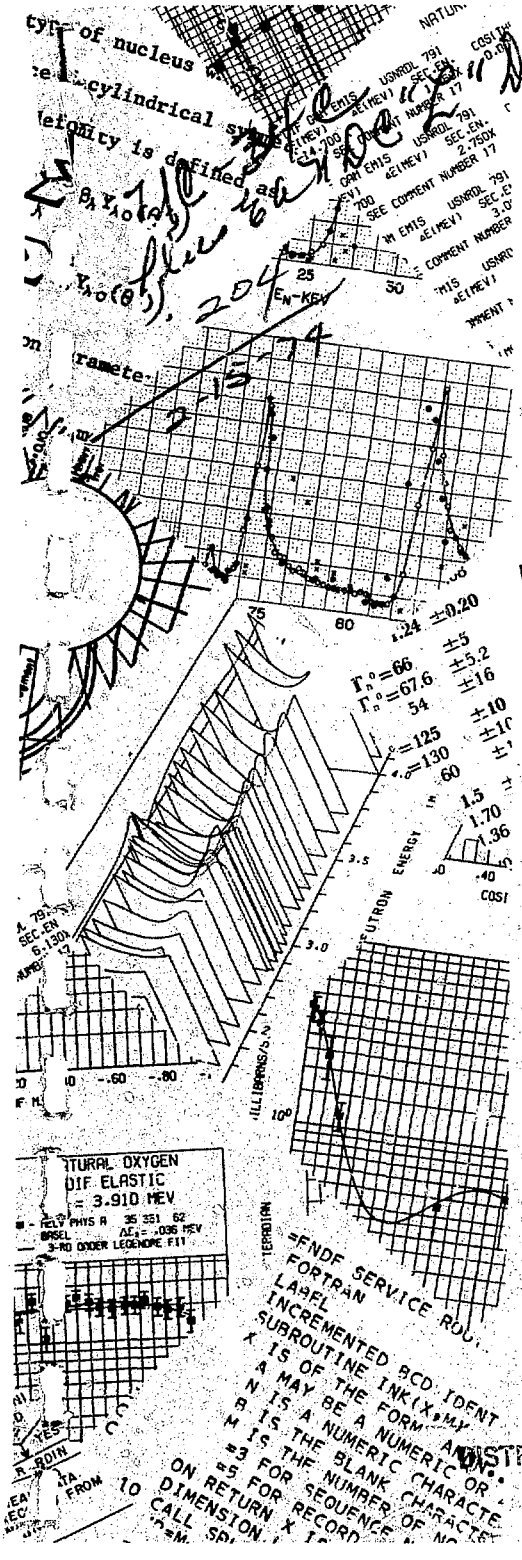

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Third Edition, Volume I
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NEUTRON CROSS SECTIONS
VOLUME 1, RESONANCE PARAMETERS

NATIONAL NEUTRON CROSS SECTION CENTER
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK 11973

MASTER

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Cross
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VOLUME I, RESONANCE PARAMETERS

S.F. MUGHABGHAB AND D.I. GARBER

June 1973

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NATIONAL NEUTRON CROSS SECTION CENTER
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UNITED STATES ATOMIC ENERGY COMMISSION

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Each section is organized by element with the natural element information first, followed by isotope information. At the end of each section is a bibliography. Within each subsection the information is structured first by thermal cross section, then resonance properties, followed by resonance parameters.

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FOREWORD

This edition of BNL 325, *Neutron Cross Sections*, takes on a new identity. Previous editions presented in compact form a summary of the complete store of the neutron data files. The increase in the volume and detail of neutron data since the second edition of BNL 325 published in 1960 and its supplements published during 1964-1966 makes a wide distribution of a compendium of all neutron data in ready reference form impractical. Furthermore, those wishing current knowledge of available data clearly must supplement published compendia by material available from data centers upon request. This new edition of BNL 325 aims at providing those portions of neutron data that are considered to be of prime importance and best suited for inclusion in ready reference form.

However, many of our users have need for an up to date complete and detailed compendium of all data on resonance parameters or cross sections such as was found in former editions. These are available on a per demand basis from NNCSC (or your regional data center – see map on last page) as requests. On the following pages are examples of such requests:

1. Interleaved and grouped resonance parameter data and recommended quantities. Quantities are in the form cited by the author.
2. Interleaved and grouped resonance parameter data and recommended quantities. Quantities are converted to a standard representation, such as $g\Gamma_n$, whenever possible to facilitate intercomparison.

The above are based upon a library of 150,000 resonance parameters.

3. Listings of CSISRS Library entries which include bibliographic abstracts in addition to the data.
4. Detailed graphical representation of cross section data with all data shown in reasonable detail.

In addition other types of requests are filled for both human and computer readable representations of neutron cross section data.

These are based upon a library of over 1,250,000 cross section points.

This edition, significantly aided by computer techniques, consists of two volumes: Volume 1, thermal cross sections, resonance properties, resonance parameters, and bibliography; and Volume 2, curves and bibliography. As in previous editions, recommended values for thermal cross sections and resonance parameters, eye-guide curves, and references to all data are included. Material was selected so as to avoid an undue increase in size or reduction in readability.

Editions of BNL 325 have been widely used and are frequently referenced. We hope that this new edition continues to be a prime source book and that together with new and varied material obtainable from data centers, it will satisfy the needs of both the casual and serious user of neutron cross sections.

ISOTOPE = 25-MANGANESE - 55 SPIN= 2.5 ABUNDANCE= 1.0000 PAGE (1)

E_0(keV)	Γ (eV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ(eV)	$2g\Gamma^0_n$(eV)	Misc	AUTHOR	YR
-4.700			3		Γ^0_n =	6.9		Stephenso	68
-3.300			2		Γ^0_n =	.73		Stephenso	68
-2.830			2		0.45 calc	.21		RECMD-SM	72
-2.830			2		Γ^0_n =	5.05		Cote	64
-0.078			3		0.45 calc	0.019		RECMD-SM	72
-0.078			3		Γ^0_n =	0.016		Cote	64
0.335±0.001		Γ_n= 22.40 ±0.020	2		Γ^0_n =	1.220 ±2.0-3		Garg	66
0.3355±4.0-4		calc 22.3463	2		Γ^0_n =	1.22		Cote	64
0.337±0.001		calc 18.67 ±0.017	2	0	0.5± 0.1calc	1.017 ±0.002		RECMD-SM	72
0.337±0.001	22.5± 1.0	Γ_n= 22. ±1.000	2		Γ^0_n =	1.22 ±0.050		RECMD-SM	66
0.337			2					Alves	69
0.337		Γ_n= 22.4	2		Γ^0_n =	1.22		Morgenste	65
0.337								Garg	64
0.337±0.003	21.5± 0.8	calc 20.9276±0.918	2		Γ^0_n =	1.14 ±0.050	$\sigma_0\Gamma^2$= 144. ±10.0	Bollinger	55
0.345		Γ_n= 21.6	3		0.6 calc	1.16290		Harris	50
0.346±0.011		Γ_n= 31. ±3.000	3		0.5± 0.1calc	1.66657±0.161	$\sigma_0\Gamma^2$= 3.0+6±6.0+5	Seidl	54
0.346±0.011		Γ_n= 26. ±3.000	2		calc	1.39777±0.161		Seidl	54
0.349							$\sigma_0\Gamma^2$= 1.2+6	Gaerttner	54
1.040								Gaerttner	54
1.040								Seidl	54
1.080			3					Alves	69
1.080±0.020	14.5± 1.5	calc 13.8026±1.643	3		Γ^0_n =	0.42 ±0.050	$\sigma_0\Gamma^2$= 2.8 ±0.70	Bollinger	55
1.098±0.002		calc 17.01 ±0.82	3	0	calc	0.513 ±0.025		RECMD-SM	72
1.098±0.002		Γ_n= 16.6 ±0.700	3		Γ^0_n =	0.44 ±0.020		RECMD-SM	66
1.098		Γ_n= 14.6	3		Γ^0_n =	0.44		Morgenste	65
1.098±0.002		Γ_n= 22.00 ±0.450	3		Γ^0_n =	0.49 ±0.010		Garg	66
1.098±0.002			3					Garg	64
1.0980±2.3-3		calc 14.5799	3		Γ^0_n =	0.44		Cote	64

Interleaved and grouped resonance parameter data and recommended quantities.
Quantities quoted are those exactly as cited by the author.

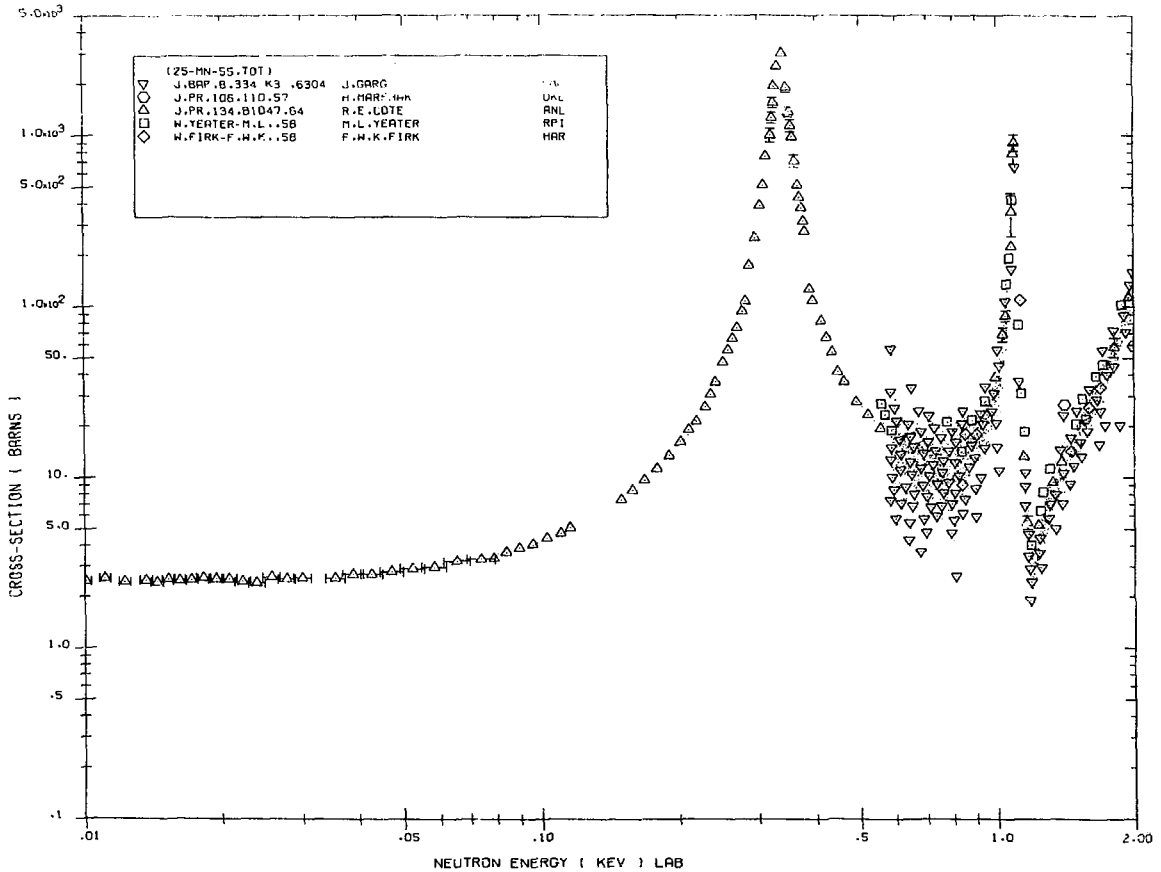
ISOTOPE = 25-MANGANESE - 55 SPIN= 2.5 ABUNDANCE= 1.0000 PAGE (1)

E_0(keV)	Γ (eV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ(eV)	$2g\Gamma^0_n$(eV)	Misc	AUTHOR	YR
-4.700			3			8.05000		Stephenso	68
-3.300			2			3.94167		Stephenso	68
-2.830			2		0.45 calc	4.21		RECMD-SM	72
-2.830			2			4.20833		Cote	64
-0.078			3		0.45 calc	0.019		RECMD-SM	72
-0.078			3			0.01867		Cote	64
0.335±0.001		18.6667±0.017	2			1.01667±1.7-3		Garg	66
0.3355±4.0-4		calc 18.6220	2			1.01667		Cote	64
0.337±0.001		calc 18.67 ±0.017	2	0	0.5± 0.1calc	1.017±0.002		RECMD-SM	72
0.337±0.001	22.5± 1.0	18.3333±0.833	2			1.01667±0.042		RECMD-SM	66
0.337			2					Alves	69
0.337		18.6667	2			1.01667		Morgenste	65
0.337								Garg	64
0.337±0.003	21.5± 0.8 calc	17.4397±0.771	2			0.95000±0.042	$\sigma_0\Gamma^2$ = 144. ±10.0	Bollinger	55
0.345		25.2000	3		0.6 calc	1.35672		Harris	50
0.346±0.011		36.1667±3.500	3		0.5± 0.1calc	1.94433±0.188	$\sigma_0\Gamma^2$ = 3.0+6±6.0+5	Seidl	54
0.346±0.011		21.6667±2.500	2		calc	1.16481±0.134		Seidl	54
0.349							$\sigma_0\Gamma^2$ = 1.2+6	Gaerttner	54
1.040								Gaerttner	54
1.040								Seidl	54
1.080			3					Alves	69
1.080±0.020	14.5± 1.5 calc	16.1030±1.906	3			0.49000±0.058	$\sigma_0\Gamma^2$ = 2.8 ±0.70	Bollinger	55
1.098±0.002		calc 17.01 ±0.82	3	0	calc	0.513±0.025		RECMD-SM	72
1.098±0.002		17.0333±0.817	3			0.51333±0.023		RECMD-SM	66
1.098		17.0333	3			0.51333		Morgenste	65
1.098±0.002		25.6667±0.525	3			0.57167±0.012		Garg	66
1.098±0.002			3					Garg	64
1.0980±2.3-3		calc 17.0097	3			0.51333		Cote	64

Interleaved and grouped resonance parameter data and recommended quantities. Quantities are converted to a standard representation, such as $g\Gamma_n$ whenever possible to facilitate intercomparison.

```
ENTRY          20011       2003                                    20011  0    1
SUBENT       20011001      2003                                    20011  1    1
BIB                15        42                                    20011  1    2
REFERENCE  ((R,KFK-1000,(SUPP.2),6902)=(R,EUR-3963,(SUPP.2),6902)=20011  1    3
            (R,EANDC(E)-111,(SUPP.2),6902))   GRAPHS ONLY.         20011  1    4
           ((R,KFK-1000,6806)=(R,EUR-3963E,6806)=                  20011  1    5
            (R,EANDC(E)-111,6806))   ABOVE 0.9 MEV SODIUM IS TAKEN20011  1    6
            FROM THIS REFERENCE.                                   20011  1    7
           (W,NEBE,7012) DATA ON TAPE.                             20011  1    8
TITLE      -HIGH RESOLUTION TOTAL NEUTRON CROSS SECTIONS FOR NA,   20011  1    9
            CL, K, V, MN AND CO BETWEEN 0.5 AND 30 MEV.-           20011  1   10
AUTHOR     (S.CIERJACKS, P.FORTI, D.KOPSCH, L.KROPP, J.NEBE,       20011  1   11
            H.UNSELD)                                              20011  1   12
INSTITUTE  (2GERKFK)                                               20011  1   13
FACILITY   (CYCLI)    45 MEV KARLSRUHE ISOCHRONOUS CYCLOTRON (KIC)20011  1   14
            DESCRIBED BY S.CIERJACKS ET AL., REV.SCI.INSTR.        20011  1   15
            39(1968)1279.                                          20011  1   16
           .DEUTERON BURST WIDTH 1 NS, REPETITION RATE 20 KC/S.    20011  1   17
N-SOURCE   (D-U  )    U(D,NX)-REACTION.                            20011  1   18
INC-SPECT   BROAD NEUTRON SPECTRUM IN THE ENERGY REGION FROM       20011  1   19
            0.3 TO 30 MEV.                                         20011  1   20
METHOD     (TOF  )    FLIGHT PATH LENGTH = ABOUT 57.5 M,           20011  1   21
            MORE PRECISE VALUES ARE GIVEN UNDER COMMENT FOR EACH   20011  1   22
            ELEMENT.                                               20011  1   23
           (TRNSM)    TRANSMISSION MEASUREMENT.                    20011  1   24
STANDARD   (ABSOL)    ABSOLUTE MEASUREMENT.                        20011  1   25
DETECTOR   (LSCIN,RECC)          LIQUID SCINTILLATOR (NE-213),    20011  1   26
            9 CM DIAM. 1 CM THICK VIEWED BY AN XP-1040 PHOTO TUBE.20011  1   27
CORRECTION .CORRECTED FOR BACKGROUND AND                           20011  1   28
           .FOR THE DEAD TIME OF THE TIME RECORDING SYSTEM.        20011  1   29
           .MULTIPLE SCATTERING EFFECTS ARE ESTIMATED TO BE        20011  1   30
            NEGLIGIBLE.                                            20011  1   31
ERR-ANALYS .TOTAL ERROR GIVEN IS AN UPPER LIMIT,                   20011  1   32
           .THE STATISTICAL ERROR RUNS FROM BETTER THAN 1 PER CENT20011  1   33
            TO ABOUT 3 PER CENT IN MOST OF THE CHANNELS, EXCEPT    20011  1   34
            FOR THE LOW ENERGY REGION OF SODIUM, SEE SUBCOMMENT.   20011  1   35
COMMENT     OVERALL ENERGY RESOLUTION GIVEN IS AN UPPER LIMIT =    20011  1   36
             (FWHM OF THE GAMMA PEAK)/(FLIGHT PATH) = DT/L,        20011  1   37
            VALUES OF DT AND L ARE GIVEN UNDER COMMENT FOR EACH    20011  1   38
            NUCLIDE.                                               20011  1   39
STATUS     (PRIV )    NEBE, 701211, ON TAPE.                       20011  1   40
           (APRVD)    NEBE. TELEPHONE CALLS AND LETTERS, 02/71.    20011  1   41
HISTORY    (701211R)  DATA RECEIVED ON TAPE.                       20011  1   42
           (710115C)                                               20011  1   43
           (710326E)                                               20011  1   44
ENDBIB            42         0                                     20011  1   45
NOCOMMON           0         0                                     20011  1   46
ENDSUBENT         45         0                                     20011  199993
SUBENT       20011006      2003                                    20011  6    1
BIB                5        10                                    20011  6    2
ISO-QUANT  (25-MN-55,TOT)                                          20011  6    3
PART-DET   (N) NEUTRONS.                                           20011  6    4
SAMPLE     (COMC=)    CHEMICAL PURITY 99.5 PER CENT.               20011  6    5
           .THICKNESS, N = 0.2464 ATOMS/BARN.                      20011  6    6
COMMENT    .TOTAL TIME UNCERTAINTY OF THE SPECTROMETER = DT,       20011  6    7
             DT = (FWHM OF THE GAMMAPEAK) = 3.3 NANOSEC,           20011  6    8
             L = (FLIGHT PATH LENGTH) = 57.540 M.                  20011  6    9
HISTORY    (701211R)  DATA RECEIVED ON TAPE.                       20011  6   10
           (710115C)                                               20011  6   11
           (710326E)                                               20011  6   12
ENDBIB            10         0                                     20011  6   13
NOCOMMON           0         0                                     20011  6   14
DATA               4      5129                                     20011  6   15
EN         EN-RSL     DATA       DATA-ERR                          20011  6   16
MEV        NSEC/M     B          PER-CENT                          20011  6   17
 5.0000E-01 5.7000E-02 3.4600E+00 3.0000E+00                       20011  6   18
 5.0017E-01 5.7000E-02 3.5400E+00 3.0000E+00                       20011  6   19
 5.0034E-01 5.7000E-02 3.3400E+00 3.0000E+00                       20011  6   20
 5.0051E-01 5.7000E-02 3.6500E+00 3.0000E+00                       20011  6   21
 5.0068E-01 5.7000E-02 3.3900E+00 3.0000E+00                       20011  6   22
```

Listings of CSISRS Library entries which include bibliographic abstracts in addition to the data.



Detailed graphical representation of cross section data with all data shown in reasonable detail.

ACKNOWLEDGMENTS

A project of this magnitude is not the work of two individuals. The list of people who must be acknowledged is necessarily quite long. Three people must be specially mentioned and thanked. They are R.R. Kinsey, F. Scheffel and P. Hlavac.

The scope of the project consists of three parts: (1) preparation of the body of data for subsequent consideration, (2) recommendation, and (3) production and checking.

1. Production of this volume demanded an accurate and complete body of the world's resonance parameter data. For this publication, it was judged best to create a computerized library of resonance data from the original articles in the image of the original article. This library now consists of 150,000 points. The mammoth task was overseen by Frances Scheffel, and the never-ending keypunching and verifying was ably done by M. Blennau, J. Buiniskis, and P. Price. Programs to operate on this data base to present the data in a highly usable form for recommendation were developed by H. Connell and O. Ozer. We wish to thank L.T. Whitehead at Oak Ridge for sending us the Cinda Library on magnetic tape, allowing us to perform additional completeness checks on our library. We are indebted to S. Santos for her diligent hours in our library, and to S. Amoretty for translating numerous articles. We wish to thank M.K. Drake for developing specifications for this library.

2. In the recommendation phase, B.A. Magurno helped in the evaluation of the thermal cross sections of the light elements ($Z=15$-20), S. Pearlstein in the evaluation of rhodium resonance parameters, and B. Leonard in the evaluation of the samarium and europium isotopes. Interesting and useful discussions with M.R. Bhat, T.J. Krieger, A. Prince, J. Stehn, H. Takahashi, and R.E. Chrien were greatly appreciated. Programs were written by O. Ozer to compute resonance integrals, contribution to thermal cross section, coherent scattering amplitude, etc. from the recommended parameters which aided greatly in the recommendations.

3. This volume was printed directly from computer generated microfilm. The program to automatically compose pages, including upper and lower case symbols and Greek letters, was due to R.R. Kinsey and afforded very substantial savings of money and errors. The task of keeping track of all the recommended values and their corrections and looking over the output of checking programs was ably performed by P. Hlavac and later by C. Brewster. Thanks go to G. Irving and J. Redzinak for typing and distribution. The authors wish to express special thanks to the Brookhaven Graphics Arts group, under K. Boehm, for their help in the publication, and to S. Pearlstein, R. Dannels and R.E. Chrien for their leadership throughout this project.

Many people outside of the NNCSC have aided in this publication. We are grateful to the many experimentalists who made special effort to provide us with their recent data prior to publication. In particular, special mention goes to Drs. H. Liou, U.N. Singh, F. Rahn, G. Hacken, J. Rainwater of Columbia University, Drs. W. Good, R.L. Macklin, J.A. Harvey, J.W.T. Dabbs, and G.G. Slaughter of Oak Ridge National Laboratory, Drs. G.A. Keyworth, M.G. Silbert, G.F. Auchampaugh, and J.H. McNally of Los Alamos Scientific Laboratory, Drs. R.C. Block and R.W. Hockenbury of Rensselaer Polytechnic Institute, Professors H.W. Newson, E. Bilpuch of Duke University, Dr. S. Friesenhahn of Gulf General Atomic, Dr. S.A. Cox of Argonne National Laboratory, Professor J.B. Garg of State University of New York at Albany, Dr. R.R. Winter of Dennison University, Ohio, Professor C.G. Shull of Massachusetts Institute of Technology, Drs. O.A. Wasson, R.E. Chrien, and W. Kane of Brookhaven National Laboratory, Drs. B.L. Berman and J.C. Browne of Lawrence Berkeley Laboratory, Drs. H. Weigman, G. Rohr, and F. Poortmans of Geel, Belgium, Dr. F. Fröhner of CCDN Saclay, Drs. D. Earl and G. Bartholomew of Chalk River Nuclear Laboratories. Useful and interesting discussions of thermal cross sections with Dr. N. Holden of Knolls Atomic Power Laboratory are acknowledged.

The criticism and suggestions of the reviewers have been essential. Our thanks go to Professor R.O. Lane of Ohio State University, Professors E.G. Bilpuch and H.W. Newson of Duke University, Dr. D.C. Dodder of Los Alamos Scientific Laboratory, Dr. P. Ribon of Saclay, while visiting BNL, Drs. G. de Saussure of Oak Ridge National Laboratory, Drs. J.R. Smith, F.B. Simpson of Idaho Falls, Dr. C.D. Bowman of National Bureau of Standards.

A tabulation of energy ordered listing of strong resonances as an aid to experimentalists to identify impurities in samples was motivated by a suggestion from the late E.R. Rae.

We would like to recognize the NNCSC Advisory Committee, R. Erlich, A.B. Smith, H. Goldstein, G. Hanna, P. Lazarus, and P. Greebler, for their suggestions with regard to the new format of BNL 325.

NOTATION AND NOMENCLATURE

The following is a table of definitions of quantities used in the present edition of BNL 325. A quantity with a superscript c indicates that it is calculated from resonance parameter information or related measurements.

I. Thermal Cross Sections

σ_γ = $\sigma_{n\gamma}$ = neutron radiative capture cross section.
σ_s = σ_s = "free" neutron scattering cross section.
σ_α = $\sigma_{n\alpha}$ = neutron cross section for alpha particle emission.
σ_p = σ_{np} = cross section for proton emission.
σ_f = σ_{nf} = fission cross section.
σ_a = neutron absorption cross section.
σ_{pm} = paramagnetic cross section.
σ_t = total neutron cross section.
a_{coh} = coherent scattering amplitude (bound), a complex quantity sometimes referred to in literature as b.
ν = $\nu_p + \nu_d$, total number of neutrons emitted per fission; ν_d is the number of delayed neutrons per fission.
ν_p = number of prompt neutrons emitted per fission.
ν_{sp} = number of prompt neutrons per spontaneous fission.
η = $\nu(\sigma_f/\sigma_a)$ = number of neutrons emitted per neutron absorbed.
α = σ_γ/σ_f = capture to fission cross section ratio. At a neutron resonance, this is equivalent to Γ_γ/Γ_f.

II. Resonance Properties

I_γ = radiative capture resonance integral.
I_f = fission resonance integral.
I_a = absorption resonance integral. For fissionable nuclei, $I_a = I_\gamma + I_f$.
I_p = proton emission resonance integral.
$\langle D \rangle$ = mean observed level spacing.
R' = potential scattering radius.
S_0 = $(g\Gamma_n^0)/\langle D^0 \rangle$ = s-wave neutron strength function.
S_1 = $(g\Gamma_n^1)/3\langle D^1 \rangle$ = p-wave neutron strength function. For brevity, S_0 and S_1 are given in units of 10^{-4}.

A quantity enclosed by parentheses ( ) or square brackets [ ] indicates that it is assumed or preferred respectively.

> *The recommended widths are R-matrix* derived parameters for $Z \leqslant 28$ and are single-level Breit-Wigner parameters for $29 \leqslant Z$ unless otherwise indicated.
>
> The widths are generally expressed in the laboratory coordinate system unless otherwise noted.

E_0 = resonance energy.
Γ = total width of resonance at E_0.
Γ_n = neutron width at E_0.
Γ_γ = radiative width.
Γ_a = $\Gamma_\gamma + \Gamma_n + \Gamma_f$.
Γ_α = alpha width at E_0.
Γ_d = deuteron width at E_0.
Γ_f = fission width. Positive and negative signs associated with this quantity are interpreted as follows: pairs of resonances with fission widths having the same sign interfere destructively while pairs with opposite signs interfere constructively.
Γ_{f1} = fission width in channel number 1.
Γ_{f2} = fission width in channel number 2.
Γ_p = proton width at E_0.
σ_0 = peak cross section at E_0.
$\Gamma_n^0 = \Gamma_n \sqrt{1\ \mathrm{eV}/E_0}$ = reduced neutron width at 1 eV for s-wave neutrons.
$\Gamma_n^1 = \Gamma_n \sqrt{1\ \mathrm{eV}/E}\,[1+(1/k^2R^2)]$ = reduced neutron width for p-wave neutrons.
$\gamma_n^2 = \Gamma_n/2P_n$ = reduced neutron width in R-matrix formalism.
P_ℓ = neutron penetrability for a specified orbital angular momentum of the incoming neutron.
$k = 2\pi/\lambda$ = wave number.
R = nuclear radius.
S_n = neutron separation energy for the compound nucleus $A+1$. These were generally adopted from Wapstra[1]; if more accurate values derived from (n,γ) measurements carried out with Ge-Li detectors were available, they were adopted.
I^π = spin of the target nucleus; superscript on I indicates the parity.
$J = I + l + ½$.
ℓ = orbital angular momentum of the incoming neutron.

$g = (2J+1)/[(2s+1)(2I+1)]$ = statistical weight factor. For neutrons, the spin $s = ½$ so that $g = (2J+1)/[2(2I+1)]$.
%Abd = percentage abundance of isotope. These are generally taken from 1973 *Chart of the Nuclides* (N. Holden & F.W. Walker).
a = (as in $2ag\Gamma_n$) fractional abundance of isotope.

CONSIDERATIONS INVOLVED IN THE RECOMMENDATIONS

INTRODUCTION

The aim of the following survey is to present (1) the various considerations employed in the assessment of the experimental data and (2) the relationships, methods, and principles that have been useful in arriving at the recommended parameters. This survey is not intended to be an exhaustive review of the field of neutron physics. For comprehensive and detailed reviews the user may consult any of the excellent articles or books on the subject.[2-6]

I. THERMAL CROSS SECTIONS

A. Capture, Absorption, Fission, and Total Cross Sections.

The total neutron cross section can be written as the sum of partial cross sections:

$$\sigma_t = \sigma_\gamma + \sigma_\alpha + \sigma_p + \sigma_f + \sigma_s \,. \tag{1}$$

Because of its simplicity and widespread use, we present here a description of these cross sections in terms of single-level Breit-Wigner parameters. For an isolated resonance, one can write

$$\sigma_\gamma = \sigma_0 \frac{\Gamma_\gamma}{\Gamma}\left(\frac{E_0}{E}\right)^{1/2} \frac{1}{1+y^2}\,, \tag{2}$$

$$\sigma_s = 4\pi(R')^2 + \left[\frac{\sigma_0\Gamma_n}{\Gamma} + \frac{\sigma_0 2R'y}{\lambda\!\!\!^{-}_0}\right]\frac{1}{1+y^2}\,, \tag{3}$$

where $y = \frac{2}{\Gamma}(E - E_0)$,

$$\sigma_0 = 4\pi\lambda\!\!\!^{-}_0{}^2 \frac{g\Gamma_n}{\Gamma} = \frac{2.608\times10^6}{E(eV)}\left(\frac{A+1}{A}\right)^2 \frac{g\Gamma_n}{\Gamma}\,. \tag{4}$$

Expressions similar to that for σ_γ can be written for σ_f, σ_α, and σ_p.

Some of the factors considered in the recommendation for the thermal cross sections are the following:

1. The resonance contribution to the capture and fission cross sections at a neutron energy of 0.0253 eV is calculated from the resonance parameters. If neutron-bound levels are not required to account for the discrepancy between measured and calculated values, reasonable adjustments are made in either the resonance parameters or the thermal cross sections (depending on the accuracy of the measurements) in order to achieve consistency. In some cases sufficient information is available to warrant a calculation for the parameters of a bound level. When a bound level contribution is required to account for the thermal cross section, this is indicated in the resonance parameter tables. The parameters of a bound level are not unique and should be considered as a means for providing a description of the cross section at low neutron energies.

2. In a few cases, we have employed the isomeric ratio (ratio of the activation cross sections leading to the isomeric and the ground state) as an aid, either to calculate one of the partial activation cross sections, or to test the consistency of measurements. The target isotopes ^{82}Kr and ^{84}Kr provide a good example. The isomeric ratio for ^{84}Kr is experimentally determined to be 2.14 (see page B/96). Assuming that the γ-ray multiplicities of ^{83}Kr and ^{85}Kr are approximately the same and that the respective spins of the ground and isomeric states are identical for ^{83}Kr and ^{85}Kr, then one can calculate the activation cross section leading to the ground state of ^{83}Kr: $\sigma_\gamma^g = \sigma_\gamma^m/2.14 = 9.3$ b. As a result the total capture cross section of ^{82}Kr is 20.0 ± 9.3 b, which compares favorably (within the error limits) with the one available single measurement: $\sigma_\gamma = 45 \pm 15$ b.

3. In addition to the general requirement that the sum of the partial cross sections should be equal to the total cross section, the values of α, η, and ν of the fissile nuclides are constrained to fit the following relationships:

$$\alpha = \frac{\sigma_\gamma}{\sigma_f}, \tag{5}$$

$$\eta = \nu \frac{\sigma_f}{\sigma_a} = \frac{\nu}{1+\alpha}. \tag{6}$$

A consistent set of values was sought in the analysis.

In the rare-earth region and for elements in the ionic state, such as oxide samples, one must take into consideration the interaction between the magnetic moment of the neutron and that of the ion. Such an interaction gives rise to a paramagnetic cross section which has the form[7]

$$\sigma_{pm} = \frac{2}{3}\pi \left(\frac{e^2}{mc^2}\right) \gamma^2 \mu^2 \overline{F^2}, \tag{7}$$

where e^2/mc^2 is the classical electron radius, γ is the magnetic moment of the neutron, μ is the effective magnetic moment of the atom in Bohr magnetons, and F is the neutron scattering form factor. The paramagnetic cross sections can be determined from an analysis of the total cross sections. Recommended

values for σ_{pm} are given in the present edition of BNL 325 and they range, for example, from 26 b for Er to 5 b for Yb.

B. Coherent Scattering Amplitude.

The coherent scattering amplitude can be measured by the techniques of diffraction, refraction, and reflection of neutrons. Very recently, specialized methods such as the Christiansen filters[8] and Pendellosung effect[9] have been developed which give highly accurate values of the coherent scattering amplitude. It can also be calculated from the resonance parameters.

The coherent scattering amplitude for slow neutrons ($kR \ll 1$) is given by

$$a_{coh} = R' + \sum \frac{\lambda\!\!\!^{-}_j \Gamma_{nj}}{2(E-E_j)+i\Gamma_j} \cdot \tag{8}$$

The summation is carried out over resonances j of the same spin. The term R' is sometimes referred to as the potential scattering amplitude. In most cases, $|E_j| \gg |\Gamma_j|$ and $|E_j| \gg |E|$; then a_{coh} reduces at thermal energies to the simple form

$$a_{coh} = R' - \sum_j \frac{\lambda\!\!\!^{-}_j \Gamma_{nj}}{2E_j}, \tag{9}$$

where

$$\lambda\!\!\!^{-}_j = \frac{0.286 \times 10^{-8}}{\sqrt{E_j(eV)}} \left(\frac{A+1}{A}\right) \text{ in cm}. \tag{10}$$

However, in the case in which a resonance is located close to thermal energy, the complex part of the coherent amplitude is not negligible (e.g., in ^{113}Cd). For nuclei with nuclear spin $I \neq 0$, s-wave neutron capture leads to two compound states, with spins $I + ½$ and $I - ½$. Then a coherent scattering amplitude is associated with each of these spin states. In addition, one could generally allow for a spin dependence of R'. Under these conditions, the resultant total coherent scattering amplitude becomes

$$a_{coh} = g_+ a_+ + g_- a_-, \tag{11}$$

where g_+ and g_- are the statistical weight factors for spin states $I + ½$ and $I - ½$, respectively, and are given by

$$g_+ = \frac{I+1}{2I+1}, \qquad g_- = \frac{I}{2I+1} \cdot \tag{12}$$

The coherent scattering cross section is given by

$$\sigma_{coh} = 4\pi a^2_{oh} = 4\pi(g_+ a_+ + g_- a_-)^2. \tag{13}$$

The total scattering cross section is the sum of the coherent and incoherent cross sections and is related to a_+ and a_- by the following relation:

$$\sigma_s = \sigma_{coh} + \sigma_{inc} = 4\pi g_+ a_+^2 + 4\pi g_- a_-^2 \ . \tag{14}$$

With the aid of Eqs. (13) and (14), one can calculate the spin incoherent cross section:

$$\sigma_{inc}(\text{spin}) = 4\pi g_+ g_-(a_+ - a_-)^2. \tag{15}$$

Note that the incoherent cross section is identically zero if $a_+ = a_-$ and in this case, as well as for nuclei with $I = 0$, the total scattering cross section is equivalent to the coherent scattering cross section; i.e.,

$$\sigma_s = \sigma_{coh}. \tag{16}$$

In general the most direct way of determining the amplitudes for each spin state is to use polarized neutrons and polarized targets. For example, such measurements have been carried out on cobalt by Ito and Shull.[10] For this isotope the total scattering cross section is attributable largely to spin incoherence.

In the previous discussion, we did not take into consideration the effect of isotopic incoherence on scattering. This can be treated in a similar manner as spin incoherence. If the fractional abundances of two isotopes in a sample are f_1 and f_2 and their coherent amplitudes are a_1 and a_2, then it follows that

$$a_{coh} = f_1 a_1 + f_2 a_2 ,$$

$$\sigma_{inc}(\text{isotopic}) = 4\pi f_1 f_2 (a_1 - a_2)^2 . \tag{17}$$

The best example of isotopic incoherence is afforded by nickel.

Finally, we would like to point out that the recommended values of a_{coh} presented in BNL 325 pertain to bound nuclei in a crystal lattice. The scattering amplitude for a free nucleus is related to the amplitude for a rigidly bound nucleus by

$$a_{coh}\,(\text{free}) = \frac{A}{A+1}\, a_{coh}\,(\text{bound}). \tag{18}$$

We would like to point out that Eq. (8) in addition to providing us with a useful means for checking the consistency of the variables (when measured independently) was also applied to deduce one of the parameters when the others are known. For example, when information on the resonance parameters of negative and positive energy resonances is available, then R′ was obtained from a_{coh}.

Extensive use has been made of this relation in the evaluation of the parameters in the thermal energy region.

II. RESONANCE PROPERTIES

A. Resonance Integrals.

The epicadmium dilute resonance integral for a particular reaction $\sigma_R(E)$ (σ_γ, σ_f, σ_a, σ_n, σ_p, σ_s) is expressed by the relationship

$$I = \int_{E_c}^{\infty} \sigma_R(E) \frac{dE}{E}, \tag{19}$$

where E_c is determined by the cadmium cutoff energy, which depends on the cadmium thickness. We have assumed that the cutoff energy, E_c, equals 0.5 eV. It is assumed that the dE/E neutron spectrum is not perturbed by the absorbing material. Explicit expressions have been derived by Story[11] for the integral for the case in which the cross section is represented by a Breit-Wigner shape. However, if the resonances are not located close to E_c and the cross section is described by a sum of single-level Breit-Wigner contributions, the resonance capture integral (in barns) can be approximated by the very simple expression

$$I_\gamma = \frac{\pi}{2} 2.608 \times 10^6 \left(\frac{A+1}{A}\right)^2 \sum_j \frac{\Gamma_{\gamma j}}{E_j^2} \frac{g\Gamma_{nj}}{\Gamma_j}, \tag{20}$$

where the summation is extended over resolved resonances and all units are expressed in eV. Similar expressions for the resonance fission integral could be written. The contribution to the resonance integral from the unresolved energy region has been treated by Dresner.[12] The 1/v contribution to the resonance integral for a cadmium cutoff energy of 0.5 eV is given by

$$I_\gamma(1/v) = 0.45\sigma_\gamma\,(0.0253). \tag{21}$$

The capture and fission resonance integrals have been computed for each isotope from the resonance parameters and have been compared with measurements. If large discrepancies exist between measured and calculated values, these cases have been brought to the attention of the user. Finally we would like to point out that the bibliography relating to resonance integrals is complete only for isotopes with $Z \geqslant 90$.

B. Determination of the Potential Scattering Radius.

For s-wave neutrons ($\ell = 0$), the scattering cross section in the single-level Breit-Wigner approximation can be written in the form

$$\sigma_s(E) = 4\pi(1-g)(R')^2 + 4\pi g \lambda\!\!\!^{-}_0{}^2 \left| \frac{\Gamma_n/2}{E - E_0 + (i\Gamma/2)} + \frac{R'}{\lambda\!\!\!^{-}_0} \right|^2. \tag{22}$$

In an energy region away from resonances, the above expression reduces to

$$\sigma_s(E) = \sigma_p = 4\pi(R')^2. \tag{23}$$

σ_p is the potential scattering cross section, and R' is the potential scattering radius, which is related to the "nuclear" radius by the relation

$$R' = R[1 - R^\infty], \tag{24}$$

where R^∞ describes the effect of distant levels located outside the investigated energy regions. R' is determined by carrying out a shape analysis of the total or scattering cross section over an extended energy range.

In addition, we derived R′ from accurate values of the coherent scattering amplitude, provided that the contribution of positive and negative energy resonances is known. The recommended potential scattering lengths are plotted in Figure 1 and are compared with the "nuclear" radius $R = 1.35A^{1/3}$ and with the optical model calculation based on the Buck and Perey code.[13] The optical model potential parameters used in the present computation are the same as those employed for the derivation of S_0 and S_1. Note that the present calculation describes well the behavior of the experimental data and in particular the oscillation of R′ with A. The scatter of the experimental points around mass number $A = 150$ is indicative of the problems associated with the determination of R′ in the rare-earth region, where the samples used are in the oxide form. This results in large corrections due to water absorption. Experiments with metal foils are required to improve the experimental data in this region.

There are indications that R′ depends on the spin of the compound state. In the study of the total cross section of ^{51}V, Firk et al.[14] reported potential scattering lengths of 7.5 and $\leqslant 5$ fm for $J = 3$ and 4 resonances, respectively. By applying the method of shape analysis to the transmission data of ^{59}Co, Morgenstern et al.[15] derived $R' = 4.9 \pm 0.5$ fm for $J = 3$ resonances and $R' = 5.8 \pm 0.5$ fm for $J = 4$ resonances. It is interesting that these results, when combined with the polarization data and the resonance parameters of positive resonances, indicate that the contribution to the thermal cross section of ^{59}Co is largely due to one or more bound levels with spin 3.

C. Average Level Spacing and Level Density Formula.

The spacings between neighboring resonances drawn from the same population (same spin and parity) obey the Wigner distribution:

$$P(D) = \frac{\pi}{2}\left(\frac{D}{\langle D\rangle^2}\right) e^{-\pi(D/2\langle D\rangle)^2}, \tag{25}$$

where D is the spacing between adjacent resonances and $\langle D\rangle$ is the mean level spacing for the same spin and parity. Note that this distribution describes the "level repulsion effect"; i.e., small level spacings are unlikely to occur. The available experimental data agree well with the Wigner distribution. Intermediate structure (e.g., subthreshold fission effects) would lead to significant departure from these statistical distributions. An estimate of the error on $\langle D\rangle$ was derived from the distribution of spacings and is given by the relationship

$$\Delta D = \left(\frac{4-\pi}{\pi N}\right)^{1/2} \langle D\rangle, \tag{26}$$

where N is the number of spacings.

Following Reichel and Wilkins[16] and Muradyan and Adamchuk,[17] the most probable value of spacing, D*, can be calculated by using the method of maximum likelihood. The result is

$$D^* = \left(\frac{\pi}{4M} \sum_{j=1}^{M} D_j^2 \right)^{1/2}, \tag{27}$$

where $M = N - 1$, and D_j is the nearest level spacing.

The level density formula derived on the basis of the Fermi gas model is

$$\rho(U,J) = \frac{C(2J+1)}{U^2} e^{-J(J+1)/2\sigma^2} e^{2(aU)^{1/2}}, \tag{28}$$

where U is the effective excitation energy, σ is the spin cutoff factor and a is the level density parameter. Note that for the case $J(J+1) < 2\sigma^2$ (for example, when $\sigma = 3$, $I \leqslant 7/2$) the level density would be proportional to $2J+1$ and the spacing is $\langle D \rangle \propto 1/(2J+1)$.

D. s- and p-Wave Neutron Strength Functions.

The s- and p-wave neutron strength functions are defined by the following relations:

$$S_0 = \frac{\langle g\Gamma_n^0 \rangle}{\langle D^0 \rangle} = \frac{\Sigma_j g\Gamma_{nj}^0}{\Delta E}, \tag{29}$$

$$S_1 = \frac{\langle g\Gamma_n^1 \rangle}{3\langle D^1 \rangle} = \frac{\Sigma_j g\Gamma_{nj}^1}{3\Delta E}, \tag{30}$$

where the summation is carried out over N resonances in an energy interval ΔE, and $\langle D^0 \rangle$ and $\langle D^1 \rangle$ are the mean level spacings for s- and p-wave neutrons, respectively.

The error on the strength function is estimated from the relation $(2/N)^{1/2} S_0$ (which is an asymptotic approximation for large N) based on the Porter-Thomas distribution of reduced neutron widths. For a limited number of resonances, Muradyan and Adamchuk[17] and later Slavinskas and Kennett[18] took into consideration the distribution of reduced neutron widths to calculate the most probable value of the strength function and the associated asymmetrical errors. Recently, Liou and Rainwater[19] have applied the Monte Carlo method to solve for S_0 (and S_1) and their errors.

These quantities are important because of their use in the calculation of average cross sections in the unresolved energy region and because of the significant role they played in the development of the optical model. The recommended s- and p-wave neutron strength functions derived from the individual resonance parameters and from average cross sections are plotted in Figures 2 and 3 and are compared with an optical model calculation based on the Buck-Perey code. The optical model parameters employed in these calculations are $V_0 = 41.5$ MeV, $V_{SO} = 8$ MeV, surface absorptions $W_D = 5.4$ MeV, and $r_{SP} = 1.35$ fm. Note that the minima at $A = 100$ in the s-wave strength function and at $A = 50$, 190, in the p-wave strength functions are not well reproduced by the calculations. Refinements such as the influence of intermediate

structure had not been taken into consideration in the calculation. There is mounting evidence that doorway states, such as 2-particle 1-hole states, play an important role in determining the magnitude of the strength functions.

The first success of the optical model was achieved by Feshbach, Porter, and Weisskopf,[20] whose calculations showed that the "cloudy crystal ball" model qualitatively described the general trend of the experimental data. Subsequent, more accurate, measurements, particularly around $A=155$, demonstrated that the peak around $A=155$ is in fact split in two. Chase et al.,[21] by including deformation of the nucleus in the optical model parameters, adequately described the splitting of the peak at $A=155$. Moldauer[22] accounted for the deep minimum at $A=100$ in the s-wave neutron strength function by concentrating the imaginary part of the optical potential outside the nuclear surface. Considerable effort was devoted by the Saclay group[23] to a search for a spin dependence of the strength function. However, to date, there is no convincing evidence for a spin dependence of the strength function.

Much experimental and theoretical effort was concentrated recently on the study of the variation of S_0 with isotope number. The first observation of a general decrease of S_0 with A was reported by Fuketa and Harvey[24] for the tin isotopes. This behavior was accounted for by Shakin[25] in terms of the 2p-1h or doorway state model. Studies in the 4-s giant resonance by Fuketa and Harvey[26] for the Hf isotopes and by Mughabghab and Chrien[27] for the Dy, Er, and Yb isotopes revealed the same systematic trend for the even-even target isotopes. A possible explanation for this behavior can be based on Lane's[28] isospin potential:

$$V(\text{isospin}) = \vec{t} \cdot \vec{T}\,\frac{V_1}{A}\,,$$

$$= (N-Z)\frac{V_1}{A}\ (\text{for neutrons})\,, \qquad (31)$$

where $\vec{t}$ and $\vec{T}$ respectively describe the isobaric spin vectors of the incident particle and the target nucleus with mass number A.

In extensive investigations of the Te isotopes, Tellier et al.[29] showed that these isotopes manifested the same trend as the Sn isotopes. By including the Lane potential in the absorptive part of the optical potential ($V_1 \rightarrow W_1$) and by using coupled channel calculations (Tamura's Jupitor Code[30]), Newstead et al.[31] were able to fit the experimental data for the Sn and Te isotopes with reasonable values of W_1.

Finally, a new approach to this problem was taken by Nikolenko.[32] By introducing neutron pair correlations in a superconducting model, Nikolenko was successful in describing well the behavior of the strength functions of the Te and Sn isotopes.

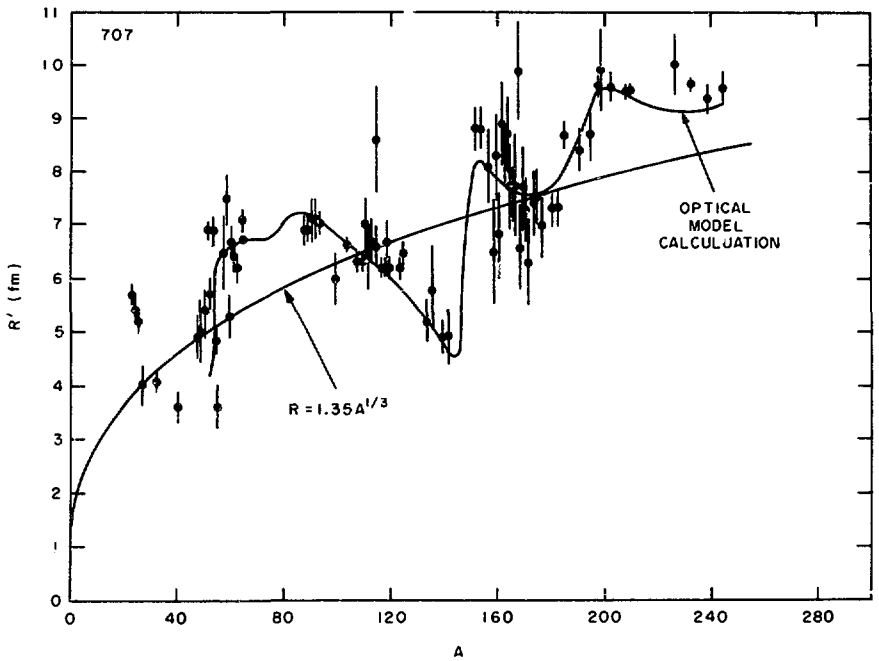


Figure 1. Variation of R′ with A. The solid curve is based on the vibrational rotational optical model with parameters $V_0 = 43.5$ MeV, $r_{sp} = 1.35$ fm, $V_{s0} = 8$ MeV and surface absorption $W_D = 5.4$ MeV.

III. INDIVIDUAL RESONANCE PARAMETERS

The level widths are generally determined from a shape or area analysis of the reaction cross section, with use of certain formalisms, described in Refs. 2-5. For fissile nuclei, the various resonance reaction formalisms were recently described by de Saussure.[33]

The general considerations that were taken into account in the recommendation of the width of the resonances are the following: (1) resolution, (2) sample thickness, (3) type of measurement, (4) isotopic enrichment, and (5) type of analysis. In addition, charged particle reaction data such as (d,p) and inverse reactions such as (γ,n) and (α,n) reactions were also considered. In some cases radiation widths have been calculated in the framework of the statistical and valence neutron models and comparisons made with measurements. In the recommendations of spins and parities, clear-cut decisions have been made, depending on the merit of the methods. The different techniques of spin and parity determinations have been reviewed and assessments have been made.

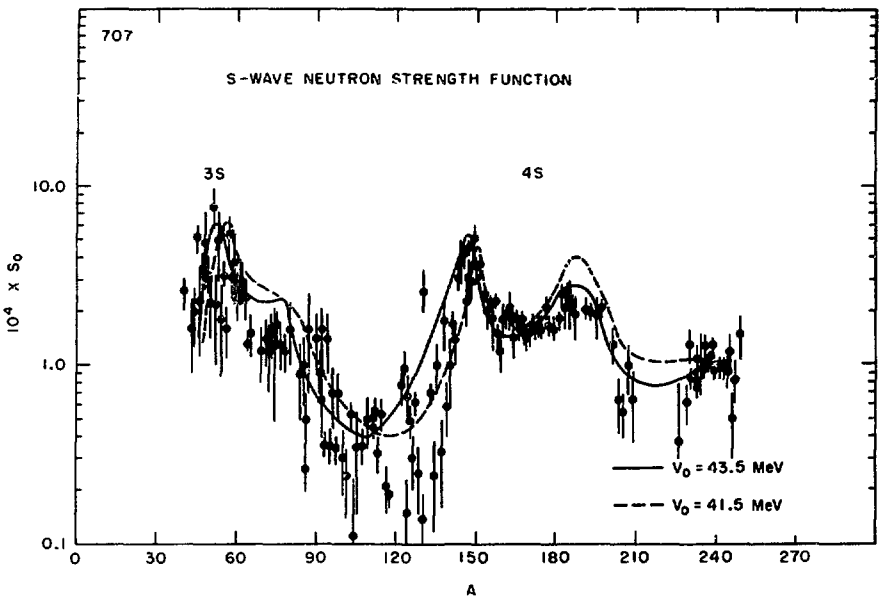


Figure 2. s-Wave neutron strength function. The parameters of the optical potential are the same as in Figure 1.

A. Determination of Spins of Neutron Resonances

A knowledge of resonance spins is required for studies of (a) the distribution of level spacings or of level densities; (b) spin dependence of the strength function, average radiation widths, fission widths, and average reduced neutron widths; (c) Porter-Thomas distribution of partial radiative widths; (d) valence neutron predictions, and (e) channel theory of fission. Because of these and other considerations we outline, briefly, the various methods for determining the spins of neutron resonances:

1. Total Cross Section Measurements.

The peak cross section of a resonance is expressed by

$$\sigma_0 = 4\pi\lambda\!\!\!^{-2}\frac{g\Gamma_n}{\Gamma} \tag{32}$$

for resonances with $\Gamma_n \gg \Gamma_\gamma$, $\sigma_0 = 4\pi\lambda\!\!\!^{-2}g$. Hence, an experimental determination of the peak cross section σ_0 and the resonance energy E_0 establishes the spin of the resonance. This method is used extensively in the mass region $A < 60$. Additional spin assignments have been made in BNL 325 from total cross section data on the basis of this relation.

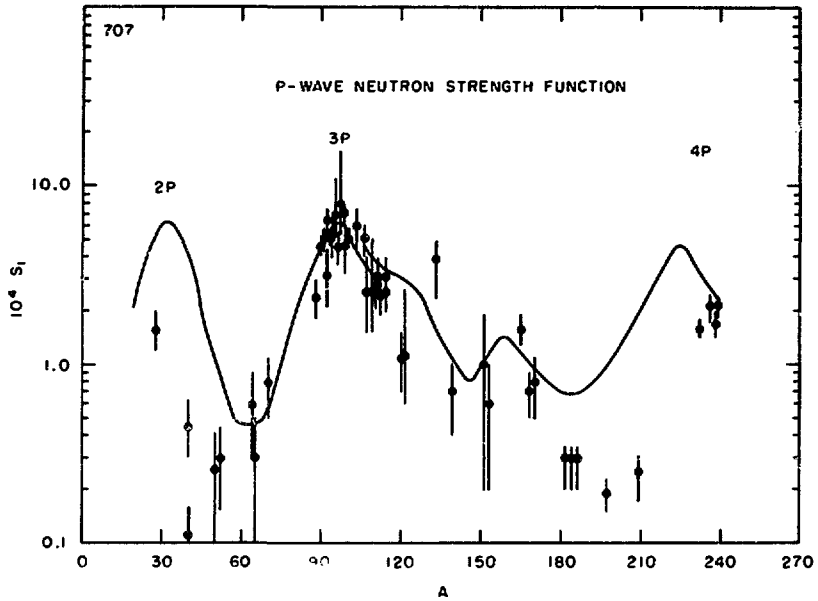


Figure 3. Experimental values of p-wave strength functions compared with predictions of the optical model.

In the heavy mass region and for nonfissile nuclei where the condition $\Gamma_n \gg \Gamma$ is no longer applicable, one could carry out a shape analysis of good resolution transmission data to extract $g\Gamma_n$ and Γ values. With the aid of the relationship

$$\Gamma_\gamma = \Gamma - \frac{g\Gamma_n}{g} > 0 , \tag{33}$$

one could determine the spin.

2. Scattering Measurements.

In a scattering measurement, the scattering area, A_s, is expressed by

$$A_s = 2\pi^2 \lambda\!\!\!^{-2} \frac{g\Gamma_n{}^2}{\Gamma} . \tag{34}$$

When this information is combined with $g\Gamma_n$ and Γ values, it yields the spin of the resonance.

3. Capture Measurements.

Similarly, in a total capture measurement, the capture area, A_γ, is

$$A_\gamma = 2\pi^2 \lambda\!\!\!^{-2} \frac{g\Gamma_n \Gamma_\gamma}{\Gamma} . \tag{35}$$

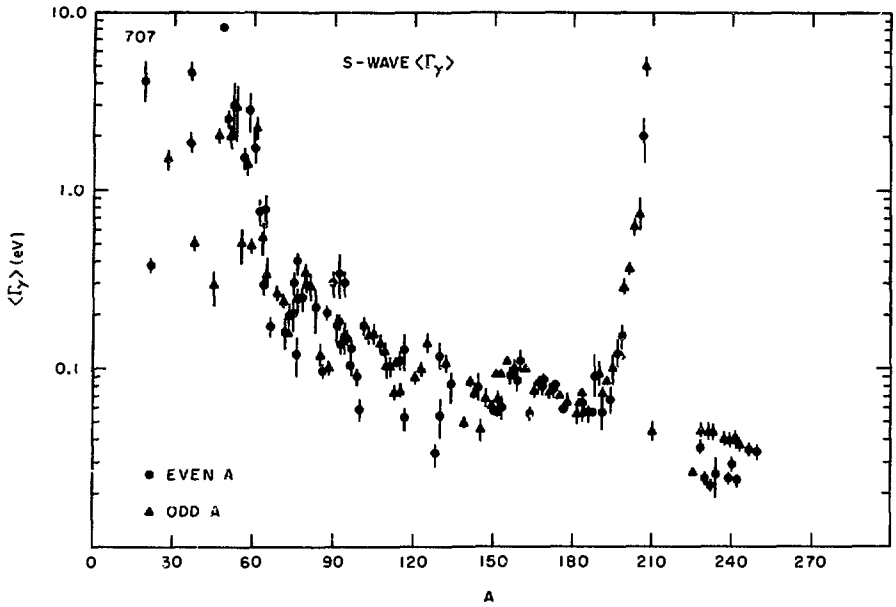


Figure 4. s-Wave radiation widths.

With the aid of available $g\Gamma_n$ and Γ_γ values, the spin of a resonance can be deduced. An example illustrating the application of this method for p-wave resonances of ^{52}Cr is by plotting the $g\Gamma_n\Gamma_\gamma/\Gamma$ values of resonances versus neutron energy. Assuming that $\Gamma_n \gg \Gamma_\gamma$ and that Γ_γ is approximately constant one expects the experimental points to be clustered roughly around two lines, $g\Gamma_\gamma = 0.5$ or 1.0 eV, corresponding to $J = 1/2$ or $3/2$, respectively. Large deviations from these lines may indicate a breakdown of the above assumptions or possibly the existence of doublets. An independent confirmation of the spin assignments of ^{52}Cr is provided by the threshold photonuclear results of Jackson and Strait.[34] On the basis of similar considerations one could make tentative spin assignments of $J = 3/2$ for the p-wave resonances of ^{58}Ni located at neutron energies: 26.67, 34.24, 39.59, 61.8, 81.1, 94.5, 101.1, 105.3, 110.7, and 117.5 keV.

4. Primary and Low-Energy γ-Rays Detected by Ge-Li Detectors.

For s-wave neutron capture, the observation of reasonably strong primary γ-rays populating low-lying states with spins $I + 3/2$ or $I - 3/2$ establishes the spin of the capturing state as $I + 1/2$ or $I - 1/2$, respectively. Underlying this conclusion is the assumption of primary dipole transitions. Because of the Porter-Thomas distribution of partial radiative widths or the unavailability of low-lying states with these spins, these selected high-energy γ-rays may be either

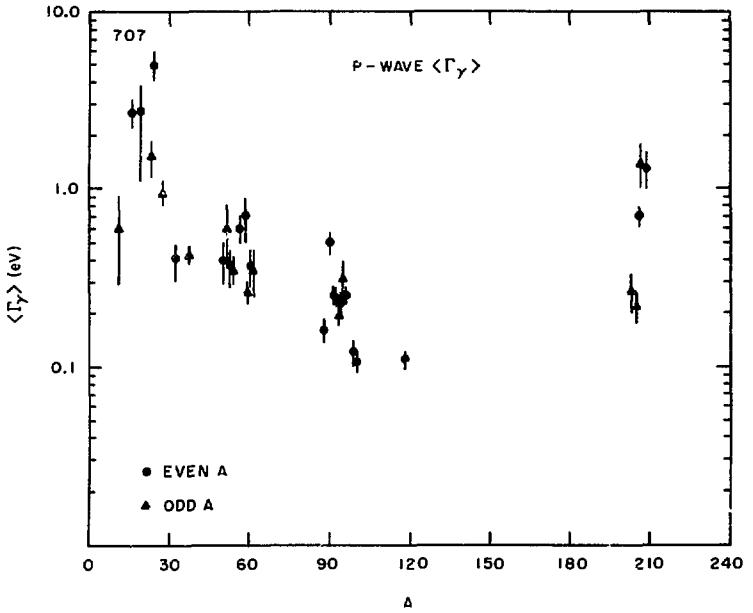


Figure 5. p-Wave radiation widths.

weak or absent in the spectrum of a resonance. One could then alternatively rely on measurements of low-energy γ-rays. As shown by Huizenga and Vandenbosch,[35] using a simple statistical model, the γ-ray population of a low-lying state is sensitive to the spin of the capturing state. By considering two suitable low-energy γ-rays and forming intensity ratios for the various resonances, one finds that these ratios separate into two distinct groups. In 1953, Sailor[36] observed a large difference in the isomeric ratios, which are related to the population ratios, of the first two levels of ^{115}In. Subsequently Draper et al.[37] studied the low-energy γ-rays of ^{115}In(n,γ)^{116}In and showed that the intensity ratios form two groups. Later, Wetzel and Thomas,[38] using Ge-Li detectors, established that the intensity ratio is related to the spin of the capturing state. The BNL fast chopper group[39] has extended this technique to a variety of nuclei in the rare-earth region. The combination of primary and low-energy γ-rays proved to be a powerful tool for the determination of spins of neutron resonances. Very recently Corvi[40] successfully made use of this technique to determine the spins of ^{235}U resonances below 41 eV.

5. The 2-Step Cascade Method.

Bollinger et al.[41] introduced a novel approach for the determination of neutron resonance spins, known as the 2-step cascade method. The intensity for such a cascade to the ground state is measured by recording the spectrum of

the pulse heights for coincident counts in two NaI crystals. Under certain simplifying assumptions [such as a constant Γ_γ and a $(2J+1)$ dependence of level density] it can be easily shown that the intensity for such a cascade is proportional to $(2J+1)^{-1}$. As a result, it would be expected that the 2-step cascade intensities for the resonances would separate cleanly into two groups. This method was applied by Bollinger et al.[41] to even-odd target nuclei ^{111,113}Cd, ^{135}Ba, ^{105}Pd, and ^{177}Hf, for which the intensities behaved according to expectation. Since then, spin assignments of resonances of these target nuclei have been made with the aid of other techniques. To assess the experimental validity of the 2-step cascade method, spin assignments derived by this and other methods have been compared by us and the excellent agreement warrants the extensive use of the 2-step cascade method in spin determinations.

6. The γ-Ray Multiplicity Method.

Another method, developed by Coceva et al.,[42] relies on the idea that the multiplicity, or average number of steps per cascade, depends on the spin difference between the initial and final states. By using two NaI crystals viewing a sample, they measured the intensity ratio $R=I_s/I_c$, where I_s is the intensity of counts measured with a single pulse-height detector and I_c is the intensity of coincidence counts measured with two NaI detectors. For s-wave capture, expectations are that R will separate into two distinct classes. The applicability of these ideas has been verified experimentally by determining the resonance spins of ^{105}Pd, ^{99,101}Ru, ^{95,97}Mo, and ^{177,179}Hf. On the other hand, nuclei such as ^{121,123}Sb and ^{171}Yb did not exhibit the expected spin effect in R.[43]

7. Polarization Measurements.

One of the direct measurements of resonance spins is the use of polarized neutrons and targets. Under these conditions, the interaction cross section can be written in the simple form

$$\sigma=\sigma_0+f_n f_N \sigma_p\,, \tag{36}$$

where f_n and f_N are the neutron and nuclear polarization and σ_0, σ_p are the polarization-independent and polarization-dependent cross sections and are expressed by

$$\sigma_0=g_+\sigma_++g_-\sigma_-\,,$$
$$\sigma_p=g_-(\sigma_+-\sigma_-)\,. \tag{37}$$

These quantities are related through the transmission effect τ by the relationship

$$\tau=\frac{\tau_P-\tau_A}{\tau_P-\tau_A}\approx-\frac{1}{2}(1+\varphi)f_n(f_N N\sigma_0 t)\frac{\sigma_P}{\sigma_0}\,, \tag{38}$$

where τ_P and τ_A are the transmissions through the target when the neutron beam is polarized parallel or antiparallel to the applied magnetic field, respectively, φ is the efficiency for reversing the beam polarization, t is the sample

thickness, and N is the number of target nuclei per unit volume. Since one can measure the quantities $\frac{1}{2}(1+\varphi)f_n$ and $f_N N\sigma_0 t$, a polarization measurement determines σ_P/σ_0. Note that for a well-isolated resonance,

$$\frac{\sigma_P}{\sigma_0} = -1 \quad \text{for } J = I - 1/2$$

$$\frac{I}{I+1} \text{ for } J = I + 1/2 \,. \tag{39}$$

Recently Reddingius et al.[44] and Keyworth et al.[45] achieved a spin determination of resonances of ^{235}U and ^{237}Np.

8. Level-Level Interference in Scattering or Fission Channel.

It can be shown that the resonance-resonance interference term due to scattering for two resonances can be written in the form

$$\Delta\sigma_{nn} = \left(\frac{4\sigma_{01}\sigma_{02}\Gamma_{n1}\Gamma_{n2}}{\Gamma_1\Gamma_2}\right)^{1/2} \frac{1+X_1X_2}{(1+X_2^2)(1+X_2^2)} \,, \tag{40}$$

where

$$X_1 = \frac{2(E-E_1)}{\Gamma_1} \,,$$

A shape analysis between resonances can give an indication of the spins of the resonances. Coté et al.[46] applied this method to deduce the spin of resonances of ^{55}Mn. This method is used also in partial capture cross section measurements for spin determinations.

Similarly, shape analysis of the fission cross section using multilevel formalisms can separate the resonance into two classes. For example, Moore et al.[47] were successful in deducing the two classes of ^{241}Pu resonances.

9. Degree of Symmetry of Fission: Ratio of Symmetric to Asymmetric Fission.

One of the indirect methods for the determination of spins of fissionable nuclides is by a measurement of the degree of symmetry in the fission process. Cowan and collaborators[48] developed a method in which a sample is placed on a rotating wheel and the ratio of the fission products ^{115}Cd and ^{99}Mo is determined radiochemically. This ratio is related to the ratio of symmetric and asymmetric fission. A comparison between the ^{235}U spin assignments of Cowan et al.[48] and Keyworth et al.[45] below 33.5 eV shows reasonably good agreement, suggesting that there is a correlation between spin and symmetry of fission.

B. Determination of the Parity of Neutron Resonances.

The parity of neutron resonances is determined by the orbital angular momentum (ℓ) of the incoming neutron and the parity of the target nucleus. Some of the methods described previously for spin determination may shed light, in some cases, on the ℓ value of the incident neutron. For example, the

observation of a strong primary γ-ray transition to the ground state of ^{94}Nb ($I=9/2^+$) with spin and parity 6^+ indicates that the capturing state is 5^- under the reasonable assumption that the radiation is dipole in character. Hence, the capturing state is formed by p-wave interaction of neutrons. Higher orbital angular momenta may be excluded on the basis of the strength and Wigner limit of a resonance. Similarly, in the γ-ray multiplicity method, the determination of intensity ratios different from those expected for s-wave capture may indicate interaction of p-wave neutrons with the target nucleus. However, these techniques are indirect in nature. Some of the direct methods are outlined below.

1. Interference Effects.

Presence of an interference minimum on the low-energy side of a resonance gives evidence that the resonance is formed by s-wave neutrons. The resonance strength must be reasonable to allow experimental observation of the dip. As an illustration, the 45-eV resonance of ^{95}Mo exhibits the interference minimum to allow a definite $\ell=0$ assignment for it.

2. Angular Distributions of Elastically Scattered Neutrons.

The differential cross section can be written in the form

$$d\sigma(\alpha's';\alpha s)=\frac{\lambda\!\!\!^{-}_{\alpha}{}^2}{2s+1}\sum_{L=0}^{\infty} B_L(\alpha's';\alpha s)P_L(\cos\Theta)\,d\Omega\,, \qquad (41)$$

where the channel index α describes the type of incoming particle and state of the target nucleus, and s defines the channel spin, i.e., the total spin angular momentum. $P_L(\cos\Theta)$ are the usual Legendre polynomials, and $B_L(\alpha's';\alpha s)$ coefficients are related to the Z coefficients and collision matrix. For details, the reader is referred to the work of Blatt et al.[49] For elastic scattering of neutrons, $\alpha=\alpha'$. In general, for an unpolarized neutron beam on an unpolarized target, summation of s, s' must be carried out for the entrance and exit channels. However, for spinless nuclides the channel spin is unique, and for the case of an incoming neutron, $s=s'=1/2$. From the shape and interference patterns of the differential cross sections, the ℓ value of the incoming neutron can be inferred. Asami et al.[50] applied these methods to determine the parity of the 1.15-keV resonance of ^{56}Fe. Recently, Kirouac and Nebe[51] exploited the same techniques for the determination of the spins and parities of ^{40}Ca resonances.

3. Angular Distribution of Capture γ-Rays.

It is possible to utilize high-energy capture γ-rays by measuring their angular distribution for the purpose of investigating the parity of the initial, as well as final, states. For even-even target nuclei and for dipole radiation (p-wave neutron capture) the expected angular distributions for transitions $3/2\rightarrow5/2$, $3/2\rightarrow3/2$, and $3/2\rightarrow1/2$ are displayed in Table 1. Also listed in the table are the γ-ray intensity ratios at two selected angles, 90° and 135°, determined by the neutron beam and γ-ray directions.

By observing an anisotropy in the γ-ray capture spectra recorded at two angles, one can readily deduce the spins and parities of the initial and final states. It should be noted, however, that the observation of a symmetrical angular distribution does not permit a distinction between $s_{1/2}$ and $p_{1/2}$ resonances. Using NaI crystals, McNeil et al.[52] applied these methods to investigate the γ-rays of the 62-eV resonance of ^{124}Sn. Recently, Slaughter et al.[53] reported similar measurements for the 45.8-eV resonance of ^{118}Sn and the 62.0-eV resonance of ^{124}Sn. With the advent of high-resolution GeLi detectors, Bhat et al.,[54] Mughabghab et al.,[55,56] and Chrien et al.[57] exploited these methods for the determination of low energy p-wave resonances in ^{116,118,120,122}Sn, ^{98}Mo, ^{108}Pd, and ^{56}Fe as well as spin assignments of low-lying compound states. Angular distributions can also determine channel spin admixtures for $\ell \neq 0$ resonances in target nuclei where $I > 0$ as demonstrated by Chrien et al.[58] for ^{93}Nb.

Table 1

Angular Distribution of Dipole γ-Rays Due to p-Wave Capture in Target Nuclides With I=0

Transition	W(Θ)	$\frac{W(90°)}{W(135°)}$
$3/2 \rightarrow 5/2$	$\frac{3}{80\pi}(6+\sin^2\Theta)$	$\frac{14}{13}$
$3/2 \rightarrow 3/2$	$\frac{1}{20\pi}(7-3\sin^2\Theta)$	$\frac{8}{11}$
$3/2 \rightarrow 1/2$	$\frac{1}{16\pi}(2+3\sin^2\Theta)$	$\frac{10}{7}$
$1/2 \rightarrow 1/2$	symmetrical	1

4. Angular Distribution of Photoneutrons.

In recent years, Jackson and Strait[34] and Berman et al.[59] made use of the threshold photonuclear reaction (introduced by Bertozzi et al.[60]) to study the properties of the neutron resonance states. By measuring the angular distribution of the ejected photoneutrons and by assuming dipole transitions, information on the spin and parity of the compound resonance states can be deduced. Spins and parities for the compound nuclides ^{51}Cr, ^{81}Na, and ^{57}Fe have been reported by Jackson and Strait.[34]

5. The Wigner Limit.

In the atomic mass region of light nuclei, one could apply the Wigner limit Γ_w to place an upper limit on the ℓ value of the incoming neutron.

$$\Gamma_w = \frac{3\hbar^2}{2mR} k V_\ell ,$$

where V_ℓ is the probability of passing through a centrifugal barrier. Values of V_ℓ for $\ell \leqslant 3$ are derived for a square potential well. These are included in Table 2. The experimentally determined width of a resonance must not exceed the Wigner limit corresponding to a particular ℓ value.

6. Statistical Considerations.

The application of statistical arguments such as the Porter-Thomas distribution of reduced neutron widths, Dyson and Mehta's Δ and F statistics, and Baye's theorem may give some indication of the p-wave assignment of resonances. These techniques have been extensively used by the Columbia[61] and Livermore[62] groups. They do not give definite ℓ assignments since there is an overlap between the weak s-wave and strong p-wave resonances. The principal use of these methods is the ability to estimate average quantities such as p-wave strength functions and p-wave mean level spacings.

Table 2

l	V_l
0	1
1	$k^2R^2/(1+k^2R^2)$
2	$k^4R^4/(9+3k^2R^2+k^4R^4)$
3	$k^6R^6/(225+45k^2R^2+6k^4R^4+k^6R^6)$

C. s- and p-Wave Radiative Widths.

The first attempt to study average radiative widths and interpret them in terms of Blatt and Weisskopf's[63] estimates of partial radiative widths was made by Levin and Hughes.[64] Subsequently, by carrying out a similar study of the experimental $\langle \Gamma_\gamma \rangle$, Stolovey and Harvey[65] arrived at the following empirical expression for $\langle \Gamma_\gamma \rangle$:

$$\langle \Gamma_\gamma \rangle = (5.3 \times 10^{-4}) A^{2/3} [D(U)]^{0.25} U^{4.3} \quad \text{(in meV)}. \tag{42}$$

The total radiative width for electric dipole radiation can be written in the approximate form

$$\Gamma_\gamma = \frac{3}{4} \frac{(\bar{e})^2}{\hbar c} \left(\frac{R}{\hbar c}\right)^2 \frac{D(U)}{D_0} \int_0^U \frac{E^3 dE}{D(U-E)} , \tag{43}$$

where $\bar{e}$ is the effective charge, U is the effective excitation energy (defined below), and D(U) is the level spacing at U.

With the aid of this expression and Newton's level spacing formula,[66] Cameron derived the following expression for the total radiative width:

$$\Gamma_\gamma = 5.2\,A^{2/3}\,b^4\left[1+\frac{2b}{U^{1/2}}\right]\left[U^2-\frac{10b}{3}\,U^{3/2}\right.$$
$$\left.+5b^2U-\frac{35}{9}b^3\,U^{1/2}+\frac{35}{27}b^4\right]\quad(\text{in meV})\,. \qquad (44)$$

Here $b=5.97/(\bar{J}_N+\bar{J}_Z+1)^{1/2}\,A^{1/3}$ and, for slow neutrons, $U=S_n-\Delta$. $\bar{J}_N$ and $\bar{J}_Z$ are the effective total angular momenta of single-particle states near the Fermi surface, S_n is the neutron separation energy, and Δ is the pairing energy which is expressed (for compound nucleus $A+1$) as

$$\begin{aligned}\Delta &= \delta_n+\delta_p && \text{even-even}\\ &= \delta_p && \text{even-odd}\\ &= \delta_n && \text{odd-even}\\ &= 0 && \text{odd-odd.}\end{aligned}$$

δ_n and δ_p are the neutron and proton pairing energies. These relationships were used to calculate Γ_γ in the absence of experimental data.

Our present knowledge of the variation of the average s-wave radiative widths with mass number A is illustrated in Figure 4. Two interesting features emerge from this plot: (a) the monotonic decrease of Γ_γ with A in the mass region 60-190 and (b) the maxima at about the mass numbers $A=50$ and 208, which are related to the magic numbers $Z=28$ and 82. A comparison of measured s-wave radiative widths with calculations based on Cameron's formula shows qualitative agreement. It should be noted that large fluctuations from resonance to resonance are observed for the s-wave radiative widths around $A=50$.

The variation of p-wave radiative widths with mass number is shown in Figure 5, which demonstrates the same qualitative features as for s-wave radiative widths. A detailed comparison of s- and p-wave radiative widths shows generally the following results:

$$\langle\Gamma_\gamma\rangle_s > \langle\Gamma_\gamma\rangle_p \quad \text{at } A\simeq 50\,,$$
$$\langle\Gamma_\gamma\rangle_p > \langle\Gamma_\gamma\rangle_s \quad \text{at } A\simeq 100\,.$$

These differences can be understood in terms of channel or valence neutron capture of Lane and Lynn.[68, 69] In this model an incident neutron is pictured as undergoing a transition to a low-lying final single-particle state. By considering the motion of a valence neutron in a potential well, Lynn[3] derived the following expression for the partial radiative width between an initial state i and final state f:

$$\Gamma_{\gamma if} = \frac{16\pi k^3}{9}\,\Theta_i^2\Theta_f^2\,\frac{|\langle j'IJ_i\|Y^{(1)}\|j''IJ_f\rangle|^2}{2J_i+1}\times\left|\bar{e}\int_0^\infty dr\,u_i r u_f\right|^2, \qquad (45)$$

where $\bar{e}$ is the effective charge, k is the photon wave vector, Θ_i^2, Θ_f^2 are dimensionless reduced widths of the initial and final states, respectively, and are expressed by $\Theta_i^2 = \gamma_i^2/\gamma_{sp}^2$ and $\Theta_f^2 = S_{dp}$. γ_{sp}^2 is the single-particle reduced width of the initial state, and S_{dp} is the (d,p) stripping spectroscopic factor. The radial overlap integral is calculated by Lynn[3] with use of a Saxon-Woods potential with a spin orbit coupling term.

The first success of the valence neutron model was quantitatively demonstrated by Mughabghab et al.[70,71] for the case of p-wave resonances of ^{98}Mo and ^{96}Zr. In a few cases particularly in the 2p and 3p giant resonances, Γ_γ was calculated using the above relationships.

D. Neutron-Induced Fission.

The body of available data for fissile material is described in terms of the single-level Breit-Wigner formalism because of its simplicity. However, in a few cases, authors reported fission widths derived on the basis of the multilevel Reich-Moore formalism[72] with two fission channels (Γ_{f1} and Γ_{f2}). An attempt was made to present single-level Breit-Wigner parameters, except for those cases where only multilevel Reich-Moore parameters are available. (See footnote at the end of resonance parameter tables.)

For an understanding of the energy and spin dependence of the fission widths, it is necessary to discuss briefly the channel theory of fission. To estimate the fission width, Bohr and Wheeler[73] applied statistical considerations to arrive at an expression which was subsequently reinterpreted by Aage Bohr:

$$\langle \Gamma_F(J^\pi) \rangle = \frac{\langle D(J^\pi) \rangle \, N(J^\pi}{2\pi} \quad , \tag{46}$$

where $\langle \Gamma_F(J^\pi) \rangle$ and $\langle D(J^\pi) \rangle$ are respectively the average total fission width and average level spacing of resonances of specified spin and parity, and $N(J^\pi)$ is the available number of levels in the transition state. In modern terminology, $N(J^\pi)$ is known as the number of exit fission channels. This simple relation played a major role in accounting for some principal features of nuclear fission, such as (1) the steplike increase of the fission cross section with increasing excitation energy, (2) spin dependence of the fission widths, and (3) mass distribution of fission fragments, etc. Of particular importance in the development of the theory of fission is the introduction by Aage Bohr[74] of the concept that the spectrum of transition states at the saddle point is finite. The nucleus at the saddle point is considered thermodynamically "cold" because a large fraction of the available energy is in the form of potential energy of deformation. Then the number of fission channels for a particular J^π is small and can be related to the vibrational and rotational modes of the nucleus at the saddle point; i.e., the spectrum of transition states at the saddle point resembles the rotational and vibrational spectra of deformed nuclei near the ground state. In other words the exit fission channels can be characterized by the parity and the J and K quantum number (the projection of the angular momentum

quantum number on the symmetry axis of the nucleus). A description of the exit fission channels or transition states for even-even compound nuclei in terms of simple collective motions has recently been summarized by Lynn.[66] A brief summary of the number of transition states is presented in Table 3 for the target isotopes $^{233,235}U$ and $^{239,241}Pu$ for neutron energies just above the neutron separation energies.

Table 3

Comparison of Experimental and Predicted Ratios of Fission Widths in the Framework of the Channel Theory of Fission

Target nucleus	I^{π}	$N_F(I-1/2)$	$N_F(I+1/2)$	$\frac{\Gamma_F(I-1/2)}{\Gamma_F(I+1/2)}$ Predictions	$\frac{\Gamma_F(I-1/2)}{\Gamma_F(I+1/2)}$ Experimental
^{233}U	5/2+	2.5	1.5	2.3	–
^{235}U	7/2−	2.5	1.0	1.9	1.7
^{239}Pu	1/2+	1.5	0.23–0.042	20–110	44
^{241}Pu	5/2+	2	1	2.8	2.9

For excitation energies below the fission barrier (subthreshold fission for a single-humped potential), the above relation for the average fission width has to be modified to take into account barrier penetration, or transmission factors:

$$P_f = \frac{1}{1 + \exp(2\pi(E_f - E)/\hbar\omega)}, \tag{47}$$

where E_f and E are the fission barrier height of a particular fission channel f and the excitation energy, respectively, and ω is the circular frequency of the oscillator. $\hbar\omega$ gives a measure of the curvature of the barrier. Estimates of $\hbar\omega$ range from about 0.3 to 0.9 MeV. P_f is also referred to as the "channel width" or "degree of opening." Note that it is unity for $E \gg E_f$ and is 0.5 at E_f. The relation for the barrier penetration factor was first derived by Hill and Wheeler[75] for a potential barrier of an inverted simple harmonic oscillation. Therefore the general expression for $\langle \Gamma_F \rangle$ becomes

$$\langle \Gamma_F(J^{\pi}) \rangle = \frac{\langle D(J^{\pi}) \rangle}{2\pi} \sum_f \frac{1}{1 + \exp(2\pi(E_f - E)/\hbar\omega)}, \tag{48}$$

where the summation is extended over f fission channels.

1. Consequences of the Channel Theory of Fission.

(a) Fluctuation of fission widths. Early in the history of fission, it was held that the fission width would behave much like the radiation width (numerous exit channels, and therefore constant value), but experimental findings soon showed that the fission widths do not behave according to these expectations

but fluctuate strongly from resonance to resonance of a particular nucleus. Analysis of the ^{235}U fission widths carried out by Porter and Thomas[76] indicated that the number of degrees of freedom is 2.3 ± 0.8.

At this point it is important to note that the effective number of degrees of freedom, $\nu_{eff}(J^\pi)$, obtained from analysis of the fission widths on the basis of a chi-squared distribution is generally different from $N(J^\pi)$. This arises because the degrees of opening of the various contributing fission channels may be different which results in unequal average partial fission widths, Γ_f. Under this condition, the distribution of the total fission widths, Γ_F, no longer exactly obeys a chi-squared distribution. Thus, one could define an effective number of degrees of freedom by the relationship

$$\nu_{eff}(J^\pi) = \frac{2[\langle \Gamma_F(J^\pi) \rangle]^2}{\text{Variance } \Gamma_F(J^\pi)} . \tag{49}$$

In terms of the penetration factors or "degrees of opening" of the various fission channels, it can be shown that

$$\nu_{eff}(J^\pi) = \frac{(\Sigma_f P_f)^2}{\Sigma_f (P_f)^2} . \tag{50}$$

Note then that ν_{eff} is generally larger than $N_F(J^\pi)$.

(b) Spin dependence of $\langle \Gamma_F \rangle$. One of the interesting consequences of the channel theory of fission is the spin dependence of the average fission width, which arises from the specific properties of the transition states associated with each J^π. Because of the importance of average fission widths to the channel theory of fission and to reactor calculations, let us examine briefly the available data.

(i) $^{235}U(I^\pi = 7/2)$. s-Wave neutron capture by ^{235}U leads to two spin states $J^\pi = 3^-$ and 4^-. The fission barriers of the various transition states are such that $N_F(3^-) = 2.5$ ($N_{f1} = N_{f2} = 1$, and $N_{f3} = 0.5$) and $N_F(4^-) = 1.0$ ($N_{f1} = N_{f2} = 0.5$). With the assumption of a $(2J+1)$ dependence of the level density, the channel theory of fission gives a ratio for $\Gamma_F(3^-)/\Gamma_F(4^-)$ of 1.9. This is to be compared with an experimental value of 1.7 obtained with the multilevel fission widths determined by de Saussure et al.[77] [Note: the presently available spin-assigned resonances of ^{235}U do not follow a $(2J+1)$ law, possibly because (1) all spins in the energy interval below 56 eV are not determined and (2) high target spin value of ^{235}U.] It is interesting to note that the distributions of the fission widths for $J^\pi = 3^-$ and 4^- in terms of Eq. (50) show that $\nu_{eff}(3^-) = 1.9$ and $\nu_{eff}(4^-) = 2.5$. The latter value is consistent with the picture of at least two partially open channels contributing to the fission widths of 4^- resonances.

(ii) $^{239}Pu(I^\pi = 1/2^+)$. s-Wave neutron capture by ^{239}Pu results in two spin states, $J^\pi = 1^+$ and 0^+. For the 0^+ resonances, there are about 1 to 2 transition states while for the 1^+ resonances, one transition state is partially open. Therefore, the calculated ratio $\Gamma_F(0^+)/\Gamma_F(1^+)$ is very sensitive to the location

of the transition state associated with the 1^+ resonances. With the aid of the Bohr-Wheeler relationship [Eq. (47)], this ratio can be estimated to lie in the range 20 to 110. The experimental resonance data of ^{239}Pu show that this ratio is equal to 44, in reasonable agreement with the prediction of the channel theory of fission.

(iii) ^{241}Pu($I^\pi = 5/2^+$). For this nucleus there are probably 2 and 1 open transition states for $J^\pi = 2^+$ and 3^+ resonances, respectively. Therefore, the predicted ratio $\Gamma_F(2^+)/\Gamma_F(3^+) = 2.8$. Analysis of the ^{241}Pu fission widths is limited by the small number of resonances with assigned spins. From the known 13 resonances with $J^\pi = 3^+$ and 8 resonances with $J^\pi = 2^+$, we obtain an estimated ratio of $\Gamma_F(2^+)/\Gamma_F(3^+) = 2.9$.

In conclusion, the analysis of the available resonance data demonstrates the validity of the channel theory of fission and consequently the spin dependence of the average fission widths. Should an evaluator require the spin of a resonance when it is not determined, he could call upon these concepts to assign provisional spins. For example, tentative spin assignments $J = 0$ could be attributed to the ^{239}Pu resonances with large fission widths at neutron energies of 346.6, 357.9, 371.7, etc.

Because of scope and space limitations some of the recent interesting features, such as (1) subthreshold fission of ^{238}U, ^{237}Np, ^{238}Pu, ^{240}Pu, and ^{242}Pu and its description in terms of the double-humped fission barrier, and (2) variation of ν with resonance energies and its possible interpretations in terms of spin quantum number K and/or (n,γf), could not be discussed. The user is referred to Refs. 3 and 4 and to the recent excellent review article by Michaudon.[78]

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THERMAL CROSS SECTIONS

σ_γ = 0.332±0.002 b
$\bar{\sigma}_s$ = 20.436±0.023 b
a_{coh} = -3.739±0.003 fm
a_{coh} = -23.719±0.013 fm [J0]
a_{coh} = 5.414±0.005 fm [J1]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
H	σ_t para H	PRL,26,1581(71)	Houk
H	σ_t	PR/C,3,1886(71)	Houk
H	reflection	PRL,27,956(71)	Koester
H	pulsed n	PRIVATE COMM.(69)	Cokinos
H	pulsed n	NSE,35,70(69)	Nassar
H	pulsed n	NUK,11,159(68)	Elkert
H	σ_t	RMP,39,546(67)	Houk
H	refractometry	ZP,198,187(67)	Koester
H	pulsed n	DA/B,27,257(66)	Silver
H	pulsed n	NP,74,497(65)	Cox
H	decay	ANS,8,274(65)+	Gon
H	pulsed n	PPS,85,79(65)	Harris
H	pulsed n	65KARSR,1,35(65)	Silver
H	neutron lifetime	PRIVATE COMM.(64)	Kay
H	neutron lifetime	63MANCHST,34(63)	Wynchank
H	mirror reflection	PR,126,632(62)	Dickinson
H	diffusion length	NSE,14,224(62)	Starr
H	mirror reflection	UCRL-6320(61)	Dickinson
H	neutron lifetime	NSE,9,132(61)	Meadows
H	pulsed n	NUK,2,131(60)	Kuechle
H	pulsed n	NSE,8,88(60)	Kuechle
H	pulsed n	AF,15,471(59)	Sjoestrand
H	neutron lifetime	PR,114,1561(59)	Stooksberry
H	neutron density	PRS/A,248,539(58)	Baker
H	pulsed n	ZN/A,13,822(58)	Beckurts
H	pulsed n	NUK,1,13(58)	Dio
H	pile osci.	PRS/A,248,539(58)-	Lockett
H	pile osci.	AERE-R/R-2333(57)	Cummins
H	diffusion length	ORNL-2076,32(56)	Campbell
H	neutron lifetime	PPS/A,69,469(56)	Meads
H	σ_t	55GENEVA,2,81(55)	Nikitin
H	$\bar{\sigma}_s$ para-ortho	PRS,230,19(55)	Squires
H	$\bar{\sigma}_s$ ortho-para	PR,90,1125(53)	Stewart
H	σ_t	PR,90,1125(53)	Stewart
H	mirror reflection	PR,84,1160(51)	Burgy
H	polarization	PR,82,5(51)	Meyerhof
H	diffraction	PR,81,527(51)	Shull
H	σ_t (120,345 ev)	PR,79,747(50)	Hibdon
H	reflection	PR,77,291(50)	Hughes
H	σ_t	PR,76,1744(49)	Melkonian
H	σ_t	PR,76,1750(49)	Melkonian
H	σ_t	PR,72,1147(47)	Sutton
H	$\bar{\sigma}_s$ ortho-para	PR,72,1147(47)	Sutton
H	σ_t	HPA,19,285(46)	Gibert
H	capture	PR,67,202(45)	LeRoy
H	σ_t	PR,59,489(41)	Hanstein
H	σ_t	PR,48,265(35)	Dunning

THERMAL CROSS SECTIONS

σ_γ = 0.53±0.02 mb
$\bar{\sigma}_s$ = 3.390±0.012 b
a_{coh} = 6.672±0.007 fm
a_{coh} = 6.35±0.02 fm [J3/2]
a_{coh} = 0.65±0.04 fm [J1/2]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
D	σ_t (1-1000 kev)	PRL,29,1745(72)	Stoler
D	σ_t reflection	PL/B,36,208(71)	Dilg
D	diffraction	ACR/B,25,2442(69)	Coppens
D	Christiansen filter	ZP,219,300(69)	Koester
D	reflection	PR,174,313(68)	Bartolini
D	activation	NSE,34,195(68)	Merritt
D	a+/a-	PL/B,24,151(67)	Alfimenkov
D	polarization	PL/B,24,151(67)	Alfimenkov
D	activation	NSE,28,286(67)	Merritt
D	analysis	PL/B,24,562(67)	Van Oers
D	σ_t (1.4 ev)	NP,61,381(65)	Rayburn
D	mirror reflection	BAP,8,477(63)	Bartolini
D	σ_t	ZK,118,149(63)	Gissler
D	σ_γ(spectra)	63ANL-6797,236(63)	Jurney
D	σ_γ(spectra)	ANL-6719,17(63)	Raboy
D	σ_t (5,10 ev)	PRIVATE COMM.(59)	Fluharty
D	analysis	JNE,11,34(59)	Hone
D	σ_t	55GENEVA,2,81(55)	Nikitin
D	activation	PR,87,785(52)	Kaplan
D	σ_t (1.4 ev)	PR,87,174(52)	Rayburn
D	$\bar{\sigma}_s$	CJP,29,36(51)	Hurst
D	diffraction	PR,81,527(51)	Shull
D	σ_t (120,345 ev)	PR,79,747(50)	Hibdon
D	$\bar{\sigma}_s$	PR,80,117(50)	Hurst
D	ortho + para	PR,75,578(49)	Fermi
D	σ_t (5 ev)	PR,73,733(48)	Rainwater
D	diffusion	CJR/A,25,134(47)	Sargent
D	σ_t	PR,60,702(41)	Carrol
D	σ_t	PR,59,489(41)	Hanstein
D	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
D	σ_t	PR,48,265(35)	Dunning

^{3}T

[12.33 yr]

THERMAL CROSS SECTIONS

σ_γ < 0.006 mb
$\bar{\sigma}_s$ = 1.3±0.3 b
a_{coh} = 5.0±0.3 fm

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
T	refraction	PR/C,5,1952(72)	Donaldson
T	$\bar{\sigma}_s$	IZV,31,349(67)	Vertebnyi
T	activation	NP,59,81(64)	Imhof
T	activation	AFSWC-TDR-62-26(62)	Imhof
T	activation	BAP,7,268(62)	Grench

$_{2}He$

THERMAL CROSS SECTIONS

σ_a < 0.05 b
$\bar{\sigma}_s$ = 0.76±0.01 b
a_{coh} = 3.0±0.1 fm

$^{3}_{2}He$

THERMAL CROSS SECTIONS

σ_γ = 0.060±0.030 mb
σ_a = 5327±10 b

RESONANCE PROPERTIES

I_γ^c = 2390±10 b

RESONANCE PARAMETERS

I^π = 1/2⁺ %Abn = 0.00013 S_n = 20578.48±.36 keV

E_0 (keV)	J	ℓ	Γ_p (keV)
*-500	0	0	1200

* Proton width at an excitation energy of the binding energy of a neutron in He-4.

$^{4}_{2}He$

THERMAL CROSS SECTIONS

$\bar{\sigma}_s$ = 0.76±0.01 b
a_{coh} = 3.0±0.1 fm

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 100 S_n = -890±50 keV

E_0 (keV)	Γ (keV)	Γ_n (keV)	J	ℓ	Γ_d (keV)
*6.43			1/2	1	
1150 ±20	1400 ±200	1400 ±200	3/2	1	
22155 ±10	110 ± 20	55 ± 30	3/2	2	55 ±30

* Broad level.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
He^3	σ_γ(spectra)	BAP,18,591(73)	Bollinger
He	σ_t	NP/A,133,410(69)	Rorer
He^3	σ_t	PR/B,133,925(64)	Als-Nielsen
He	diffraction	ARN,11,303(64)	Wilkinson
He	σ_t	JPR,24,21(63)	Genin
He^3	σ_γ(spectra)	BAP,5,19(60)	Gallmann
He	$\bar{\sigma}_s$	ANL-4680,6(51)	Harris
He	reflectior	PR,84,969(51)	McReynolds
He	$\bar{\sigma}_s$	PR,80,20(50)	Harris
He^3	σ_p	PR,75,1358(49)	Coon
He^3	σ_t	PR,75,1366(49)	King
He	analysis	PR,58,1004(40)	Schwinger
He	σ_t	PR,54,541(38)	Carroll

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
He^4	analysis	6430	NP/A,180,225(72)	Stammbach
He^4	$\bar{\sigma}_s$	200-7000	PR,168,1114(68)	Morgan
He	$\bar{\sigma}_s$	200-7000	DA/B,28,4249(68)	Morgan
He,He^4	$\bar{\sigma}_s$ polar.	22160	NP,83,65(66)	Hoop
He^3	polarization	thermal	PR,150,146(66)	Passell
He,He^4	$\sigma_t\bar{\sigma}_s$	22150	PR/B,135,99(64)	Shamu
He,He^4	analysis	1297	NC,28,600(63)	Pisent
He^4	analysis	1297	NCS,1,386(63)	Pisent
He,He^4	σ_t	22150	PL,4,286(63)	Shamu
He^3	σ_p	thermal	ZET,40,1270(61)	Bergman
He,He^4	σ_t	1150	PR,118,683(60)	Vaughn
He,He^4	$\bar{\sigma}_s$	22150	PR,115,398(59)	Bonner
He^3	σ_p	500	ZET,33,9(57)	Bergman
He,He^4	$\bar{\sigma}_s$	400-2730	PR,86,155(52)	Adair
D	(t,n)	21900	PR,87,612(52)	Argo
He,He^4	σ_t	1150	PR,82,378(51)	Bashkin
He,He^4	$\bar{\sigma}_s$	1000	PR,57,936(40)	Staub

$_3$Li

THERMAL CROSS SECTIONS

σ_γ = 70.7±0.7 b
a_{coh} = -2.14±0.05 fm

$^6_3$Li

THERMAL CROSS SECTIONS

σ_γ = 0.028±0.007 b
$\bar{\sigma}_a$ = 0.72±0.02 b
σ_a = 940±4 b
σ_t = 941±4 b
a_{coh} = 1.80+0.25i fm

RESONANCE PARAMETERS

$I^\pi = 1^+$ %Abn = 7.5 S_n = 7250.6±0.5 keV

E_0 (keV)	Γ (keV)	Γ_n (keV)	J	ℓ	Γ_α (keV)
-808		[a]265	1/2	0	3152
252 ±5	137 ± 15	90 ±10	5/2	1	47 ±10
3500	1400 ±100	>800	3/2	1	
[b]4600	272 ± 50	2	3/2	1	

Note-All widths are in center of mass system. Location of the positive parity bound level (possibly its existence also) is uncertain. It is postulated to account for the larger s-wave scattering in channel spin s=1/2.

[a] γ_n^2

[b] Isotopic spin of resonances is 3/2. Its proton and inelastic neutron widths are 110 and 160 keV respectively.

$^7_3$Li

THERMAL CROSS SECTIONS

σ_γ = 0.037±0.004 b
a_{coh} = -2.1±0.1 fm

RESONANCE PARAMETERS

$I^\pi = 3/2^-$ %Abn = 92.5 S_n = 2032.7±0.7 keV

E_0 (keV)	Γ (keV)	J	ℓ	Γ_γ (eV)
257 ±3	32 ±3	3	1	.07±.03
[a]1350	~1140	(1,2)	1	
3400	~8500	2	0	
3800	650	(2,3)	(1)	
5000	1000	(3+,3-)	(1,2)	

Note-All widths are in the center of mass system. Polarization data favors an s-wave background, predominantly in the parallel channel spin state (S=2).

[a] Other possible spin assignments for the 1350 keV resonance are J=1 and I=0,2.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Li	Christiansen filters	ACR/A,28,357(72)-	Koester
Li	σ_t	70ANL,125(70)	Becker
Li^6	pulsed n	NSE,40,12(70)	Meadows
Li^7		ACR/A,25,391(69)-	Smith
Li	pile osci.	NUK,8,443(63)	Bouzyk
Li	diffraction	PCS,23,621(62)	Calder
Li^6	diffraction	JPJ,17,335(62)	Peterson
$Li^{6,7}$	σ_γ(spectra)	HPA,34,483(61)	Jarczyk
Li	pulsed n	NSE,9,132(61)	Meadows
Li^7	diffraction	ARN,11,303(61)	Wilkinson
Li^7	activation	PR,114,1037(59)	Imhof
Li^6	σ_γ(spectra)	CJP,35,1347(57)	Bartholomew
Li^7	activation	DOK,111,331(56)	Koltypin
Li	pile osci.	JPR,13,171(52)	Ailloud
Li	reactivity	PR,87,785(52)	Kaplan
Li	pile osci.	CR,232,2089(51)	Grimeland
Li	pile osci.	PR,83,641(51)	Pomerance
Li^7	diffraction	PR,81,527(51)	Shull
Li^6	diffraction	PR,81,527(51)	Shull
Li	pile osci.	PPS/A,63,1175(50)	Colmer
Li	$\bar{\sigma}_s$	PR,71,666(47)	Fermi
Li	ratio	CJR/A,25,73(47)	Fenning
Li^7	activation	PR,72,646(47)	Hughes
Li	σ_t	PR,70,154(46)	Havens
Li	absorption	PR,50,738(36)	Fink

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Li^6	σ_a	252	PRIVATE COMM.(72)	Fort
Li^6	σ_t	255-808	NSE,48,221(72)	Meadows
Li^7	$\bar{\sigma}_s$	3800-5000	NP/A,182,321(72)	Presser
Li^7	σ_γ	254	PR/C,3,1737(71)	Allen
Li^6	$\sigma_s\bar{\sigma}_s$	260	71KNOX,611(71)	McPherson
Li^6	$\bar{\sigma}_s$	1-110	70HELSINKI,1,153(70)	Asami
Li^7	σ_t	261	NSE,41,351(70)	Meadows
Li^6	analysis	247	70ANL,80(70)	Uttley
Li^6	σ_t	250	AERE-PR/NP-16,3(69)	Diment
Li^6	σ_p	3500-4600	NP/A,131,679(69)	Presser
Li^6	σ_t	249	AERE-PR/NP-14,20(68)	Diment
Li^6	σ_t	250.6	68WASH,1,153(68)	Farrell
Li^6	σ_t	250	68WASH,1,159(68)	Hibdon
Li,Li^7	σ_t	260	68WASH,1,159(68)	Hibdon
Li^7	polarization	thermal	YF,6,657(67)	Gul'ko
Li^6	σ_a	267	NP,63,593(65)	Schwarz
Li^6	analysis	256	NP,74,161(65)	Mahaux
Li^6	$\bar{\sigma}_s$ polar.	200-2000	PR/B,136,1710(64)	Lane
Li^7	$\bar{\sigma}_s$ polar.	200-2000	PR/B,136,1710(64)	Lane
Li^7	polarization	256	NP,31,78(62)	Elwyn
Li^6	polarization	0.146	BAP,7,305(62)	Marshak
Li^6	σ_a	.00046-thermal	α ZET,40,1270(61)	Bergman
Li^6	analysis	255	NP,22,439(61)	Darden
Li^7	analysis	256	NP,22,439(61)	Darden
Li^6	σ_a	255	PR,114,201(59)	Gabbard
Li^7	σ_γ	250	PR,114,1037(59)	Imhof
Li^6	analysis	255	PR,104,1402(56)	Marion
Li^7	$\bar{\sigma}_s$	256	PR,101,759(56)	Thomas
Li^6	$\bar{\sigma}_s$	255	PR,101,765(56)	Willard
Li^7	$\bar{\sigma}_s$	256	PR,101,765(56)	Willard
Li^7	inelastic	400-1700	PM,46,17(55)	Freeman
Li^6	σ_t	247	ANL-5273,64(54)	Hibdon
Li^7	σ_t	257	ANL-5273,64(54)	Hibdon
Li^6	σ_t	255	PR,96,985(54)	Johnson
Li	σ_t	260-1150	PR,84,69(51)	Bockelman
Li^7	σ_t	258	PR,84,162(51)	Stelson
Li^7	σ_t	270	PR,79,1018(50)	Adair

$^{7}_{4}Be$

[53.28 day]

THERMAL CROSS SECTIONS

σ_p = 48000±9000 b
σ_a < 1 b

RESONANCE PARAMETERS

I^{π} = 3/2⁻ S_n = 18900.2±0.9 keV

E_0 (keV)	Γ (keV)	J	ℓ
*10 ±10	>500	2	0
*365	220	3	1

Note-The broad s-wave resonance at threshold accounts for the large thermal cross section.

* Data from charged particle reactions.

$^{9}_{4}Be$

THERMAL CROSS SECTIONS

σ_γ = 9.2±1.0 mb
$\bar{\sigma}_s$ = 6.14±0.008 b
σ_t = 6.149±0.008 b
a_{coh} = 7.74±0.10 fm

RESONANCE PROPERTIES

I_γ = 4±1 mb

RESONANCE PARAMETERS

I^{π} = 3/2⁻ %Abn = 100 S_n = 6812.0±0.4 keV

E_0 (keV)	Γ (keV)	J	ℓ
622.0±.8	17.5±.5	3	2
811.8±.7	7.0±.9	2	1
2730	~100	4	[2]
2850	~400	[2]	[1]
*4300			

Note-Peak at neutron energy of 2850 keV is complex.

* Weak resonance.

$^{10}_{4}Be$

[1.6×10^{8} yr]

THERMAL CROSS SECTIONS

σ_γ < 1 mb

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Be	σ_t (1.25,5.2 ev)	PRIVATE COMM.(73)	Koester
Be^{10}	σ_γ	IDO-17147,17(66)	Tromp
Be	$\bar{\sigma}_s$	ZN/A,19,354(64)	Sherm
Be^9	pile osci.	PRIVATE COMM.(63)	Carre
Be^9	σ_γ(spectra)	63ANL-6797,236(63)	Jurney
Be^9	σ_γ(spectra)	HPA,34,483(61)	Jarczyk
Be^9	diffraction	ARN,11,303(61)	Wilkinson
Be^9	pile osci.	AERE-R/R-2516(58)	Jowitt
Be^9	pile osci.	58GENEVA,16,34(58)	Rose
Be^9	$\bar{\sigma}_s$	AERE-N/R-1165(57)	Egelstaff
Be^9	reactivity	55GENEVA,5,13(55)	Geraseva
Be^7	$\sigma_p\sigma_\alpha$	PM,46,381(55)	Hanna
Be	reflection	PR,86,604(52)	Harvey
Be^9	σ_t	PRIVATE COMM.(52)	Palevsky
Be^9	diffraction	PR,81,527(51)	Shull
Be^9	$\bar{\sigma}_s$	PR,71,666(47)	Fermi
Be^9	activation	PR,71,269(47)	Hughes
Be^9	diffusion	ANL-4076,10(47)	Nobles
Be^9	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Be^9	$\sigma(\alpha,n)$	9330-10800	PR/C,7,1827(73)	DeMartini
Be^9	(a,a)	9030-10300	PR/C,7,1837(73)	Goss
Be^9	σ_t	622.0-811.8	BAP,16,495(71)+	Schwartz
Be^9	σ_t	2710	68WASH,2,851(68)	Johnson
Be^9	$\bar{\sigma}_s$	625-815	NSE,26,500(66)	Chien
Be^7	compilation		NP,78,1(66)	Lauritsen
Be^9	$\bar{\sigma}_s$ polar.	2730-2850	NP,84,201(66)	Schirmer
Be^9	$\sigma(\alpha,n)$	8120-14840	NAT,206,494(65)	Groce
Be^9	$\bar{\sigma}_s$ polar.	625-815	PR/B,133,409(64)	Lane
Be^7	analysis		ZET,40,1270(61)	Bergman
Be^9	$\bar{\sigma}_s$	620-800	AP,12,135(61)	Lane
Be^9	compilation		NP,11,1(59)	Ajzenberg-Selove
Be^9	$\bar{\sigma}_s$	2800	BAP,3,305(58)	Fowler
Li^7	(p,n)		PR,109,105(58)	Macklin
Be^9	σ_t	620-810	PR,98,669(55)	Willard
Be^9	σ_t	620-2730	PR,84,69(51)	Bockelman
Be^9	σ_t	2720	PPS/A,64,388(51)	Stafford
Be^9	σ_t	620-810	PR,80,1011(50)	Bockelman
Be^9	σ_t	625	PR,75,1124(49)	Adair
Be^9	$\sigma_t\sigma_\alpha$	550-2600	PRS/A,192,114(47)	Allen

$_5B$

THERMAL CROSS SECTIONS

σ_a = 759±2 b
$\bar{\sigma}_s$ = 3.6±0.2 b
a_{coh} = 5.40±0.04 fm

RESONANCE PROPERTIES

I_a = 341±2 b

$^{10}_5B$

THERMAL CROSS SECTIONS

σ_a = 3837±9 b
σ_γ = 0.5±0.2 b
$\bar{\sigma}_s$ = 2.23±0.06 b
σ_p < 0.2 b
σ_α = 3837±9 b
a_{coh} = 1.4±0.5 fm

RESONANCE PROPERTIES

I_a = 1722±5 b

RESONANCE PARAMETERS

I^π = 3⁺ %Abr. = 19.8 S_n = 11456.0±0.4 keV

E_0 (keV)	Γ (keV)	Γ_n (keV)	J	ℓ	Γ_α (keV)
-947 ±6		*120	7/2	0	100
170.3	300	4	5/2	0	296
370	884	770	7/2	0	114
530	201	31	5/2	1	170
1830	425	100	9/2	1	325
1880	430	80	(5/2,7/2)	2	350
2820	855	800	11/2	2	55
3400	<275				
4040	700	500		2	200
4730					180
5750					
6300					

Note: All widths are expressed in the center of mass system.

* Value is the reduced neutron width, γ_n^2.

THERMAL CROSS SECTIONS

σ_γ = 5.5±3.3 mb
$\bar{\sigma}_s$ = 3.9±0.2 b
a_{coh} = 6.1±0.1 fm

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 80.2 S_n = 3369.3±1.3 keV

E_0 (keV)	Γ (keV)	J	ℓ	Γ_γ (eV)
20.8± 0.5	.0031± .0006	3	2	.025±.008
430 ± 5	35 ± 5	2	1	.30
1025 ± 5	11 ± 2	1	0	
1090 ±50	360 ± 50	2	0	
1275 ± 5	115 ± 10	4	2	0.20
1775 ±10	70 ± 20	1	1	0.9
2450 ±10	134 ± 20	3	1	
2570 ±10	40 ± 10	3	2	
2700 ±50	1060 ±200	1	2	
3500 ±30	153 ± 30	1	1	
3800 ±50	540 ±100	1	1	
4550	<15			
4680	49			
4800	98			
5010	30			
5310	71			
5590	82			
6180	131			
7180	109			
7820	71			
9720	131			

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
B^{10}	$\bar{\sigma}_s$	JNE,24,85(70)	Asami
B^{10}	pulsed n	NSE,40,12(70)	Meadows
B^{11}	$\bar{\sigma}_s$	70HELSINKI,1,651(70)	Vertebnyi
B	pile osci.	AE-351(69)	Sokolowski
B	pulsed n	NSE,33,218(68)	Larsson
B,B^{10}	absorption	JNE,21,373(67)	Debus
B	σ_t	AERE-R-5224(67)	Diment
B^{11}	diffraction	ACR,20,214(66)	Craven
$B^{10,11}$	refraction	PR,146,660(66)	Donaldson
B	reflection	PR/B,138,1116(65)	Donaldson
B	σ_t	PR/B,133,925(64)	Als-Nielsen
B	reflection	BAP,6,477(63)+	Bartolini
B,B^{10}	σ_t	JNE,17,83(63)	Prosdocimi
B^{11}	activation	PR,125,1334(62)	Imhof
B,B^{10}	n lifetime	NSE,9,132(61)	Meadows
B	σ_t	NII/A,27,216(61)	Singh
B	σ_t	NSE,8,453(60)	Gould
B,B^{10}	σ_t	PR,119,1291(60)	Safford
B,B^{10}	σ_t	NP,17,109(60)	Schmitt
B	n lifetime	PNE,2,183(58)	Von Dardel
B^{10}	σ_γ	CJP,35,1347(57)	Bartholomew
B	σ_t	JNE,5,41(57)	Egelstaff
B	n lifetime	PR,96,1566(54)	Von Dardel
B	σ_t	PR,92,716(53)	Carter
B		PR,90,603(53)	Hamermesh
B^{10}	$\bar{\sigma}_s$	ANL-4982,15(52)	Hibdon
B	$\bar{\sigma}_s$	PRIVATE COMM.(51)	Shull
B,$B^{10,11}$	$\bar{\sigma}_s$	ANL-4552,6(50)	Hibdon
B^{11}	compilation	AECD-2274(48)	Way
B^{11}	activation	AECD-2274(48)	Way

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
B^{11}	$\bar{\sigma}_s$ polar.	2630	NP/A,203,89(73)	Cox
B^{11}	$\bar{\sigma}_s$	2200-4500	BAP,18,538(73)	Nelson
B^{10}	σ_α	1500-4500	COO-1717,5(73)	Hausladen
B^{10}	σ_α	1500-4500	BAP,18,538(73)	Hauseladen
B^{11}	$\bar{\sigma}_s$	2200-4500	COO-1717,4(73)	Nelson
B^{10}	σ_α	170-1860	PR/C,4,380(71)	Lane
B^{11}	$\bar{\sigma}_s$ polar.	20-1770	PR/C,2,2097(70)	Lane
B^{10}	$\bar{\sigma}_s$ polar.	940-1860	70ANL,107(70)	Lane
B^{10}	σ_α	170	70ANL,151(70)	Soverby
B^{10}	σ_α	170	70HELSINKI,1,161(70)	Soverby
B^{11}	(d,p)	20	PR,185,1401(69)	Fortune
B^{11}	$\sigma_t \bar{\sigma}_s$	20.8	PR,178,1612(69)	Mooring
$B^{10,11}$	compilation		NP/A,114,1(68)	Ajzenberg-Selove
B^{11}	polarization	75-2250	BAP,12,87(67)	Lane
Li^7	(α,α)	37-4767	NP,86,481(66)	Cusson
B^{10}	$\sigma_t \sigma_a$	10-500	NP,82,16(66)	Mooring
B^{11}	σ_t	10-500	NP,82,16(66)	Mooring
B^{11}	σ_γ	23	ANL-6877,5(64)	Mooring
B^{11}	σ_γ	20	BAP,9,434(64)	Mooring
B^{11}	σ_γ	430-1780	PR,125,1334(62)	Imhof
B^{10}	σ_α	530-6400	NP,27,448(61)	Davis
B^{10}	σ_t	4300-6200	PR,123,209(61)	Fossan
B^{11}	σ_t	3500-9720	PR,123,209(61)	Fossan
B^{10}	$\bar{\sigma}_s$ inelastic	1930-4730	PR,117,1330(60)	Day
B^{11}	σ_γ	430-1780	BAP,5,245(60)	Imhof
B^{11}	σ_t	1027	BAP,5,245(60)	Imhof
Li^7	$\sigma(\alpha,n)$	570	PR,114,571(59)	Gibbons
B^{10}	σ_α	250	ZET,33,9(57)	Bergman
B^{10}	σ_α	530-4100	PR,108,1025(57)	Bichsel
B^{11}	σ_t	430-1280	PR,98,669(55)	Willard
B^{11}	σ_t	430-2580	PR,84,69(51)	Bockelman
B^{10}	σ_α	1900	PR,83,1148(51)	Petree

$_6C$

THERMAL CROSS SECTIONS

σ_a = 3.4±0.2 mb
σ_s = 4.75±0.02 b
σ_t = 4.75±0.02 b
a_{coh} = 6.657±0.003 fm

RESONANCE PROPERTIES

I_γ^c = 1.5±0.2 mb

$^{12}_6C$

THERMAL CROSS SECTIONS

σ_γ = 3.4±0.3 mb
a_{coh} = 6.65±0.01 fm

RESONANCE PROPERTIES

I_γ^c = 1.5±0.2 mb

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 98.89 S_n = 4946.03±.15 keV

E_0 (keV)	Γ (keV)	J	ℓ	γ_n^2 (keV)
-2020		1/2	0	540
2077 ± 2	8 ± 2	5/2	2	
2818 ± 4	(1)			
2950 ± 2	100 ± 10	3/2	2	
3600 ± 50	1100 ±100	3/2	2	
4260 ± 20	220 ± 20	1/2	1	
4936 ± 6	11 ± 4			
5366 ± 6	33 ± 4	3/2	1	
[a]6293 ± 5	60 ± 4			
[a]6361 ± 5	24 ± 3			
6554 ± 5	82 ± 15			
[b]6645 ± 5	8 ± 4			
6660 ± 5	62			
7368 ± 10	107 ± 14			
[b]7480 ± 5	68 ± 4			
[a]7609 ± 40	~260			
7758 ± 5	81 ± 8			
8100	160			
9300	400			
11100 ±100	490			
12100 ±100	250			

Note-Charged particle reactions (Goss 73- DeMartini 73) indicate that the resonance structure at excitation energies of 13.28-14.46 meV (neutron energies 9-11) is complex.

[a] Possible doublet.

[a] Resolved in (d,p) data.

[b] Observed in (d,p) data.

$^{13}_{6}C$

THERMAL CROSS SECTIONS

σ_γ = 0.9±0.2 mb
a_{coh} = 6.0±0.2 fm

RESONANCE PROPERTIES

I_γ^c = 1.3±0.2 mb

RESONANCE PARAMETERS

$I^\pi = 1/2^-$ %Abn = 1.11 S_n = 8177.01±.35 keV

E_0 (keV)	Γ (keV)	J	ℓ	Γ_γ (eV)
152.9± .5	3.7±0.7	2	1	4.0±1.6
1751 ± 8	20	1	>0	
2432 ±10	17	2		
2454 ±10	10	>1		

$^{14}_{6}C$

[5730 yr]

THERMAL CROSS SECTIONS

σ_γ < 0.001 mb

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
3252.7 ±1.0		83 ± 8	1/2	0		1.46 ± .14	
3270.0 ±1.0		26 ± 4	1/2	0		.45 ± .07	
3295.7 ±1.0		408 ±45	1/2	0		7.11 ± .78	
3307.2 ±1.0		4.0 ± 4.0	1/2	0		.07 ± .07	
3317.6 ±1.0		5.2 ± 2.9	1/2	0		.09 ± .05	
3331.8 ±1.0		41 ± 6	1/2	0		.71 ± .10	
3342.9 ±1.0		170 ±20	1/2	0		2.94 ± .35	
3351.4 ±1.0		18 ± 4	1/2	0		.31 ± .07	
3383.5 ±1.0		75 ±10	1/2	0		1.29 ± .17	
3409.5 ±1.0		5.0 ± 1.8	1/2	0		.09 ± .03	
3442.9 ±1.1		20 ± 3	1/2	0		.34 ± .05	
3471.9 ±1.1		18 ± 3	1/2	0		.31 ± .05	
3510.0 ±1.1		4.7 ± 3.0	1/2	0		.08 ± .05	
3521.8 ±1.1		106 ±18	1/2	0		1.79 ± .30	
3544.2 ±1.1		7.1 ± 3.0	1/2	0		.12 ± .05	
3574.4 ±1.1		16.7 ± 3.0	1/2	0		.28 ± .05	
3594.4 ±1.1		20 ± 4	1/2	0		.35 ± .07	
3611.6 ±1.1		120 ±15	1/2	0		2.00 ± .25	
3623.5 ±1.1		15 ± 3	1/2	0		.25 ± .05	
3636.7 ±1.2		9 ± 3	1/2	0		.15 ± .05	
3651.7 ±1.2		67.1 ± 7.9	1/2	0		1.11 ± .13	
3674.2 ±1.2		15 ± 3	1/2	0		.25 ± .05	
3692.7 ±1.2		10 ± 4	1/2	0		.16 ± .07	
3707.6 ±1.2		6 ± 3	1/2	0		.10 ± .05	
3716.0 ±1.2		26 ± 4	1/2	0		.43 ± .07	
3722.9 ±1.2		100 ±20	1/2	0		1.64 ± .33	
3732.8 ±1.2		50 ± 7	1/2	0		.82 ± .11	
3745.2 ±1.2		4.9 ± 3.1	1/2	0		.08 ± .05	
3759.2 ±1.2		8.0 ± 3.1	1/2	0		.13 ± .05	
3786.4 ±1.2		25 ± 9	1/2	0		.40 ± .15	
3799.4 ±1.2		4.9 ± 3.1	1/2	0		.08 ± .05	
3820.5 ±1.2		40 ± 6	1/2	0		.65 ± .10	
3827.0 ±1.3		110 ±17	1/2	0		1.78 ± .27	
3848.5 ±1.3		12 ± 4	1/2	0		.19 ± .06	
3868.8 ±1.3		65.3 ± 8.1	1/2	0		1.05 ± .13	
3883.4 ±1.3		11 ± 3	1/2	0		.18 ± .05	
3906.0 ±1.3		220 ±30	1/2	0		3.52 ± .48	
3923.4 ±1.3		8.8 ± 3.1	1/2	0		.14 ± .05	
3931.5 ±1.3		37 ± 6	1/2	0		.59 ± .10	
3951.1 ±1.3		10 ± 4	1/2	0		.16 ± .06	
3961.4 ±1.3		41 ± 6	1/2	0		.65 ± .10	
3970.3 ±1.3		72 ± 9	1/2	0		1.14 ± .14	
3976.5 ±1.3		120 ±17	1/2	0		1.90 ± .27	
3994.4 ±1.3		36.0 ± 5.7	1/2	0		.57 ± .09	

Note - Single-level Breit-Wigner parameters. P-wave assignment of resonances are generally made on the basis of their strength and statistical distribution.

$^{233}_{90}Th$

[22.2 min]

THERMAL CROSS SECTIONS

σ_γ = 1500±100 b
σ_f = 15±2 b

RESONANCE PROPERTIES

I_γ = 400±100 b

$^{234}_{90}Th$

[24.10 day]

THERMAL CROSS SECTIONS

σ_γ = 1.8±0.5 b
σ_f < 0.01 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Th^{227}	σ_f	JIN,32,3441(70)	VonGunten
Th^{227}	σ_f	TID-5223,2,631(52)	Peterson
Th^{228}	activation	PR-CE-20(55)+	Baerg
Th^{228}	σ_f	TID-5223,2,587(52)	Studier
Th^{229}	ν_p	70HELSINKI,2,182(70)	Zamyatnin
Th^{229}	ν	AE,29,95(70)	Kroshkin
Th^{229}	σ_f	JIN,15,1(60)	Gindler
Th^{229}	ν	ANL-6600,124(61)+	Jaffey
Th^{229}	ν	ZET,35,535(58)	Lebedev
Th^{229}	σ_f	CF-3809(47)	Studier
Th^{230}	σ_c	AE,26,507(69)	Kalebin
Th^{230}	σ_c	AE,24,243(68)	Kalebin
Th^{230}	activation	CJP,40,194(62)	Attree
Th^{230}	activation	CJP,36,989(58)	Cabell
Th^{230}	oscillator	ORNL-1620,42(53)+	Pomerance
Th^{230}	σ_f	TID-5223,2,593(52)	Ghiorso
Th^{230}	activation	ANL-4249(49)	Jaffey
Th^{230}	activation	ANL-4183(48)	Hyde
Th^{230}	σ_f	PRIVATE COMM.(46)	Ghiorso
Th^{230}	σ_f	CS-3471,4(46)+	Seaborg
Th^{232}	I_γ activation	JIN,34,2699(72)	Steinnes
Th^{232}	RI absorption activation	AKE,15,83(70)	Breitenhuber
Th^{232}	σ_f	68WASH,1,611(68)	Neve-DeMevergnies
Th^{232}	RI reactivity	NSE,21,406(65)	Foell
Th^{232}	RI activation	NSE,22,121(65)	Hardy
Th^{232}	σ_c (1.44ev)	NP,61,381(65)	Rayburn
Th^{232}	RI activation	NSE,19,244(64)	Brose
Th^{232}	RI pile osci.	CEA-2486(64)	Vidal
Th^{232}	diffraction	PRS/A,274,122(63)	Willis
Th^{232}	diffraction	ACR,15,351(62)	Roof
Th^{232}	RI activation	GA-3069(62)	Sampson
Th^{232}	RI activation	AEEW-R-163,17(62)	Tiren
Th^{232}	RI activation	JNE,11,95(60)	Johnston
Th^{232}	σ_γ RI pile osci.	JNE,12,32(60)	Tattersall
Th^{232}	σ_f	ZET,37,41(59)	Kurneev
Th^{232}	σ_c	TID-7547,39(57)	Hubert
Th^{232}	σ_c	57COLUMBIA,39(57)	Hubert
Th^{232}	RI reactivity coefficient	AE,3,507(57)	Klimentov
Th^{232}	σ_γ RI activation	AE,2,22(57)	Myasishcheva
Th^{232}	σ_γ reactivity coefficient	DP-207(57)	Wade
Th^{232}	RI activation	JNE,2,243(56)	Macklin
Th^{232}	σ_γ activation	JNE,1,234(55)	Crocker
Th^{232}	σ_c	NRDC-84,10(55)	Egelstaff

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Th^{232}	σ_a pile osci.	JNE,1,319(55)	Small
Th^{232}	ν_{sp}	PPS/A,65,73(52)	Barclay
Th^{232}	σ_f	TID-5223,2,593(52)	Ghiorso
Th^{232}	σ_a pile osci.	PR,88,412(52)	Pomerance
Th^{232}	$\bar{\sigma}_s$	ANL-4680,5(51)	Hibdon
Th^{232}	σ_t	ORNL-1164,34(51)	Rayburn
Th^{232}	$\bar{\sigma}_s$	PR,81,527(51)	Shull
Th^{232}	diffraction	PR,81,527(51)	Shull
Th^{232}	σ_γ	MC-70(44)	Grummitt
Th^{232}	σ_γ activation	CP-2376(44)	Seren
Th^{232}	σ_t	PR,48,265(35)	Dunning
Th^{233}	σ_γ chemical separation	JNE,11,95(60)	Johnston
Th^{233}	σ_f	NSE,2,33(57)	Fields
Th^{233}	σ_f	PRIVATE COMM.(56)	Crane
Th^{233}	σ_γ activation	ANL-4165(48)	Hyde
Th^{234}	σ_f	ACT.EL,14/A,839(54)-	Osborne
Th^{234}	σ_γ activation	PR,80,1098(50)	Harvey
Th^{234}	σ_f	CL-RWS-20(46)	Barney
Th^{234}	σ_f	MON-P-178,10(46)	Osborn

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Th^{228}	σ_t	1.896-7.55	NSE,29,423(67)	Simpson
Th^{229}	σ_f	.61-51.0	BAP,16,16(71)+	Felvinci
Th^{229}	σ_f	.61-16.8	BAP,8,370(63)	Bollinger
Th^{229}	σ_t	.609-29.9	BAP,6,417(61)+	Cote
Th^{229}	σ_f	.24-.727	AE,8,47(60)	Konakhovich
Th^{230}	σ_f	721	NP/A,289,225(72)	James
Th^{230}	σ_t	-.07-563.	AE,26,507(69)	Kalebin
Th^{230}	σ_t	1.425-294.	PR,176,1421(68)	Cote
Th^{230}	σ_t	1.107-47.5	66PARIS,1,71(66)	Kalabin
Th^{232}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	21.78-4592.7	PR/C,6,1854(72)	Rahn
Th^{232}	σ_γ	8.35-1940	PRL,27,117(71)+	Forman
Th^{232}	σ_γ	8.35-1940	71KNOX,2,735(71)	Forman
Th^{232}	σ_t	8.35-3006.9	CEA-N-1149(69)	Ribon
Th^{232}	σ_γ	-7.	NUK,11,61(68)	Lundgren
Th^{232}	σ_t	21.80-69.25	BAP,13,722(68)+	Shwe
Th^{232}	σ_t	21.78-69.13	PR,155,1362(67)	Bhat
Th^{232}	$\sigma_t\sigma_\gamma\bar{\sigma}_s$	8.24-866.2	NP,76,196(66)	Asghar
Th^{232}	σ_γ	21.80-221.9	PR/B,140,50(65)	Haddad
Th^{232}	σ_t	21.78-305.50	65ANTWERP,166(65)	Ribon
Th^{232}	σ_t	8.34-103.6	PL,8,45(64)	Bollinger
Th^{232}	σ_t	21.8-171	PRIVATE COMM.(64)	Cote
Th^{232}	σ_t	112.90-3592.66	PR/B,134,985(64)	Garg
Th^{232}	σ_γ	21.80-69.2	BAP,9,31(64)	Haddad
Th^{232}	$\sigma_t\sigma_\gamma\bar{\sigma}_s$	21.69-489	AERE-PR/NP-7,5(64)	Moxon
Th^{232}	σ_γ(SI)	21.8-171	BAP,9,20(64)+	Palevsky
Th^{232}	σ_t	21.69-341.16	AERE-PR/NP-7,6(64)	Pattenden
Th^{232}	$\sigma_t\bar{\sigma}_s$	21.69-489	PRIVATE COMM.(64)	Rae
Th^{232}	σ_t	8.346-3005.78	PRIVATE COMM.(64)	Ribon
Th^{232}	σ_t	8.346-3005.78	64PARIS,2,744(64)	Ribon
Th^{232}	σ_t	21.73-69.02	AERE-PR/NP-5,6(63)	Pattenden
Th^{232}	σ_t	68.95-341.16	AERE-M-1223(63)	Uttley
Th^{232}	analysis	-4.3	AEEW-R-163,15(62)-	Schroder
Th^{232}	σ_t	-3.5	ANS,4,271(61)	Cooper
Th^{232}	σ_γ(SI)	113.15-1390	CU(PNPL)-206,6(60)	Rosen
Th^{232}	σ_t	195-263	PRIVATE COMM.(59)	Bollinger
Th^{232}	σ_t	-7	PR,110,692(58)	Seth
Th^{232}	σ_t	22.1-23.8	PR,101,1328(56)	Levin
Th^{232}	σ_t	22.00-350	AE,1,(5),55(56)	Radkevich
Th^{232}	σ_t	22.0-310	PRIVATE COMM.(55)	Pilcher
Th^{232}	σ_t	4.94-194	PR,95,476(54)	Seidl

$^{230}_{91}Pa$

[17.4 day]

THERMAL CROSS SECTIONS

σ_f = 1500±250 b

$^{231}_{91}Pa$

[3.25×10^4 yr]

THERMAL CROSS SECTIONS

σ_γ = 210±20 b
σ_f = 0.010±0.005 b
σ_t = 211±4 b

RESONANCE PROPERTIES

I_γ = 1500±100 b
<D> = 0.45±0.07 eV
S_0 = 0.85±0.10

RESONANCE PARAMETERS

I^π = 3/2⁻ S_n = 5562±22 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
-.318		56	.111	
.396±.003	.080 ± .004	43	.127 ±.006	.0018±.0007
.494±.003	.009 ± .003	40	.013 ±.004	.013 ±.007
.743±.003	.0077± .0011	40 ± 4	.0089±.0013	.007 ±.004
1.238±.003	.028 ± .001	46 ± 3	.025 ±.001	<.006
1.405±.005	.0012± .0008	45	.0010±.0007	
1.960±.005	.0071± .0004	46 ± 4	.0051±.0003	
2.790±.006	.0099± .0003	39 ± 5	.0059±.0002	
3.483±.007	.0470± .0015	48 ± 5	.0252±.0008	
4.12 ±.01	.085 ± .004	50	.042 ±.002	
4.35 ±.01	.060 ± .004	60	.029 ±.002	
4.53 ±.01	.017 ± .002	55	.0080±.0009	
5.06 ±.01	.49 ± .02	63 ±10	.218 ±.009	
5.28 ±.02	.085 ± .007	45	.037 ±.003	
5.63 ±.02	.047 ± .005	45	.0198±.002	
5.82 ±.02	.058 ± .005	45	.024 ±.002	
6.55 ±.03	.049 ± .005	50	.019 ±.002	
6.87 ±.03	.25 ± .02	46 ±11	.095 ±.008	
7.57 ±.03	.093 ± .006	60	.034 ±.002	
7.82 ±.03	.182 ± .014	55	.065 ±.005	
8.73 ±.03	.74 ± .03	57 ±10	.25 ±.01	
9.26 ±.04	.046 ± .006	55	.015 ±.002	
9.70 ±.04	.230 ± .010	50	.074 ±.003	
10.33 ±.04	.700 ± .035	49 ±10	.218 ±.011	
10.76 ±.04	.341 ± .013	30 ±20	.104 ±.004	
11.26	.362 ± .013		.108 ±.004	
11.67	.683 ± .061		.200 ±.018	
12.08	.0216± .003		.0062±.0008	

$^{231}_{91}Pa$

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
13.26	.801 ± .146		.220 ±.040	
13.38	1.097 ± .146		.300 ±.040	
14.10	.578 ± .030		.154 ±.008	
15.06	.109 ± .006		.0282±.0016	
15.57	.201 ± .008		.051 ±.002	
16.02	.328 ± .016		.082 ±.004	
16.66	.229 ± .016		.056 ±.004	
16.99	.306 ± .016		.074 ±.004	
18.29	1.514 ± .086		.354 ±.020	
18.74	.693 ± .035		.160 ±.008	
19.25	.176 ± .026		.040 ±.006	
19.55	.080 ± .027		.018 ±.006	
20.3	.041 ± .009		.009 ±.002	
20.6	.999 ± .054		.220 ±.012	
21.3	.554 ± .185		.120 ±.040	
21.45	.648 ± .185		.140 ±.040	
22.12	.470 ± .028		.100 ±.006	
24.75	.279 ± .020		.056 ±.004	
25.45	.091 ± .020		.018 ±.004	
25.97	1.070 ± .051		.210 ±.010	
26.85	.155 ± .021		.030 ±.004	
27.32	.554 ± .042		.106 ±.008	
28.23	.202 ± .021		.038 ±.004	
28.69	.268 ± .021		.050 ±.004	
29.62	1.687 ± .109		.310 ±.020	
30.22	.0550± .016		.010 ±.003	
31.73	3.38 ± .23		.60 ±.04	
32.2	.057 ± .023		.010 ±.004	
32.80	.18 ± .02		.032 ±.004	
33.39	.14 ± .023		.024 ±.004	
35.15	.20 ± .02		.034 ±.004	
36.14	.39 ± .04		.064 ±.006	
36.65	1.45 ± .24		.240 ±.040	
36.80	.36 ± .12		.060 ±.020	
37.53	.98 ± .06		.16 ±.01	
38.26	.20 ± .04		.032 ±.006	
39.73	1.05 ± .06		.17 ±.01	
41.27	.45 ± .10		.070 ±.016	
42.08	.65 ± .10		.100 ±.016	
43.34	1.51 ± .16		.230 ±.024	
44.54	.19 ± .04		.028 ±.006	
44.91	.11 ± .04		.016 ±.006	
45.64	1.22 ± .16		.180 ±.024	
46.39	.33 ± .07		.048 ±.010	
47.22	1.03 ± .17		.150 ±.024	
48.60	.292 ± .056		.042 ±.008	
50.12	.13 ± .06		.018 ±.008	
50.85	.856 ± .085		.120 ±.012	
51.25	.49 ± .07		.068 ±.010	
51.92	.98 ± .10		.136 ±.014	
52.54	2.18 ± .15		.300 ±.020	
53.91	.808 ± .088		.110 ±.012	

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
54.45	1.36 ± .10		.184 ±.014	
55.20	9.36 ± .74		1.26 ±.10	
56.05	2.17 ± .15		.290 ±.020	
56.52	.83 ± .09		.110 ±.012	
57.16	1.42 ± .14		.188 ±.018	
60.16	.25 ± .06		.032 ±.008	
61.35	2.82 ± .31		.36 ±.04	
61.77	.79 ± .31		.10 ±.04	
62.35	.22 ± .10		.028 ±.012	
63.38	1.39 ± .14		.174 ±.018	
64.40	.29 ± .08		.036 ±.010	
65.30	1.08 ± .15		.134 ±.018	
66.43	.11 ± .08		.014 ±.010	
67.35	.95 ± .15		.116 ±.018	
68.21	.22 ± .10		.026 ±.012	
69.09	1.83 ± .33		.22 ±.04	
70.07	.27 ± .10		.032 ±.012	
70.64	.84 ± .13		.100 ±.016	
71.33	1.52 ± .34		.180 ±.040	
72.03	.54 ± .12		.064 ±.014	
73.8	.69 ± .16		.080 ±.018	
74.9	1.23 ± .19		.142 ±.022	
75.7	.37 ± .12		.042 ±.014	
76.6	.53 ± .16		.060 ±.018	
77.8	.86 ± .18		.098 ±.020	
78.5	.34 ± .14		.038 ±.016	
79.2	.45 ± .14		.050 ±.016	
80.1	1.00 ± .18		.112 ±.020	
81.0	.77 ± .20		.086 ±.022	
83.5	3.29 ±1.10		.36 ±.12	
84.7	2.03 ± .55		.22 ±.06	
85.7	2.04 ± .56		.22 ±.06	
87.7	2.06 ± .56		.22 ±.06	
90.0	1.14 ± .38		.12 ±.04	
91.5	1.15 ± .38		.12 ±.04	
92.8	.48 ± .27		.050 ±.028	
93.9	.60 ± .27		.062 ±.028	
95.8	3.92 ± .78		.40 ±.08	
99.0	2.19 ± .40		.22 ±.04	

Note - Resonances are missed above neutron energy of 15 eV.
Single-level Breit-Wigner parameters.

$^{232}_{91}Pa$

[1.32 day]

THERMAL CROSS SECTIONS

σ_γ = 760±100 b
σ_f = 700±100 b

$^{233}_{91}$Pa

[27.0 day]

THERMAL CROSS SECTIONS

σ_γ = 21±3 b [1.17 min ^{234}Pa^m]
σ_γ = 20±3 b [6.67 hr ^{234}Pa^g]
σ_f < 0.1 b
σ_t = 55±3 b

$^{234}_{91}$Pa

[1.17 min]

RESONANCE PROPERTIES

I_γ = 895±30 b
<D> = 0.69±0.09 eV
S_0 = 0.75±0.06

RESONANCE PARAMETERS

I^π = 3/2$^-$ S_n = 5197±6 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level		0		
.795±.005	.0014±.0004		50 ±10	.0016±.0004
1.341±.003	.139 ±.014		40 ± 5	.120 ±.012
1.644±.004	.38 ±.04		42 ± 5	.296 ±.029
2.356±.004	.0117		50	.0076
2.830±.004	.207 ±.020		46 ± 5	.123 ±.012
3.386±.006	.39 ±.09		50 ± 5	.21 ±.05
4.288±.009	.113 ±.010		48 ± 5	.055 ±.005
5.152	.524 ±.037		55 ± 5	.231 ±.016
7.181	.21		60	.080
8.26	.0673		65	.0234
8.97	.22		70	.074
9.37	1.50		70	.490
10.35	.14		50	.044
10.89	.21		65	.0625
11.52	.106		50	.031
12.15	.460		75	.132
12.90	.14		60	.039
14.42	.53		70	.14
14.80	.077		50	.020
15.96	1.19		70	.297
17.00	.367		50	.0891

Note - Single-level Breit-Wigner parameters.

$^{234}_{91}$Pa

[6.67 hr]

THERMAL CROSS SECTIONS

σ_f < 500 b

THERMAL CROSS SECTIONS

σ_f < 5000 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pa^{230}	σ_f	PRIVATE COMM.(46)	Ghiorso
Pa^{231}	σ_γ	AE,32,178(72)	Alexsandrov
Pa^{231}	σ_t	NSE,12,243(62)	Simpson
Pa^{231}	σ_γ activation	PR,101,1053(56)+	Smith
Pa^{231}	σ_γ activation	PR,90,102(53)	Elson
Pa^{231}	σ_f	TID-5223,2,593(52)+	Ghiorso
Pa^{231}	σ_γ activation	TID-5223,2,604(52)	Jaffey
Pa^{231}	σ_f	LAMS-354(46)	Farwell
Pa^{231}	σ_γ activation	CS-3471,2(46)	Seaborg
Pa^{232}	σ_γ activation	PR,101,1053(56)	Smith
Pa^{232}	σ_γ activation	PR,90,102(53)	Elson
Pa^{232}	σ_f	PRIVATE COMM.(46)	Ghiorso
Pa^{232}	σ_f	PRIVATE COMM.(46)	Perlman
Pa^{233}	$\sigma_\gamma I_\gamma$ chemical separation	WAPD-TM-837(70)	Connor
Pa^{233}	RI chemical separation	NSE,29,408(67)	Connor
Pa^{233}	σ_t	NSE,28,133(67)	Simpson
Pa^{233}	σ_t	NSE,20,235(64)	Simpson
Pa^{233}	RI	PRIVATE COMM.(64)	Stoughton
Pa^{233}	σ_a RI mass spectrometry	ORNL-3320,1(62)	Halperin
Pa^{233}	σ_γ chemical separation	CJP,38,751(60)	Eastwood
Pa^{233}	σ_γ mass spectrometry	NSE,1,1(56)	Halperin
Pa^{233}	σ_γ chemical separation	IDO-16226(55)	Smith
Pa^{233}	σ_γ mass spectrometry	NSE,1,1(56)-	Katzin
Pa^{233}	σ_γ chemical separation	TID-5223,543(52)	Katzin
Pa^{234}	σ_f	PRIVATE COMM.(46)	Borst

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pa^{231}	σ_t	0.4-99	ORNL-3268,47(62)	Patterson
Pa^{231}	σ_f	0.39-0.743	BAP,6,8(61)	Leonard
Pa^{231}	σ_f	0.39-1.238	HW-67219(60)	Leonard
Pa^{231}	σ_t	0.38-1076	NSE,12,243(60)	Simpson
Pa^{233}	σ_t	1.31-15.96	PRIVATE COMM.(68)	Burgus
Pa^{233}	σ_t	0-1700	NSE,28,133(67)	Simpson
Pa^{233}	σ_t	0-0.43	PRIVATE COMM.(66)	Simpson
Pa^{233}	σ_t	0.01-1.0	NSE,20,235(64)	Simpson
Pa^{233}	σ_t	0-1700	BAP,9,433(64)	Simpson

$^{230}_{92}U$

[20.8 day]

THERMAL CROSS SECTIONS

σ_f = 25±10 b

$^{231}_{92}U$

[4.2 day]

THERMAL CROSS SECTIONS

σ_f = 400±300 b

THERMAL CROSS SECTIONS

σ_γ = 73.1±1.5 b
σ_f = 75.2±4.7 b
σ_a = 148.3±4.4 b
$\bar{\sigma}_s$ = 14.7 b
σ_t = 163±10 b
α = 0.972±0.061
ν_p = 3.13±0.06

RESONANCE PROPERTIES

I_γ = 280±15 b
I_f^c = 320±40 b
<D> = 7.6±1.5 eV
S_0 = 1.0±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 5743±10 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
-.60		(45 ±5)	.14	-40 ± 4
5.98±.01	1.2 ±0.2	(45 ±5)	.49 ±.08	25 ± 5
12.70±.03	6.5 ± .5	(45 ±5)	1.83 ±.14	263 ± 5
21.00±.05	1.9 ±0.2	(45 ±5)	.41 ±.04	-580 ±70
23.80±.05	5.2 ± .5	(45 ±5)	1.07 ±.11	90 ±10
24.75±.05	.50± .03	(45 ±5)	.10 ±.05	-1150
27.70±.05	2.4 ± .1	(45 ±5)	.46 ±.02	-200 ±50
29.65±.06	.85	(45 ±5)	.016	900
34.24±.06	.59	(45 ±5)	.10	-360
40.0 ±.07	.25	(45 ±5)	.04	-2600
43.16±.07	7.9	(45 ±5)	1.2	178
47.61±.07	1.06	(45 ±5)	.15	-340
52.48±.08	2.0	(45 ±5)	.27	284
74.24	31	(45 ±5)	3.6	-720
102.3				
106.4				
107.3				
112.5				
124.6				
128.1				
131.5				
141.5				
149.6				

Note - Multi-level Reich and Moore parameters. Two fission channels are required to adequately fit the cross section data.

$^{233}_{92}U$ [1.553 × 10^5 yr]

THERMAL CROSS SECTIONS

σ_γ = 47.7±2.0 b
σ_f = 531.1±1.3 b
σ_a = 578.8±2.0 b
$\bar{\sigma}_a$ = 8.2±2.0 b
σ_t = 587.0±1.3 b
α = 0.0899±0.004
η = 2.287±0.007
ν = 2.492±0.008

RESONANCE PROPERTIES

I_γ = 140±6 b
I_f = 764±13 b
<D> = 0.68±0.06 eV
S_0 = 1.1±0.2

RESONANCE PARAMETERS

I^π = 5/2⁺ S_n = 6840.8±3.6 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
Bound level						
.17±.02	100 ± 20	.00020± .00004		40 ±10	.00049±.00010	60 ± 15
1.55±.02	600 ± 50	.165 ± .010		45 ±20	.133 ±.008	555 ± 80
1.79±.01	260 ± 30	.34 ± .04		40 ±10	.25 ±.03	220 ± 30
2.17±.01	170 ± 20	.072			.048	115 ± 20
2.29±.01	75 ± 10	.17 ± .03		40 ±10	.11 ±.02	35 ± 5
3.49±.07	500 ±200	.07		(45)	.037	455 ±200
3.66±.01	185 ± 20	.12 ± .02		50 ±15	.063 ±.011	135 ± 20
4.76±.01	900 ±100	.24 ± .07	[2]	(45)	.11 ±.03	855 ±100
5.89±.02	350 ± 70	.17 ±0.03		(45)	.070 ±.012	320 ± 50
6.42±.02	600 ± 75	.22 ± .11		(45)	.087 ±.04	570 ± 75
6.81±.02	150 ± 30	.78 ± .12			.30 ±.05	108 ± 20
7.48±.02	170 ± 30	.038 ± .007		48 ±15	.015 ±.003	120 ± 30
8.67±.02	380 ± 50	.038 ± .019		40 ±20	.013 ±.007	340 ± 60
9.26±.02	300 ± 50	.13 ± .03		50 ±20	.043 ±.010	250 ± 50
9.68±.02	600 ± 50	.13		(45)	.042	555 ± 50
10.37±.02	320 ± 30	1.66 ± .08			.515 ±.025	260 ± 30
10.86±.04	350	.073			.022	
11.31±.02	325 ± 60	.20 ± .07	[2]		.059 ±.021	280 ± 60

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
12.05±.04	900	.30 ±0.05			.086 ±.014	
12.81±.03	310 ± 15	1.4 ±0.1			.39 ±.03	265 ± 20
13.45±.06	165	.055			.015	120
13.74±.03	320 ± 40	.39 ± .05			.11 ±.01	270 ± 40
15.35±.03	235 ± 30	.47 ± .06		(45)	.12 ±.02	190 ± 20
15.54±.03	225 ± 25	.425 ± .060		(45)	.11 ±.02	180 ± 25
16.29±.06	530 ± 70	1.35 ± .10	[2]	(45)	.334 ±.025	485 ± 70
16.59±.03	172 ± 20	.48 ± .03		(45)	.118 ±.007	127 ± 20
18.01±.03	205 ± 30	.42 ± .03		(45)	.099 ±.007	160 ± 30
18.50±.06	225 ± 30	.23 ± .03		(45)	.054 ±.007	180 ± 30
18.98±.03	300 ± 20	1.74 ± .08		(45)	.399 ±.018	253 ± 20
20.54±.03	450 ± 40	1.17 ± .08		(45)	.258 ±.018	404 ± 40
21.90±.04	250 ± 25	1.2 ± .3		(45)	.26 ±.06	204 ± 25
22.35±.04	450 ± 50	3.4 ± .2		40	.72 ±.04	407 ± 50
22.93±.04	730 ± 50	.85 ± .08		(45)	.18 ±.02	684
23.77±.04	450 ± 50	.60 ± .15			.12 ±.03	385 ± 40
24.26±.04	700	.48 ± .04		(45)	.098 ±.008	654
25.28±.04	315 ± 30	.88 ± .09			.175 ±.018	290 ± 30
25.85±.04	600 ±200	.8 ± .2		(45)	.16 ±.04	554 ±200
26.30±.04	150	.036		45	.007	105
26.65±.04	300	.70 ± .18		(45)	.14 ±.04	254
27.04±.04	600 ± 50	.17			.033	540 ± 50
28.09±.04		.027 ± .010			.0051 ±.0019	
28.38±.04		.50 ± .15			.094 ±.028	
29.07±.04	530 ± 40	1.8 ± .2		(45)	.33 ±.04	484 ± 40
29.61±.04	200 ± 50	.3 ± .1		(45)	.055 ±.018	155 ± 50
30.39±.04	400 ± 50	.13 ± .03		(45)	.024 ±.005	355 ± 50
30.75±.04	260 ± 30	.8 ± .2		(45)	.14 ±.04	214 ± 30
31.39±.04	450 ± 70	.71 ± .07		(45)	.127 ±.013	404 ± 70
32.06±.04	330 ± 50	1.64 ± .08		(45)	.290 ±.014	284 ± 50
33.14±.04	900 ±150	1.26 ± .10		(45)	.218 ±.017	853 ±150
34.02±.04	1000	1.35 ± .14			.23 ±.02	
34.55±.04	630 ± 50	2.2 ± .4		(45)	.37 ±.07	583 ± 50
35.20±.04	500	.20		(45)	.034	455
35.89±.04	1100 ±400	1.4 ± .2		(45)	.23 ±.03	1100 ±400
36.60±.04	170 ± 20	1.07 ± .13			.177 ±.021	110 ± 20
37.50±.04	420 ± 20	.78 ± .11			.127 ±.018	380 ± 20
39.40±.05	775 ±100	1.1 ± .2		(45)	.175 ±.032	729 ±100
39.94±.05	580 ± 70	.49 ± .10		(45)	.078 ±.016	535 ± 70
40.50±.05	650 ± 70	.9 ±0.2		(45)	.14 ±.03	604 ± 70
41.06±.05	225 ± 75	.59 ± .03		(45)	.092 ±.005	179 ± 75

E_0 (eV)	Γ (meV)	$2gf\Gamma_n$ (meV)	J	Γ_γ (meV)	$2gf\Gamma_n^0$ (meV)	Γ_f (meV)
42.08±.05	700 ±100	.24 ± .02		(45)	.037 ±.003	655 ±100
42.68±.05	230 ± 30	1.0 ± .2		(45)	.15 ±.03	274 ± 30
43.57±.05	290 ± 40	.52 ± .07		(45)	.079 ±.011	244 ± 30
44.70±.10	1000 ±200	.70 ± .07		(45)	.11 ±.01	954 ±200
46.18±.05	210 ± 40	.66 ± .05		(45)	.097 ±.007	164 ± 20
46.70±.05	230 ± 30	.075 ± .008		(45)	.011 ±.001	185 ± 30
47.37±.05	470 ± 40	.98 ± .06		(45)	.14 ±.09	424 ± 40
48.75±.05	208 ± 20	2.8 ± .3		(45)	.40 ±.04	160 ± 20
49.32±.05	270 ± 25	.34 ± .02		(45)	.048 ±.003	225 ± 25
50.55±.05	886 ± 50	1.27 ± .05		(45)	.179 ±.007	950 ± 50
51.40±.10	355 ± 50	.14 ± .02		(45)	.0195 ±.003	310 ± 50
52.11±.05	290 ± 30	.14 ± .02			.0194 ±.003	245 ± 30
53.17±.05		1.39			.19	290
53.54±.05		.40			.055	300
54.15±.05		2.2			.30	400
54.89±.05		2.4			.33	320
55.81±.05		1.7			.23	500
56.18±.05		1.5			.20	300
56.58±.05		2.6 ± .2			.34 ±.03	450
57.55±.05		5.6 ± .7			.74 ±.09	900
58.54±.05		1.76			.23	350
58.35±.05		.069			.009	300
60.38±.05		.35			.045	500
61.07±.05		.63			.08	280
61.50±.05		2.8			.36	400
62.72±.05		2.3			.29	185

Note - Single-level Breit-Wigner parameters. For Adler-Adler parameters, see de Saussure 70, Kalar 70 and Cao 70. For R-matrix parameters see Bergen 68.

THERMAL CROSS SECTIONS

σ_γ = 100.2±1.5 b
σ_f = 0.65 b
σ_s = 12±4 b
σ_t = 112±4 b

RESONANCE PROPERTIES

I_γ = 630±70 b
$\langle D \rangle$ = 12.3±1.5 eV
S_0 = 1.1±0.4

RESONANCE PARAMETERS

$I^\pi = 0^+$ $\qquad$ $\Sigma g\Gamma_n = 0.0055$ $\qquad$ $S_n = 5297.6 \pm 0.5$ keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
Bound level						
5.19± .01	3.92 ± .02	1/2	0	25 ±6	1.72 ± .01	.019± .001
22.74± .09	.018± .002			(25)	.0038± .0004	
23.42± .09	.16 ± .02			(25)	.033 ± .004	
31.21± .16	6.50 ± .25			(25)	1.16 ± .045	.204± .025
36.86± .20	.056± .005			(25)	.0096± .0008	
45.83± .28	.297± .014			(25)	.0435± .0021	.108± .039
48.75± .34	8.0 ± .7			(25)	1.15 ± .10	.004± .002
77.66± .62	7.9 ± .3			(25)	.896 ± .034	.011± .005
91.4 ± .7						*.038± .053
94.75± .83	39 ± 2			(25)	4.00 ± .21	.040± .005
106.65± .99	3.2 ± .3			(25)	.31 ± .03	.110± .029
111.49± 1.07	17.8 ± .6			(25)	1.69 ± .06	.297± .024
133.6 ± 1.5						
146.75± 1.60	9.4 ± 1.4			(25)	.77 ± .12	.007± .016
152.81± 1.70	19.7 ± .5			(25)	1.59 ± .05	.023± .009
177.25± 2.11	28 ± 4			(25)	2.1 ± .3	.120±0.012
183.5 ± 2.3	37 ± 6			(25)	2.7 ± .4	.133± .012
188.3 ± 2.3	52 ± 1			(25)	3.79 ± .07	.032± .010
209.5 ± 2.7	6.4 ± 1.5			(25)	.44 ± .10	.002± .030
230.7 ± 3.3	3.9 ± .8			(25)	.25 ± .05	.091± .063
259.1 ± 3.8	7.0 ± 1.4			(25)	.435 ± .087	.422± .08
277.8 ± 4.2	3.2 ± .3			(25)	.19 ± .02	.216± .101
281.4 ± 4.5	29 ± 2			(25)	1.70 ± .12	.208± .032

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
309.8 ± 4.9	11.3 ± 1.2			(25)	.64 ± .07	.127± .054
315.4 ± 5.0						*.33 ± .14
324.5 ± 5.0	16.2 ± .4			(25)	.90 ± .02	.017± .039
332.9 ± 5.5	2.7 ± .2			(25)	.15 ± .01	.166± .143
350.8 ± 5.9	27 ± 6			(25)	1.44 ± .32	.173± .053
360.3 ± 6.1	37 ± 5			(25)	1.95 ± .26	
367.5 ± 6.4						*.06 ± .16
393.1 ± 7.1	10.0 ± 1.5			(25)	.504 ± .076	.711± .138
414.1 ± 7.6	4.1 ± .1			(25)	.202 ± .005	.667± .232
439.1 ± 8.3	2.2 ± .8			(25)	.105 ± .038	1.229± .443
457.0 ± 8.8	10.0 ± 1.7			(25)	0.468 ± .080	9.320± .924
466.4 ± 9.0	12.5 ± 1.6			(25)	.579 ± .074	.313± .197
491.1 ± 9.8	36 ± 11			(25)	1.62 ± .50	1.669± .164
515.0 ±10.5	70 ± 30			(25)	3.09 ±1.32	5.053± .406
549.8 ±11.6	47 ± 13			(25)	2.00 ± .55	
559.1 ±11.9	72 ± 26			(25)	3.1 ±1.1	5.640± .454
578.3 ±13.9	44 ± 10			(25)	1.8 ± .4	5.367± .452
638.4 ±16.1	2			(25)	.079	51.1
686.7 ±16.2	12 ± 8			(25)	.45	9.06
722.0 ±17.5						*3.65 ± .51
770.0 ±19.0	710 ± 85			(25)	25.6 ±3.1	
817.6 ±21.1	260 ±100			(25)	9.09 ±3.50	

* $g\Gamma_f$ (b-eV)

THERMAL CROSS SECTIONS

σ_γ = 98.6±1.5 b
σ_f = 582.2±1.3 b
σ_a = 680.8±1.3 b
σ_s = 13.8±0.5 b
σ_t = 694.6±1.1 b
α = 0.169±0.002
η = 2.068±0.009
ν = 2.416±0.008
a_{eff} = 9.8±0.6 fm

RESONANCE PROPERTIES

I_γ = 144±6 b
I_f = 275±5 b
$\langle D \rangle$ = 0.63±0.06 eV
S_0 = 0.92±0.10
S_1 = 1.8±0.3

RESONANCE PARAMETERS

I^π = 7/2⁻ S_n = 6545.1±1.1 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
Bound level						
.285± .005	136 ± 8	.0032± .0005	3	36 ± 3	.0055± .0005	100 ± 8
1.135± .005	157 ± 11	.0154± .0011	4	42 ± 5	.0145± .0010	115 ± 10
2.028± .00*	48 ± 3	.0077± .0003	3	38 ± 4	.0054± .0002	10 ± 1
2.84 ± .05	150 ± 50	.009 ± .001			.0018± .0006	100 ± 50
3.145± .005	160 ± 15	.028 ±0.002	3	44 ± 6	.0158±0.0011	116 ± 15
3.613± .005	87 ± 6	.046 ± .002	4	37 ± 5	.0242± .0011	50 ± 5
4.845± .006	40 ± 3	.059 ± .004	4	35 ± 4	.0268± .0018	5 ± 1
5.446± .006	70 ± 15	.022 ± .003		46 ± 8	.0094± .0013	24 ± 7
5.83 ± .01	110 ± 30	.016 ± .003			.0067± .0013	75 ± 20
6.21 ± .02	230 ± 50	.030 ± .003	3	45 ± 7	.0120± .0012	185 ± 50
6.39 ± .01	45 ± 3	.260 ± .015	4	35 ± 2	.103 ± .006	10 ± 2
7.08 ± .01	63 ± 4	.125 ± .005	4	36 ± 3	.0470± .0018	27 ± 3
8.38 ± .01	131 ± 10	1.18 ± .04	4	45 ± 5	.398 ± .013	85 ± 6
9.28 ± .01	156 ± 40	.18 ± .03	4	47 ±10	.059 ± .010	109 ± 20
9.74 ± .01	150 ± 50	.026 ± .005			.0083± .0015	85 ± 20
10.18 ± .01	95 ± 10	.067 ± .006	4	45 ± 6	.021 ± .0019	46 ± 7

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
10.80 ± .01	700 ±200	.016 ± .008			.0049± .0024	700 ±200
11.66 ± .01	45 ± 5	.59 ± .04	4	40 ± 5	.173 ± .011	4.6± 1.0
12.39 ± .01	70 ± 6	1.29 ± .03	3	42 ± 4	.366 ± .009	27 ± 3
12.85 ± .01	83 ± 15	.038 ± .006	4	28 ±12	.011 ± .002	55 ± 15
13.28 ± .01	80 ± 20	.055 ± .006		40 ±10	.0151± .0016	40 ± 20
13.69 ± .01	113 ± 30	.050 ± .010		43 ±27	.014 ± .003	70 ± 20
14.02 ± .01	500 ±100	.41 ± .07	3	(40)	.109 ± .019	460 ±100
14.51 ± .01	52 ± 8	.11 ± .02	3	39 ± 5	.029 ± .005	13 ± 3
15.40 ± .01	91 ± 10	.25 ± .02	4	44 ± 6	.064 ± .005	47 ± 7
16.08 ± .01	55 ± 5	.35 ± .01	4	38 ± 4	.087 ± .003	17 ± 2
16.68 ± .01	119 ± 14	.28 ± .02	4	41 ± 8	.069 ± .005	78 ± 12
18.05 ± .01	155 ± 20	.37 ± .01	3	45 ±10	.087 ± .002	110 ± 20
18.96 ± .01	90 ± 15	.084 ± .010	4	50 ±10	.019 ± .002	40 ± 15
19.30 ± .01	103 ± 7	3.15 ± .13	4	43 ± 4	.717 ± .003	60 ± 5
20.13 ± .01	197 ± 20	.12 ± .02		43 ±28	.027 ± .005	74 ± 22
20.62 ± .01	90 ± 10	.18 ± .02	4	45 ± 7	.040 ± .004	45 ± 7
21.07 ± .01	68 ± 6	1.50 ± .05	4	44 ± 4	.327 ± .001	24 ± 4
22.14 ± .05		.007 ± .004			.0015± .0009	
22.94 ± .01	92 ± 9	.45 ± .03	4	41 ± 4	.094 ± .006	46 ± 8
23.42 ± .01	43 ± 5	.69 ± .06	4	35 ± 5	.14 ± .01	7 ± 1
23.53 ± .01	144 ± 30	.90 ± .10	3	43 ±10	.185 ± .021	100 ± 30
24.25 ± .01	74 ± 12	.32 ± .04	3	46 ±10	.065 ± .008	28 ± 6
24.50 ± .04	88 ± 15	.14 ± .04		(45)	.028 ± .008	43 ± 15
25.19 ± .03		.18 ± .04			.036 ± .008	
25.59 ± .01	250 ± 50	.60 ± .10	3		.12 ± .02	200 ± 50
26.49 ± .02	167 ± 40	.60 ± .03	[4]	41 ±15	.116 ± .006	125 ± 40
27.16 ± .01	95 ± 20	.10 ± .03		(45)	.019 ± .006	50 ± 20
27.82 ± .01	104 ± 15	.70 ± .05	4	35 ±10	.133 ± .010	68 ± 9
28.09 ± .02		.030 ± .015			.0057± .0028	
28.36 ± .01	153 ± 17	.17 ± .02	[3]	37 ± 7	.032 ± .004	116 ± 15
28.72 ± .03	115 ± 20	.05 ± .02		(45)	.0093± .0037	70 ± 20
29.65 ± .01	73 ± 6	.18 ± .02	4	43 ± 4	.033 ± .004	30 ± 4
30.59 ± .01	[illegible] ± 15	.22 ± .02	3	44 ±11	.040 ± .004	100 ± 15
30.86 ± .01	63 ± 6	.50 ± .05	4	42 ± 5	.090 ± .009	20 ± 3
32.07 ± .01	97 ± 10	1.90 ± .08	4	45 ± 6	.336 ± .014	50 ± 6
33.53 ± .01	62 ± 7	1.90 ± .05	4	37 ± 7	.328 ± .009	23 ± 3
34.39 ± .01	83 ± 10	2.15 ± .10	4	43 ± 4	.367 ± .017	38 ± 4
34.85 ± .01	120 ± 20	.9 ± .2	3	29 ±20	.15 ± .03	90 ± 20
35.20 ± .01	175 ± 18	4.5 ± .2	4	50 ±10	.76 ± .03	120 ± 15
35.78 ± .03		0.5			.084	
37.45 ± .05		0.035			.0057	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_γ (meV)
38.36 ± .05	111 ± 20	.55 ± .06	4	(45)	.089 ± .010	65 ± 20
39.41 ± .01	95 ± 7	2.5 ± .2	4	40 ± 4	.40 ± .03	52 ± 5
39.90 ± .01		.40 ± .08			.063 ± .013	60 ± 20
40.52 ± .01	205 ± 40	.45 ± .10	4		.071 ± .016	160 ± 40
41.30 ± .01	100 ± 20	0.35 ± .10		(45)	.055 ± .016	55 ± 15
41.55 ± .01	70 ± 20	0.22 ± .07			.034 ± .011	36 ± 10
41.88 ± .01	75 ± 10	1.35 ± .10	3	54 ±10	.209 ± .015	20 ± 4
42.23 ± .01	100 ± 15	.36 ± .05		40	.055 ± .008	60 ± 10
42.70 ± .01	64 ± 6	.27 ± .03		44 ± 4	.041 ± .005	20 ± 3
43.40 ± .01	70 ± 7	.64 ± .05		44 ± 5	.097 ± .008	25 ± 4
43.94 ± .01	106 ± 20	.60 ± .05	4	(45)	.091 ± .008	60 ± 20
44.60 ± .01	225 ± 50	.8 ± .2	4	(45)	.12 ± .03	180 ± 50
45.00 ± .02	445 ±200	.5 ± .2		(45)	.075 ± .030	400 ±200
45.79 ± .01	60 ± 6	.23 ± .08	4	37 ±28	.034 ± .012	23 ± 7
46.79 ± .01	104 ± 10	.57 ± .06		38 ±19	.034 ± .012	66 ± 13
47.00 ± .02	136 ± 20	1.0 ±0.2		(45)	.146 ± .029	90 ± 20
47.98 ± .01	78 ± 8	.84 ± .06	4	53 ± 6	.121 ± .009	24 ± 3
48.30 ± .01	100 ± 20	1.10 ± .08	3	(45)	.158 ± .012	54 ± 15
48.80 ± .01	68 ± 8	.95 ± .15	3	39 ± 9	.136 ± .021	26 ± 4
49.43 ± .01	58 ± 5	.75 ± .08	4	37 ± 4	.107 ± .011	20 ± 3
50.13 ± .01	54 ± 6	.25 ± .02		33 ± 4	.035 ± .003	21 ± 4
50.49 ± .01	123 ± 10	1.13 ± .03		54 ± 7	.159 ± .004	68 ± 7
51.27 ± .01	191 ± 16	3.60 ± .15	4	47 ± 5	.503 ± .002	140 ± 15
51.68 ± .02	70 ± 10	.30 ± .03		39 ± 7	.042 ± .004	31 ± 7
52.23 ± .02	361	2.48 ± .10		38 ± 7	.343 ± .014	320
53.46 ± .01	128 ± 25	.61 ± .05		47 ± 6	.083 ± .007	80 ± 20
54.10 ± .02		.26 ± .03			.035 ± .004	
55.08 ± .02	118 ± 10	3.20 ± .08	4	57 ± 6	.431 ± .011	58 ± 6
55.85 ± .02	247 ± 50	2.3 ± .4		40 ± 5	.31 ± .05	205 ± 50
56.50 ± .02	142 ± 10	4.89 ± .35	4	45 ± 5	.65 ± .05	92 ± 8
57.81 ± .02	101 ± 20	1.14 ± .05		40 ± 5	.150 ± .007	60 ± 20
58.08 ± .02	71 ± 10	1.36 ± .08		33 ± 6	.178 ± .011	37 ± 5
58.69 ± .02	156 ± 15	1.37 ± .10		46 ±10	.166 ± .013	109 ± 12
59.75 ± .02	220	.25 ± .03		40 ± 5	.023 ± .004	180
60.20 ± .02	138	1.28 ± .07		(45)	.165 ± .008	92
60.85 ± .02	169 ± 20	.51 ± .03		45 ±10	.065 ± .004	124 ± 15
61.17 ± .02		.45 ± .05			.058 ± .006	
62.40 ± .02		.16 ± .03			.020 ± .004	
63.03 ± .02		~1.26			~.158	
64.28 ± .02	58 ± 7	1.25 ± .06		50 ± 6	.156 ± .008	7 ± 1
65.80 ± .02	60 ± 30	.31 ± .06		30 ±10	.038 ± .004	30 ± 9

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
66.38 ± .02	68 ± 10	.37 ± .04		32 ± 6	.045 ± .005	36 ± 9
67.28 ± .02	45	.088 ± .02		34	.011 ± .002	10.5
68.50 ± .02	90	.13 ± .02		50	.016 ± .003	40
69.30 ± .02	200 ± 30	.74 ± .04		53 ±27	.089 ± .005	146 ± 28
70.42 ± .02	192	2.9 ±0.3		49 ± 5	.35 ± .04	140
70.75 ± .02	225	2.3 ±0.2		40 ± 5	.27 ± .03	183
71.55 ± .02		.47 ± .05			.055 ± .006	
72.40 ± .02	125 ± 20	3.20 ± .40		50 ± 9	.376 ± .050	72 ± 13
72.91 ± .02		.26 ± .03			.030 ± .003	
74.57 ± .02	119 ± 12	2.96 ± .20		56 ± 8	.343 ± .024	60 ± 7
75.16 ± .02		~1.30			~.15	
75.54 ± .02	230 ± 60	1.23 ± .20		32	.142 ± .023	197 ± 64
76.73 ± .02	75 ± 10	.068 ± .011		36 ±25	.0078± .0013	39 ± 15
77.49 ± .02		1.02 ± .08			.116 ± .009	
77.52 ± .02	120 ± 10	1.02 ± .08		54 ± 7	.116 ± .009	65 ± 6
78.11 ± .02	146 ± 15	1.02 ± .08		39 ± 9	.115 ± .009	106 ± 15
79.70 ± .02		.13 ± .03			.015 ± .004	
79.68 ± .02	125 ± 12	.69 ± .03		37 ± 6	.077 ± .003	87 ± 10
80.36 ± .02	196 ± 30	.74 ± .03		25 ± 9	.082 ± .003	170 ± 25
81.45 ± .02	113 ± 10	.89 ± .03		29 ± 5	.099 ± .003	83 ± 8
82.06 ± .02		~.05			~.0055	
82.67 ± .02		2.20 ± .12			.242 ± .014	
83.59 ± .02	118 ± 20	1.17 ± .12		48 ±17	.128 ± .010	69 ± 14
84.04 ± .02		~1.50			~.164	
84.35 ± .02		~1.9			~.21	
85.04 ± .02		~1.0			~.11	
85.59 ± .02		~.6			~.06	
86.14 ± .02		~.05			~.005	
86.85 ± .02	80	.72 ± .06		52	.077 ± .006	27
87.54 ± .02		.74 ± .06			.079 ± .006	
88.77 ± .02		3.3 ± .3			.35 ± .03	
89.11 ± .02		.18			.019	
89.83 ± .02	136 ± 15	.66 ± .05		46 ±10	.070 ± .005	89 ± 10
90.42 ± .02	60 ± 6	4.83 ± .20		46 ± 4	.500 ± .021	9 ± 1
91.28 ± .02	280 ± 60	2.96 ± .40		39	.310 ± .004	238 ± 66
92.07 ± .02	120 ± 20	.72 ± .05		44 ±16	.075 ± .005	75 ± 15
92.59 ± .02	95 ± 12	2.53 ± .20		48 ± 7	.263 ± .021	44 ± 6
93.23 ± .02	85	.33 ± .06		39	.034 ± .006	46
94.12 ± .02	75 ± 12	4.0 ± .3		61 ±13	.41 ± .03	9.5± 1.5
94.76 ± .02	105	.5 ± .2		41	.051 ± .025	66
95.56 ± .02		1.58 ± .15			.162 ± .015	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
96.48 ± .02		1.03 ± .15			.105 ± .015	
98.11 ± .02	230 ± 40	2.78 ± .10		51 ±17	.281 ± .010	176 ± 32
99.58 ± .02		.62 ± .06			.062 ± .006	
100.37 ± .01	133 ± 15	.66 ± .04		60 ±10	.066 ± .004	72 ± 10
101.00 ± .01	89 ± 8	1.00 ± .05		60 ± 7	.0995± .0050	28 ± 3
101.87 ± .02	88 ± 20	.36 ± .03		38 ±10	.036 ± .003	50 ± 15
102.97 ± .02	125 ± 12	2.52 ± .30		40 ±10	.248 ± .030	82 ± 10
103.59 ± .02	146 ± 20	2.07 ± .10		65 ±10	.203 ± .010	81 ± 10
104.18 ± .02		.27 ± .03			.026 ± .003	
105.16 ± .02	139 ± 40	2.40 ± .12		41 ±16	.234 ± .012	96 ± 28
105.44 ± .02		.31 ± .03			.030 ± .003	
106.11 ± .02	200 ± 50	1.16 ± .05		43 ±19	.112 ± .005	156 ± 40
106.72 ± .02		.13			.013	
107.62 ± .02	76 ± 7	4.12 ± .10		52 ± 4	.397 ± .010	20 ± 2
108.08 ± .02	112 ± 18	.44 ± .04		52 ±12	.042 ± .004	60 ± 10
108.91 ± .02	95 ± 10	1.26 ± .04		58 ± 6	.121 ± .004	36 ± 4
109.72 ± .02		2.12 ± .08			.202 ± .008	
110.18 ± .02		.58 ± .08			.055 ± .008	
111.20 ± .04	103 ± 15	.48 ± .02		79 ±12	.046 ± .002	23 ± 4
111.69 ± .02	96 ± 10	1.13 ± .04		49 ± 5	.107 ± .004	46 ± 5
113.57 ± .02	202 ± 20	1.44 ± .06		56 ±16	.135 ± .006	145 ± 17
115.15 ± .02	62 ± 15	.44 ± .06		39 ±10	.041 ± .006	23 ± 7
115.95 ± .02		3.86 ± .30			.266 ± .030	
118.20 ± .02		2.7			.25	
118.73 ± .02		3.1			.28	
121.95 ± .02	151 ± 25	5.82 ± .6		42	.527 ± .054	103 ± 22
123.57 ± .02	90	.4 ± .1		41	.036 ± .009	49
123.96 ± .02		.11 ± .04			.010 ± .004	
124.81 ± .02	182 ± 27	2.2 ± .3		59 ±19	.197 ± .027	123 ± 24
125.67 ± .02		4.2 ±1.0			.37 ± .09	
126.00 ± .02	150	1.9 ± .5		34	.17 ± .05	114
126.47 ± .02		4 ±1			.35 ± .09	
127.74 ± .02		.65 ± .20			.057 ± .018	
128.19 ± .02	230 ± 60	1.5 ± .2		47	.13 ± .02	182 ± 58
129.56 ± .02	120	.68 ± .20		35	.060 ± .018	84
130.00 ± .05	77 ± 12	1.69 ± .15		63 ±10	.15 ± .02	12 ± 2
131.24 ± .02	155	2.2 ± .6		51	.19 ± .05	102
131.64 ± .02	199	1		21	.087	177
132.17 ± .02		2.2 ± .6			.19 ± .05	44
132.75 ± .04		1.2 ± .4		35 ±16	.10 ± .04	
133.04		1.1			.095	

$^{235}_{92}U$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
133.61 ± .02	82 ± 14	4.47 ± .50		43 ± 9	.387 ± .043	34 ± 10
135.08 ± .02	200	4		53	.34	143
135.47 ± .02	250	4		32	.34	214
136.38 ± .02	112 ± 12	3.15 ± .20		70 ± 8	.270 ± .017	39 ± 12
137.58 ± .02	57 ± 7	3.1 ± .3		33 ± 5	.26 ± .03	21 ± 4
139.23 ± .02	44 ± 7	.47 ± .06		23 ± 5	.040 ± .005	20 ± 5
140.27 ± .02		1.3 ± .2			.11 ± .02	
141.80 ± .02	100	.6		41	.05	58
142.15 ± .02	95	5.6 ± .30		45	.470 ± .025	44
143.05 ± .02		.15			.013	
145.60 ± .02		7.3 ± .6			.60 ± .05	
147.38 ± .02	74	2.70 ± .15		37 ± 5	.222 ± .012	34 ± 4
148.95 ± .13						
149.90 ± .13						
151.65 ± .06						
153.60 ± .06						
154.90 ± .06						
155.65 ± .06						
156.15 ± .06						
156.90 ± .06						
158.85 ± .06						
159.35 ± .06						
159.90 ± .06						
160.95 ± .06						
162.20 ± .06						
162.60 ± .06						
163.56 ± .06						
166.28 ± .06						
167.94 ± .06						
169.30 ± .06						
170.29 ± .07						
171.70 ± .07						
172.37 ± .07						
173.31 ± .07						
174.12 ± .07						
174.50 ± .07						
176.47 ± .07						
177.50 ± .07						
178.50 ± .07						
179.33 ± .07						
180.32 ± .08						

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
182.32 ±0.08						
183.50 ±0.08						
183.88 ±0.08						
184.10 ±0.08						
185.95 ±0.08						
186.43 ±0.08						
186.85 ±0.08						
187.48 ±0.08						
190.83 ±0.09						
192.28 ±0.09						
193.50 ±0.09						
194.19 ±0.09						
196.30 ±0.09						
197.30 ±0.09						
198.40 ±0.09						
200.3 ±0.10						
201.10 ±0.10						
201.90 ±0.10						
203.20 ±0.10						
203.80 ±0.10						
205.60 ±0.10						
207.00 ±0.10						
209.60 ±0.10						
211.40 ±0.10						
212.70 ±0.10						
213.70 ±0.10						
214.90 ±0.10						
215.60 ±0.10						
216.30 ±0.10						
217.10 ±0.10						
219.20 ±0.10						
220.60 ±0.10						
221.50 ±0.12						
223.20 ±0.12						
224.70 ±0.12						
226.50 ±0.12						
229.10 ±0.12						
231.00 ±0.10						
231.30 ±0.12						
232.90 ±0.12						
233.90 ±0.12						

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E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
235.30 ±0.12						
238.60 ±0.12						
239.80 ±0.12						
241.30 ±0.14						
242.50 ±0.14						
244.80 ±0.14						
245.40 ±0.14						
246.20 ±0.14						
247.90 ±0.14						
249.00 ±0.14						
250.50 ±0.14						
251.60 ±0.14						
253.20 ±0.14						
253.80 ±0.14						
256.00 ±0.14						
257.50 ±0.14						
258.70 ±0.14						
260.10 ±0.16						
261.50 ±0.16						
262.90 ±0.16						
263.80 ±0.16						
264.90 ±0.16						
266.30 ±0.16						
266.80 ±0.16						
267.90 ±0.16						
270.00 ±0.16						
270.50 ±0.16						
272.70 ±0.16						
275.00 ±0.16						
276.80 ±0.16						
279.70 ±0.16						
280.90 ±0.18						
282.00 ±0.18						
282.70 ±0.18						
284.00 ±0.18						
285.50 ±0.18						
286.10 ±0.18						
287.50 ±0.18						
289.30 ±0.18						
290.60 ±0.20						
292.20 ±0.20						

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
293.60 ±0.20						
295.10 ±0.20						
296.20 ±0.20						
296.90 ±0.20						
297.50 ±0.20						
298.50 ±0.20						
300.50 ±0.20						

Note - Single-level Breit-Wigner parameters. For recent R-matrix resonance parameters see de Saussure 73 and Cramer 69.
For Adler-Adler parameters, see de Saussure 73 and Adler 67.

$^{236}_{92}U$

[2.342×10⁷ yr]

THERMAL CROSS SECTIONS

σ_γ = 5.2±0.3 b
σ_{sp} = 1.89±0.05

RESONANCE PROPERTIES

I_{γ_1} = 365±20 b
<D> = 15.4±1.0 eV
S_0 = 1.3±0.2
S_1 = 2.3±0.6

RESONANCE PARAMETERS

I^π = 0^+ S_n = 5124.5±3.2 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_f$ (meV)	Γ_γ (meV)
-9.7 ±1.0			.514	
5.45± .03	2.16 ± .08	24.5±1.0	.925 ± .034	.29±.07
29.8 ± .1	.585± .030	(23.9±1.0)	.107 ± .006	.16±.04
34.0 ± .1	2.35 ± .13	20.9±3.5	.403 ± .022	.18±.05
43.7 ±0.1	11.8 ± .6	22.0±1.5	1.79 ± .09	.43±.11
63.1 ±0.2	.034± .005	(23.9±1.0)	.004±3± .0006	
71.1 ±0.2	19.0 ± 1.0	23.3± .9	2.25 ± .12	.29±.07
86.2 ±0.2	27.0 ± 1.5	24.3±1.3	2.91 ± .15	.30±.08
120.5 ±0.3	51.8 ± 4.0	24.0±1.5	4.73 ± .37	.34±.09
124.4 ± .3	15.9 ± 1.9	21.0±3.5	1.43 ± .17	.21±.05
133.7 ± .7	1.08 ± .09	(23.9±1.0)	.093 ± .008	
137.0 ± .7	.48 ± .10	(23.9±1.0)	.041 ± .009	
*153.6 ± .08				
*161.09± .08				
164.91± .08	2.09 ± .15		.16 ± .03	
189.90± .10	3.5 ± .5		.18 ± .04	
193.00± .10	8.8 ± 1.7		.63 ± .12	
193.35± .20	36 ± 7		2.59 ± .51	
194.49± .15	36 ± 7		2.59 ± .51	
212.99± .15	98.2 ±10.0	24.8±1.3	6.73 ± .67	.32±.08
229.85± .10	2.34 ± .14		.154 ± .009	
243.0	.30 ± .15		.019 ± .10	
261.9 ± .1	1.0 ± .2		.06 ± .01	
273.23± .10	30 ±10	25 ±3	1.8 ± .6	.52±.13
289.03± .11	11.5 ± 2.0		.68 ± .12	.53±.13
303.68± .12	70 ±10	26 ±2	4.01 ± .58	.48±.13
320.91± .12	5.2 ± .6		0.30 ± .03	
335.44± .20	6.7 ± 0.4		.39 ± .022	
356.0	.64 ± .10		.033 ± .005	
367.8	.40 ± .30		.021 ± .016	
371.62± .20	13.8 ± 1.0		.716 ± .052	.42±.11
380.42± .20	125 ±20	24.8±3.0	6.40 ±1.03	.30±.08
415.03± .20	15.8 ± 2.0	(27 ±3)	.78 ± .10	
431.56± .22	41 ± 8	(27 ±3)	1.97 ± .39	
441.09± .20	42 ± 8	(27 ±3)	2.0 ± .4	

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^2$ (meV)	Γ_f (meV)
466.09± .22	10 ± 2	(27 ±3)	.46 ± .09	
478.92± .20	34 ± 7	(27 ±3)	1.55 ± .32	
501.04± .20	4.8 ± .9	(27 ±3)	.22 ± .04	
507.61± .22	26 ± 5	(27 ±3)	1.15 ± .22	
537.03± .27	60 ±12	(27 ±3)	2.59 ± .52	
543.46± .12	25 ± 5	(27 ±3)	1.07 ± .22	
564.42± .28	71 ±14	(27 ±3)	3.0 ± .59	
576.91± .30	153 ±30	(27 ±3)	6.37 ±1.25	
607.79± .30	14.3 ± .3	(27 ±3)	.58 ± .01	
618.67± .30	60 ±12	(27 ±3)	2.41 ± .48	
638.64± .31	85.3 ±17.0	(27 ±3)	3.38 ± .67	
648.34± .33	8.1 ± 1.6	(27 ±3)	.32 ± .06	
656.5 ± .40	107.7 ±20.0	(27 ±3)	4.20 ± .78	
*661.86± .36		(27 ±3)		
674.35± .64	64.5 ±10.0	(27 ±3)	2.48 ± .39	
692.18± .32	42.4 ± 8.0	(27 ±3)	1.61 ± .30	
706.81± .37	33.4 ± 6.0	(27 ±3)	1.26 ± .23	
721.39± .43	102 ±20	(27 ±3)	3.80 ± .75	
747.06± .42	23.8 ± .4	(27 ±3)	.87 ± .02	
771				
790				
807				
822				
828				
848				
866				
889				
902				
931				
949				
956				
969				
996				

* Uncertain resonance.

Note - Scattering widths for resonances above 431.65 eV, maybe systematically low by about 30 percent.

Note - Single-level Breit-Wigner parameters.

$^{237}_{92}U$

(6.75 day)

THERMAL CROSS SECTIONS

σ_γ = 411±138 b
σ_f < 0.35 b
σ_s = 411±138 b

RESONANCE PROPERTIES

I_γ = 290 b

RESONANCE PARAMETERS

I^π = 1/2$^+$ S_n = 6143.6±3.5 keV

E_0 (eV)	$g_0\Gamma_f$ (b-eV)	E_0 (eV)	$g_0\Gamma_f$ (b-eV)	E_0 (eV)	$g_0\Gamma_f$ (b-eV)
46.2	132	93.7	12.4	160.2	6.9
52.4	4.7	98.0	6.6	169.1	9.1
57.3	6.6	103.9	1.9	175.3	18.7
60.3	3.9	112.4	8.3	184.9	12.6
67.5	10.1	119.9	11.3	192.4	42.9
70.0	6.8	129.5	2.4	200.9	5.3
73.8	131.0	131.0	45.1	207.7	64.1
81.1	41.0	138.8	9.1	212.4	6.8
82.7	5.8	143.0	8.2	216.7	25.0
87.3	7.9	145.4	9.3	235.0	100
88.4	46.7	149.9	6.3		
92.7	4.9	153.7	10.7		

THERMAL CROSS SECTIONS

σ_γ = 2.70±0.02 b
σ_s = 8.90±0.16
σ_a = 11.60±0.16
σ_{sp} = 1.98±0.03
a_{coh} = 8.50±0.06 fm

RESONANCE PROPERTIES

I_γ = 275±5 b
R' = 9.4±0.3 fm
<D> = 17.7±0.7 eV
S_0 = 1.1±0.1
S_1 = 1.7±0.3

RESONANCE PARAMETERS

$I^\pi = 0^+$ | ^{1}Nb = 99.27 | S_n = 9806.7±2.0 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
4.41±0.01		0.000111± 0.000002		1			3.5
6.67±0.02	27.5± 2.0	1.52 ± 0.02	1/2	0	26 ± 2	0.589 ±0.008	
10.25±0.02		0.00156 ± .00001	3/2	1			14
11.32±0.02		0.00035 ± .00006		1			2.8
16.3 ±0.04		0.000053± .00002		1			0.3
19.50±0.02		0.0014 ± 0.0007		1			4.8
20.90±0.10	34 ± 3	8.7 ± 0.5		0	25 ± 3	1.90 ±0.11	
36.80±0.07	57.0± 2.0	32.0 ± 1.0		0	25 ± 2	5.28 ±0.17	
45.19±0.07		0.00090 ± .00002		1			0.86
49.6 ±0.2		0.00068 ± .00023		1			0.58
57.9 ±0.3		0.00040 ± .00008		1			0.33
63.54±0.08		0.0057 ± 0.0015		1			3.4
66.15±0.15	48 ± 3	26.0 ± 1.5		0	22 ± 2	3.20 ±0.18	
80.74±0.07		2.0 ± 0.2		0		0.25 ±0.02	
83.57±0.08		0.006 ± 0.001		1			2.3
89.19±0.08		0.090 ± 0.010	(1/2)	1			31.4
93.2 ±0.5		0.0030 ± 0.0006		1			1.0
99.19±0.07		0.001 ± 0.001				0.0001 ±0.0001	
102.47±0.09	96 ± 3	70 ± 3		0	26 ± 2	6.91 ±0.30	
111.27±0.09		0.001 ± 0.001				0.000085± .0001	
116.85±0.11	52 ± 4	30 ± 4		0	22 ± 2	2.78 ±0.37	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
121.61±0.11		0.006 ± 0.003		1			1.4
124.30±0.12		0.014 ± 0.002		1			3.0
127.32±0.13		0.004 ± 0.002				0.00035 ± .00018	
145.58±0.15		0.84 ± 0.05		0		0.070 ±0.050	
152.42±0.17		0.037 ± 0.002		1			5.8
158.89±0.17		0.011 ± 0.002		1			1.6
160.65±0.18		0.005 ± 0.003				0.00039 ± .00023	
165.27±0.09	21 ± 5	3.2 ± 0.2		0	18 ± 5	0.25 ±0.02	
173.11± .21		0.033 ± 0.004		1			4.3
182.03±0.22		0.003 ± 0.002				0.0002 ±0.0001	
189.70±0.20		170 ± 10		0		12.3 ±0.7	
196.14±0.24		0.001 ± 0.001				0.00007 ± .00007	
198.57±0.24		0.003 ± 0.002				0.00002 ± .00001	
200.54±0.24		0.008 ± 0.003				0.0006 ±0.0002	
202.30±0.24		0.040 ± 0.02		1			
208.46±0.25	75 ± 6	53 ± 6		0	22 ± 2	3.7 ±0.4	
214.97±0.27		0.04 ± 0.02		1			3.8
237.27±0.16		29.0 ± 2.0		0		1.88 ±0.13	
242.65±0.17		0.15 ± 0.02		1			11.6
253.88±0.18		0.10 ± 0.03		1			7.3
255.37±0.19		0.06 ± 0.03		1			4.4
257.10±0.19		0.02 ± 0.01		1			1.4
263.95±0.19		0.23 ± 0.03	3/2	1			15.9
273.59±0.20	49 ± 2	26.0 ± 1.0		0	23 ± 1	1.57 ±0.06	
275.76±0.20		0.08 ± 0.06		1			5.1
282.29±0.21		0.06 ± 0.03		1			3.8
291.00±0.20	38 ± 4	16.0 ± 1.0		0	22 ± 3	0.94 ±0.06	
294.96±0.22		0.03 ± 0.02		1			1.8
311.18±0.25		1.0 ± 0.1		0		0.057 ±0.006	
337.19±0.27		0.05 ± 0.02		1			2.4
347.75±0.28	104 ± 3	81 ± 2		0	23 ± 2	4.34 ±0.11	
351.75±0.30		0.08 ± 0.03		1			3.6
354.66±0.30		0.03 ± 0.03		1			1.4
376.90±0.32		1.0 ± 0.2		0		0.052 ±0.01	
397.63±0.20	30 ± 4	6.0 ± 0.4		0	24 ± 4	0.30 ±0.02	
407.64±0.36		0.08 ± 0.03		1			2.9
410.20±0.25	40 ± 2	19.0 ± 1.0		0	21 ± 2	0.94 ±0.05	
434.00±0.40	31 ± 3	9.2 ± 1.0		0	22 ± 2	0.44 ±0.05	
439.60±0.40		0.20 ± 0.05		1			6.4
454.0 ±0.4		0.45 ± 0.05		0		0.021 ±0.002	
463.0 ±0.3	23 ± 6	5.0 ± 0.5		0	18 ± 6	0.23 ±0.02	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
477.0 ±0.4		3.4 ± 0.4		0		0.16 ±0.02	
485.4 ±0.4		0.03 ± 0.03				0.001 ±0.001	
486.2 ±0.4		0.50 ± 0.05		1			13.8
498.93±0.25		0.08 ± 0.04		1			2.1
518.28±0.25	74 ± 6	50 ± 5		0	24 ± 2	2.20 ±0.22	
523.21±0.26		0.27 ± 0.07		1			6.6
532.3 ±0.3		0.08 ± 0.04					
535.21±0.25	67 ± 3	44 ± 2		0	24 ± 2	1.90 ±0.09	
542.34±0.28		0.10 ± 0.03		1			2.2
551.0 ±0.3		0.087 ± 0.005					
556.00±0.28		0.7 ± 0.2		0		0.03 ±0.01	
580.0 ±0.3	62 ± 3	40 ± 2		0	24 ± 2	1.66 ±0.08	
584.7 ±0.3		0.15 ± 0.05					
592.1 ±0.3		0.05 ± 0.04				0.0021 ±0.0016	
594.9 ±0.3	107 ± 6	85 ± 5		0	23 ± 2	3.49 ±0.20	
606.1 ±0.3		0.25 ± 0.08		1			5.0
619.8 ±0.2	53 ± 3	30 ± 2		0	23 ± 2	1.21 ±0.08	
624.1 ±0.3		0.8 ± 0.1		1			15.1
628.4 ±0.4		5.4 ± 0.5		0		0.22 ±0.02	
661.0 ±0.3	150 ± 8	125 ± 7			25 ± 3	4.86 ±0.27	
668.4 ±0.3		0.25 ± 0.08		1			4.3
677.0 ±0.3		0.70 ± 0.20		1			11.6
693.0 ±0.3	65 ± 3	42 ± 2			23 ± 2	1.60 ±0.07	
708.0 ±0.3	45 ± 3	22.0 ± 2.0		0	23 ± 2	0.827 ±0.075	
712.4 ±0.3		0.25 ± 0.15		1			4.1
*721.0 ±0.3		1.3 ± 0.3		0		0.048 ±0.011	
729.4 ±0.4		0.70 ± 0.20		1			10.4
730.0 ±0.3		0.70 ± 0.20		1			10.4
732.3 ±0.3		1.3 ± 0.3		0		0.048 ±0.011	
743.1 ±0.4		0.4 ± 0.1		1			5.8
756.0 ±0.4		0.6 ± 0.2		1			8.5
765.0 ±0.3	24 ± 2	7 ± 1		0	17 ± 2	0.25 ±0.04	
779.1 ±0.3		1.8 ± 0.2		0		0.065 ±0.007	
790.9 ±0.3		6.2 ± 0.4		0	15 ±13	0.22 ±0.01	
808.2 ±0.4		0.40 ± 0.20		1			5.1
815.3 ±0.4		0.20 ± 0.10		1			2.5
821.6 ±0.4	84 ± 4	60 ± 3		0	24 ± 3	2.09 ±0.11	
832.4 ±0.4		0.25 ± 0.10		1			3.0
846.7 ±0.4		0.7 ± 0.2		1			8.3
851.0 ±0.4	80 ± 6	55 ± 5		0	25 ± 3	1.89 ±0.17	
856.2 ±0.4	105 ± 7	82 ± 7		0	23 ± 2	2.80 ±0.24	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
866.0 ±0.4		5.5 ± 0.6		0		0.19 ±0.02	
891.3 ±0.4		0.8 ± 0.2		1			8.9
905.0 ±0.4	73 ± 4	50 ± 3		0	23 ± 2	1.66 ±0.10	
909.5 ±0.4		1.3 ± 0.3		1			13.9
924.8 ±0.4		10 ± 1		0		0.33 ±0.03	
932.4 ±0.4		0.30 ± 0.20		1			3.0
936.9 ±0.4	164 ± 10	140 ± 10		0	24 ± 2	4.57 ±0.33	
940.1 ±0.4		0.3 ± 0.2		1			3.1
958.2 ±0.4	222 ± 10	200 ± 10		0	22 ± 2	6.46 ±0.32	
964.9 ±0.4		0.20 ± 0.10		1			2.0
976.8 ±0.4		0.6 ± 0.3		1			5.8
985.6 ±0.4		0.30 ± 0.20		1			2.9
991.8 ±0.4		370 ± 15		0		11.8 ±0.5	
1011.0 ±0.4		1.5 ± 0.6		0		0.047 ±0.019	
1014.4 ±0.4		1.6 ± 0.5		1			11.6
1023.0 ±0.4		9.0 ± 1.0		0		0.28 ±0.03	
1029.0 ±0.5		2.8 ± 0.7		0		0.087 ±0.022	
1033.0 ±0.5		1.0 ± 0.6		1			8.9
1054.0 ±0.5	115 ± 10	90 ± 10		0	25 ± 2	2.77 ±0.31	
1062.3 ±0.5		0.7 ± 0.3		1			6.0
1067.6 ±0.4		0.7 ± 0.3					
1071.0 ±0.5		0.3 ± 0.3		1			2.5
1081.1 ±0.5		1.0 ± 0.3					
1094.6 ±0.5		1.8 ± 0.5		1			14.6
1098.2 ±0.5	39 ± 4	17 ± 3		0	22 ± 2	0.51 ±0.09	
1102.5 ±0.5		1.5 ± 0.3		1			12.0
1108.7 ±0.5	54 ± 4	30 ± 3		0	24 ± 2	0.90 ±0.09	
1131.4 ±0.5		1.6 ± 0.4		0		0.048 ±0.012	
1140.0 ±0.5	244 ± 20	220 ± 20		0	24 ± 2	6.52 ±0.59	
1147.0 ±0.5		0.30 ± 0.20		1			2.3
1154.8 ±0.5		0.40 ± 0.20		1			3.0
1167.0 ±0.5	108 ± 6	85 ± 5		0	23 ± 2	2.49 ±0.15	
1177.0 ±0.5	87 ± 6	65 ± 5		0	22 ± 2	1.90 ±0.15	
1195.0 ±0.5	111 ± 6	90 ± 5		0	21 ± 2	2.60 ±0.15	
*1210.7 ±0.5		7.3 ± 0.7		0		0.21 ±0.02	
1217.9 ±0.5		0.40 ± 0.20		1			2.8
1237.9 ±0.5		0.40 ± 0.20		1			2.8
1245.0 ±0.5		260 ± 20		0	24 ± 2	7.37 ±0.57	
1256.5 ±0.5		0.20 ± 0.20		1			1.4
1267.0 ±0.6	45 ± 3	24 ± 2		0	21 ± 2	0.67 ±0.06	
1273.0 ±0.6	52 ± 3	28 ± 2		0	24 ± 2	0.78 ±0.06	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
1298.3 ±0.6		3.7 ± 0.8		0		0.10 ±0.02	
1317.0 ±0.6		4.0 ± 0.7		0		0.11 ±0.02	
1332.0 ±0.6		1.3 ± 0.2		0		0.036 ±0.006	
1363.4 ±0.6		1.1 ± 0.4		0		0.030 ±0.011	
1371.6 ±0.6		0.6 ± 0.4		1			3.5
1381.6 ±0.6		0.6 ± 0.4		1			3.5
1393.0 ±0.6	217 ± 10	190 ± 10		0	27 ± 3	5.09 ±0.27	
1405.0 ±0.3	95 ± 6	70 ± 6		0	25 ± 2	1.87 ±0.16	
1410.5 ±0.3		0.4 ± 0.3		1			2.3
1416.6 ±0.3		1.8 ± 0.5				0.048 ±0.013	
1419.5 ±0.3		9 ± 1		0		0.24 ±0.03	
1427.4 ±0.4	54 ± 4	29 ± 3		0	25 ± 3	0.77 ±0.08	
1443.7 ±0.4	38 ± 4	16 ± 2		0	22 ± 3	0.42 ±0.05	
1473.5 ±0.4	151 ± 10	125 ± 10		0	26 ± 3	3.93 ±0.26	
1522.5 ±0.4	267 ± 16	240 ± 15		0	27 ± 7	6.15 ±0.38	
1532.3 ±0.4		0.40 ± 0.40				0.010 ±0.010	
1546.0 ±0.4		2.4 ± 1.2				0.61 ±0.03	
1550.0 ±0.4		1.2 ± 0.4				0.031 ±0.010	
1565.4 ±0.4		5.4 ± 1.0		0		0.14 ±0.03	
1598.0 ±0.5	375 ± 25	355 ± 25		0	20 ± 4	8.88 ±0.62	
1622.6 ±0.5	104 ± 15	85 ± 15		0	19 ± 3	2.11 ±0.37	
1638.0 ±0.5	74 ± 6	55 ± 5		0	19 ± 3	1.36 ±0.12	
1646.1 ±0.5		1.0 ± 0.5		1			4.4
1662.0 ±0.5	194 ± 20	170 ± 20		0	24 ± 4	4.17 ±0.49	
1688.0 ±0.5	114 ± 9	95 ± 9		0	19 ± 3	2.31 ±0.22	
1709.0 ±0.5	111 ± 10	85 ± 8		0	26 ± 5	2.06 ±0.19	
1722.5 ±0.5	36 ± 6	15 ± 2		0	21 ± 6	0.36 ±0.05	
1744.5 ±0.5		1.8 ± 0.4				0.043 ±0.010	
1755.5 ±0.5	140 ± 15	115 ± 15		0	25 ± 4	2.75 ±0.36	
1782.6 ±0.5		670 ± 70		0		15.87 ±1.66	
1797.5 ±0.5		2.5 ± 0.7		0		0.059 ±0.017	
1808.4 ±0.5	32 ± 6	15 ± 2		0	17 ± 5	0.35 ±0.05	
1845.5 ±0.5	26 ± 5	11.0 ± 1.5		0	15 ± 5	0.26 ±0.03	
1868.0 ±0.5		3.9 ± 2.2				0.090 ±0.051	
1902.4 ±0.5	56 ± 6	37 ± 4		0	19 ± 4	0.85 ±0.09	
1912.6 ±0.4		0.5 ± 0.3		1			1.8
1916.5 ±0.5	44 ± 6	25 ± 3		0	19 ± 5	0.57 ±0.07	
1953.4 ±0.5		3.5 ± 0.5		0		0.079 ±0.011	
1968.6 ±0.5	695 ±100	670 ±100		0	25 ± 5	15.1 ±2.3	
1974.3 ±0.5		500 ± 40		0		11.25 ±0.90	
2022.8 ±0.5	220 ± 20	200 ± 20		0	20 ± 4	4.47 ±0.45	

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E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
2029.8 ±0.6	73 ± 7	55 ± 5		0	18 ± 5	1.22 ±0.11	
2070.9 ±0.6		0.32 ± 0.18				0.007 ±0.004	
2088.1 ±0.6	45 ± 6	23 ± 4		0	22 ± 4	0.50 ±0.09	
2095.9 ±0.6		18 ± 6		0		0.39 ±0.13	
2123.8 ±0.6		3.2 ± 1.4		0		0.069 ±0.030	
2144.6 ±0.6	81 ± 8	66 ± 6		0	15 ± 5	1.43 ±0.13	
2152.2 ±0.6	282 ± 22	250 ± 20		0	32 ± 8	5.39 ±0.43	
2175.2 ±0.6		1.5 ± 0.7		1			4.4
2186.0 ±0.6	629 ± 40	600 ± 40		0	29 ± 7	12.83 ±0.86	
2200.6 ±0.6	139 ± 11	113 ± 10		0	26 ± 5	2.41 ±0.21	
2235.1 ±0.6		4.7 ± 1.0				0.099 ±0.021	
2258.8 ±0.6		100 ± 10		0		2.10 ±0.21	
2265.9 ±0.7	240 ± 20	225 ± 20		0	20 ± 5	4.73 ±0.42	
2281.7 ±0.7	173 ± 20	155 ± 20		0	18 ± 5	3.25 ±0.42	
2288.9 ±0.7		0.9 ± 0.5		1			2.4
2314.5 ±0.7		20 ± 3		0		0.42 ±0.06	
2336.9 ±0.7		9 ± 1		0		0.19 ±0.02	
2352.8 ±0.7	75 ± 11	47 ± 10		0	28 ± 5	0.97 ±0.21	
2355.3 ±0.7	85 ± 11	61 ± 10		0	24 ± 5	1.26 ±0.21	
2391.4 ±0.7		28 ± 2		0		0.57 ±0.04	
2410.8 ±0.7		4.3 ± 0.6		0		0.088 ±0.012	
2425.7 ±0.7		145 ± 15		0		2.94 ±0.31	
2445.5 ±0.7		200 ± 15		0		4.04 ±0.30	
2454.8 ±0.7		17 ± 2		0		0.34 ±0.04	
2488.4 ±0.7		95 ± 9		0		1.90 ±0.18	
2520.7 ±0.8		11 ± 3		0		0.22 ±0.06	
2547.2 ±0.8		600 ±100		0		11.89 ±1.98	
2558.5 ±0.8		230 ± 30		0		4.55 ±0.59	
2579.9 ±0.8		370 ± 30		0		7.28 ±0.59	
2596.5 ±0.8		760 ± 60		0			
2619.1 ±0.8		48 ± 5		0		0.94 ±0.10	
2631.7 ±0.8		2.1 ± 1.0		0		0.041 ±0.020	
2671.3 ±0.9		270 ± 20		0		5.22 ±0.39	
2695.6 ±0.9		23 ± 4		0		0.44 ±0.08	
2716.5 ±0.9		150 ± 20		0		2.88 ±0.38	
2728.4 ±0.9		2.1 ± 2.1				0.040 ±0.040	
2749.7 ±0.9		42 ± 4		0		0.80 ±0.80	
2761.6 ±0.9		20 ± 3		0		0.38 ±0.06	
2786.0 ±0.9		12 ± 3		0		0.23 ±0.06	
2798.1 ±0.8		2.0 ± 1.0				0.038 ±0.019	
2805.4 ±0.9		4.2 ± 2.1		0		0.079 ±0.040	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
2828.4 ±0.9		18 ± 4		0		0.34 ±0.08	
2864.1 ±0.9		200 ± 30		0		3.74 ±0.56	
2881.8 ±0.9		550 ± 40		0		10.25 ±0.75	
2896.3 ±0.9		13 ± 6		0		0.24 ±0.11	
2907.1 ±0.8		1.5 ± 1.5		1			2.9
2922.1 ±0.8		6.0 ± 1.0		1			7.5
2933.9 ±1.0		32 ± 4		0		0.59 ±0.07	
2955.7 ±1.0		20 ± 4		0		0.37 ±0.07	
2965.8 ±1.0		3.4 ± 1.6		0		0.062 ±0.029	
2986.3 ±1.0		5.5 ± 2.1		0		0.10 ±0.04	
3002.4 ±1.0		125 ± 15		0		2.28 ±0.27	
3015.1 ±1.0		1.7 ± 1.1		0		0.031 ±0.020	
3027.8 ±1.0		140 ± 15		0		2.54 ±0.27	
3042.5 ±1.0		2.2 ± 1.1		0		0.040 ±0.020	
3058.1 ±1.0		30 ± 2		0		0.54 ±0.04	
3108.8 ±1.0		210 ± 15		0		3.77 ±0.27	
3132.6 ±1.0		7.0 ± 1.0		0		0.13 ±0.02	
3148.1 ±1.1		90 ± 20		0		1.60 ±0.36	
3168.5 ±1.1		8 ± 3		0		0.14 ±0.05	
3177.8 ±1.1		80 ± 10		0		1.42 ±0.18	
3188.1 ±1.1		90 ± 10		0		1.59 ±0.18	
3204.9 ±1.1		80 ± 10		0		1.41 ±0.18	
3217.0 ±1.1		8 ± 4				0.14 ±0.07	
3224.9 ±1.1		28 ± 8		0		0.49 ±0.14	
3248.1 ±1.1		25 ± 4		0		0.44 ±0.07	
3272.0 ±1.1		4.0 ± 2.0		0		0.070 ±0.035	
3278.2 ±1.1		250 ± 30		0		4.37 ±0.52	
3295.2 ±1.1		4.6 ± 1.7		0		0.08 ±0.03	
3310.3 ±1.1		135 ± 15		0		2.35 ±0.26	
3320.2 ±1.2		120 ± 15		0		2.08 ±0.26	
3332.9 ±1.2		80 ± 15		0		1.39 ±0.26	
3355.1 ±1.2		120 ± 15		0		2.07 ±0.26	
3388.3 ±1.2		14.5 ± 4.1		0		0.249 ±0.070	
3407.9 ±1.2		200 ± 20		0		3.43 ±0.34	
3417.7 ±1.2		4.1 ± 2.9				0.070 ±0.050	
3435.3 ±1.2		360 ± 20		0		6.14 ±0.34	
3456.3 ±1.3		610 ± 50		0		10.38 ±0.85	
3484.3 ±1.3		102 ± 10		0		1.73 ±0.17	
3493.3 ±1.3		9.6 ± 2.0		0		0.16 ±0.03	
3526.4 ±1.3		4.0 ± 3.0				0.067 ±0.051	
3560.5 ±1.3		235 ± 20				3.94 ±0.34	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
3572.7 ±1.3		370 ± 40		0		6.19 ±0.67	
3593.3 ±1.3		48 ± 5		0		0.80 ±0.08	
3621.8 ±1.3		9.0 ± 4.2				0.15 ±0.07	
3628.3 ±1.4		480 ± 50		0		7.97 ±0.83	
3671.8 ±1.4		7.9 ± 4.9		0		0.13 ±0.08	
3692.0 ±1.4		360 ± 40		0		5.92 ±0.66	
3715.5 ±1.4		86 ± 25		0		1.41 ±0.41	
3733.0 ±1.4		200 ± 20		0		3.27 ±0.33	
3763.6 ±1.5		85 ± 10		0		1.39 ±0.16	
3780.8 ±1.5		400 ± 50		0		6.51 ±0.81	
3830.3 ±1.5		9 ± 3				0.15 ±0.05	
3856.4 ±1.5		520 ± 30		0		8.37 ±0.48	
3872.1 ±1.5		185 ± 15		0		2.97 ±0.24	
3901.3 ±1.5		300 ± 30		0		4.80 ±0.48	
3913.4 ±1.5		100 ± 10		0		1.60 ±0.16	
3939.0 ±1.5		170 ± 50		0			
3953.9 ±1.5		120 ± 15		0		1.91 ±0.24	
4040.4 ±1.5		63 ± 10		0		0.99 ±0.16	
4063.0 ±1.5		20 ± 8		0		0.31 ±0.13	
4089.4 ±1.6		87 ± 10		0		1.36 ±0.16	
4124.0 ±1.6		33 ± 8		0		0.51 ±0.13	
4167.8 ±1.6		160 ± 20		0		2.48 ±0.31	
4178.2 ±1.7		35 ± 9		0		0.54 ±0.14	
4209.4 ±1.7		47 ± 9		0		0.72 ±0.14	
4257.7 ±1.7		23 ± 7		0		0.35 ±0.11	
4299.0 ±1.7		136 ± 15		0		2.07 ±0.23	
4323.9 ±1.7		82 ± 20		0		1.25 ±0.30	
4333.2 ±1.8		3.3 ± 2.0				0.050 ±0.030	
4375.6 ±1.6		145 ± 15		0		2.19 ±0.23	
4435.0 ±1.8		105 ± 10		0		1.58 ±0.15	
4487.2 ±1.8		4 ± 2				0.06 ±0.03	
4510.3 ±1.8		550 ± 50		0		8.19 ±0.75	
4542.0 ±1.8		87 ± 12		0		1.29 ±0.18	
4567.2 ±1.8		38 ± 8		0		1.78 ±0.37	
4592.7 ±1.9		24 ± 7		0		0.35 ±0.10	
4615.9 ±1.9		10 ± 6				0.15 ±0.09	
4630.4 ±1.9		20 ± 7				0.29 ±0.10	
4661.7 ±1.9		155 ± 40				2.27 ±0.59	
4695.0 ±1.9		13 ± 6				0.19 ±0.09	
4705.5 ±1.9		400 ± 60				5.83 ±0.87	
4725.9 ±1.9		17 ± 6				0.25 ±0.08	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
4764.0 ±2.0		17 ± 6				0.25 ±0.09	
4784.0 ±2.0		8 ± 4				0.12 ±0.06	
4798.0 ±2.0		165 ± 35				2.38 ±0.50	
4835.0 ±2.0		10 ± 5				0.14 ±0.07	
4859.0 ±2.0		200 ± 30				2.87 ±0.43	
4898.0 ±2.0		90 ± 15				1.29 ±0.21	
4908.0 ±2.0		105 ± 15				1.50 ±0.15	
4921.0 ±2.0		160 ± 20				2.28 ±0.29	
4955.0 ±2.0		145 ± 20				2.06 ±0.28	
4972.0 ±2.0		50 ± 15				0.71 ±0.21	
5005.0 ±2.0		30 ± 10				0.42 ±0.14	
5035 ±3		299 ± 40				4.21 ±0.56	
5066 ±3		51 ± 15				0.71 ±0.21	
5118 ±3		156 ± 16				2.18 ±0.22	
5259 ±3		185 ± 55				2.55 ±0.76	
5310 ±3		9.3 ± 8.0				0.13 ±0.11	
5346 ±3		160 ± 30				2.19 ±0.41	
5352 ±4		160 ± 30				2.19 ±0.41	
5419 ±4		56 ± 10				0.75 ±0.14	
5485 ±4		550 ± 90				7.42 ±1.21	
5530 ±4		30 ± 6				0.40 ±0.08	
5551 ±4		133 ± 30				1.78 ±0.40	
5580 ±4		38 ± 16				0.51 ±0.21	
5637 ±4		465 ± 55				6.19 ±0.73	
5650 ±4		485 ± 50				6.44 ±0.66	
5675 ±5		222 ± 60				2.94 ±0.80	
5682 ±5		222 ± 60				2.94 ±0.80	
5756 ±5		129 ± 15				1.70 ±0.20	

* Subthreshold fission widths of the 721.0 and 1210.7 eV resonances are 1.2 ± .3 and .12 ± .03 meV respectively for an assumed radiation width of 23 meV

Note - Single-level Breit-Wigner parameters.

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(23.5 min)

THERMAL CROSS SECTIONS

σ_γ = 22±5 b

σ_f = 14±3 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
U^{230}	σ_f	CC-3699,6(46)	Bentley
U^{231}	σ_f	CC-3699,6(46)	Bentley
U^{232}	$\sigma_s \sigma_\gamma$	71CANT,161(71)	Cabell
U^{232}	ν_p	NP/A,145,1(70)	Jaffey
U^{232}	σ_t	NSE,29,415(67)	Simpson
U^{232}	mass spectrometry,RI	NSE,21,257(65)	Halperin
U^{232}	pile osci.	CEA-R-2486(64)	Vidal
U^{232}	σ_t	ANS,6,44(63)+	Berreth
U^{232}	σ_f	PRIVATE COMM.(61)	Hulet
U^{232}	ν_p	ANL-6600,124(61)+	Jaffey
U^{232}	σ_f chemical separation	PR,89,320(53)	Elson
U^{232}	σ_f	TID-5223,2,590(52)	VanWinkle
U^{232}	σ_f	CS-3471,2(46)	Seaborg
U^{233}	σ_γ	JIN,33,3972(71)	Cabell
U^{233}	delayed neutrons	NSE,44,173(71)	Conant
U^{233}	$I_\gamma I_f$	NSE,44,180(71)	Eiland
U^{233}	η reactivity	NSE,44,266(71)	Magnuson
U^{233}	ν_p	JNE,25,321(71)	Walsh
U^{233}	I_f	AE,28,359(70)	Bak
U^{233}	ν_p	THES15(70)	Boldeman
U^{233}	$\sigma_f \leq$	70HELSINKI,1,287(70)	Lounsbury
U^{233}	$\sigma_f \eta$ pile osci.	70HELSINKI,1,295(70)	Vidal
U^{233}	σ_f	JNE,22,477(68)	Keith
U^{233}	η analysis	NSE,34,263(68)	Staub
U^{233}	$I_\gamma I_f$	NSE,29,1(67)	Conway
U^{233}	ν_{sp}	AAEC/E-172(67)	Boldeman
U^{233}	α	66PARIS,2,3(66)	Cabell
U^{233}	ν	PR,152,1046(66)	Fultz
U^{233}	η	IDO-17083(66)	Smith
U^{233}	η	66WASH,2,919(66)	Smith
U^{233}	ν	65SALZBURG,2,25(65)	Colvin
U^{233}	I_f	NSE,22,121(65)	Hardy
U^{233}	ν_p	NP,66,149(65)	Mather
U^{233}	I_f	NST,2,52(65)	Yasuno
U^{233}	σ_f	CRRP-1183(64)	Bigham
U^{233}	α mass spectrometry	AECL-2148(64)	Okazaki
U^{233}	$I_\gamma I_f$	ANS,7,272(64)	Esch
U^{233}	ν_p	NP,48,433(63)	Hopkins
U^{233}	α mass spectrometry	JNE,16,195(62)	Cabell
U^{233}	η reactivity	NSE,12,359(62)	Gwin
U^{233}	η critical concentration	NSE,12,364(62)	Gwin
U^{233}	mass spectrometry,RI	ORNL-3176,1(61)	Halperin
U^{233}	σ_t	NSE,8,112(60)	Block
U^{233}	η Mn bath	NSE,8,210(60)	Macklin
U^{233}	σ_t	60VIENNA,203(60)	Safford
U^{233}	σ_t	PR,118,799(60)	Safford

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
U^{233}	σ_t	NSE,7,187(60)	Simpson
U^{233}	ν_p	NSE,5,49(59)	DeSaussure
U^{233}	η pile osci.	NSE,5,225(59)	Muehlhause
U^{233}	σ_f	AERE-R-2998,17(59)	Raffle
U^{233}	ratio	PR,113,1589(59)	Ragier
U^{233}	σ_f	S8GENEVA,16,125(58)	Bigham
U^{233}	$\bar{\eta}$	S8GENEVA,16,233(58)	Campbell
U^{233}	α cross section ratio	JNE,6,285(58)	Cocking
U^{233}	ν_p	S8GENEVA,16,121(58)	Colvin
U^{233}	η reactivity	NSE,3,758(58)	Gaerttner
U^{233}	η	AERE-R/R-2457(58)	Rose
U^{233}	pile osci.	JNE,4,409(57)	Green
U^{233}	η pile osci.	AERE-NP/R-2140(57)-	Littler
U^{233}	η analysis	NSE,2,253(57)	Francis
U^{233}	delayed neutron	PR,107,1044(57)	Keepin
U^{233}	ν	PR,101,1012(56)	Diven
U^{233}	delayed neutrons	JNE,6,1(57)	Keepin
U^{233}	σ_t	JNE,3,28(56)	Pattenden
U^{233}	ν_p	JNE,2,247(56)	Sanders
U^{233}	η critical concentration	NSE,1,20(56)	Thomas
U^{233}	η reactivity	S5GENEVA,4,301(55)	Alichanov
U^{233}	σ_f	S5GENEVA,4,235(55)	Auclair
U^{233}	σ_f	CR,240,2306(55)	Auclair
U^{233}	σ_f	JNE,1,286(55)	Popovic
U^{233}	ν	S5GENEVA,4,301(55)	Alichanov
U^{233}	η	S5GENEVA,4,34(55)	Rose
U^{233}	ν	S5GENEVA,4,295(55)	Spivak
U^{233}	ν_p	S5MOSCOW,131(55)	Kalashnikova
U^{233}	ν_p	S5MOSCOW,123(55)	Kalashnikova
U^{233}	destruction	S5GENEVA,4,230(55)	Kukavadse
U^{233}	mass spectrometry	S5GENEVA,4,230(55)	Kukavadse
U^{233}	α mass spectrometry	S5GENEVA,4,230(55)	Kukavadse
U^{233}	σ_t	S5GENEVA,4,210(55)	Lynn
U^{233}	η reactivity	KAPL-1464(55)	McMillan
U^{233}	ν_p	KAPL-1464(55)	McMillan
U^{233}	σ_t	S5GENEVA,4,224(55)	Nikitin
U^{233}	ν	S5GENEVA,4,295(55)	Spivak
U^{233}	η neutron density	S5GENEVA,4,295(55)	Spivak
U^{233}	absorption,U233/B	S5GENEVA,4,295(55)	Spivak
U^{233}	σ_f	CRGP-458(51)	Tunnicliffe
U^{233}	α mass spectrometry	ANL-4515,15(50)	Inghram
U^{233}	σ_f	ANL-4515,15(50)	Inghram
U^{233}	η pile osci.	CRP-378(48)	Cruikshank
U^{233}	η pile osci.	CF-3651(46)	Zinn
U^{233}	σ_f	CF-3651(46)	Zinn
U^{234}	mass spectrometry	AERE-R-6761(71)	Cabell
U^{234}	σ_γ	70HELSINKI,1,287(70)	Lounsbury
U^{234}	σ_t	NSE,8,112(60)	Block

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
U^{234}	pile osci.	58GENEVA,16,64(58)	Halperin
U^{234}	σ_c	JNE,6,181(58)	McCallum
U^{234}	depletion	AECL-447,33(57)	Hurst
U^{234}	mass spectrometry	55GENEVA,4,105(55)	Inghram
U^{234}	pile osci.	ORNL-CF-52-4-15(52)	Pomerance
U^{234}	pile osci.	ORNL-CF51-12-151(51)	Pomerance
U^{234}	mass spectrometry	ANL-4515,15(50)	Inghram
U^{234}	σ_f	ORNL-51(48)	Shapiro
U^{235}	σ_f	PRIVATE COMM.(72)	Borcea
U^{235}	isomer production	YF,14,685(71)	Belov
U^{235}	delayed neutrons	NSE,44,173(71)	Conant
U^{235}	$I_a I_\gamma$	NSE,44,180(71)	Eiland
U^{235}	η reactivity	NSE,44,286(71)	Magnusen
U^{235}	I_f	AE,28,359(70)	Bak
U^{235}	ν_p	THESIS(70)	Boldeman
U^{235}	$\bar{\sigma}_s$	70HELSINKI,1,461(70)	Ceulemans
U^{235}	σ_f	70HELSINKI,1,117(70)	Deruytter
U^{235}	$\alpha\sigma_f$	70HELSINKI,1,287(70)	Lounsbury
U^{235}	$\sigma_a\sigma_f I_a$ production rate	68WASH,2,1271(68)	Henneley
U^{235}	σ_f	JNE,22,477(68)	Keith
U^{235}	η analysis	NSE,34,263(68)	Staub
U^{235}	ν_p	AAEC/E-172(67)	Boldeman
U^{235}	$I_\gamma I_f$	NSE,29,1(67)	Conway
U^{235}	$\bar{\sigma}_s$	PRIVATE COMM.(67)	Poortmans
U^{235}	α	66PARIS,2,3(66)	Cabell
U^{235}	ν	66PARIS,1,307(66)	Colvin
U^{235}	ν	ANL-7210,21(66)	DeVolpi
U^{235}	αI_γ	66PARIS,2,17(66)	Durham
U^{235}	ν_{sp}	JNE,20,549(66)	Fieldhouse
U^{235}	ν	PR,152,1046(66)	Fultz
U^{235}	I_f	NUK,8,1(66)	Hellstrand
U^{235}	$\eta\alpha$	66WASH,2,919(66)	Smith
U^{235}	η	IDO-17083(66)	Smith
U^{235}	σ_f	65SALZBURG,1,255(65)	Fraysse
U^{235}	I_f	AE-181(65)	Hellstrand
U^{235}	σ_f	CRRP-1183(64)	Bigham
U^{235}	ν_p	PRIVATE COMM.(64)	Colvin
U^{235}	σ_f	64GENEVA,2,366(64)-	Maslin
U^{235}	ν_p	PR/B,133,1403(64)	Mather
U^{235}	α mass spectrometry	AECL-1965(64)	Okazaki
U^{235}	σ_f	DP-817(63)	Baumann
U^{235}	RI	PRIVATE COMM.(63)	Bigham
U^{235}	ν_p	NP,48,433(63)	Hopkins
U^{235}	diffraction	PRS/A,274,122(63)	Willis
U^{235}	α mass spectrometry	JIN,24,1493(62)	Cabell
U^{235}	$\sigma_t\bar{\sigma}_s$	AE,13,368(62)	Gerasitov
U^{235}	η critical concentration	NSE,12,364(62)	Gwin
U^{235}	α mass spectrometry	PR-P-53,6(62)	Hanna

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
U^{235}	η/ν	NEU,TOF,METH,131(61)	Brooks
U^{235}	σ_f	JNE,15,165(61)	Deruytter
U^{235}	σ_f	NSE,9,341(61)	Hardy
U^{235}	σ_t	NSE,11,312(61)	Saplakoglu
U^{235}	σ_t	NSE,8,112(60)	Block
U^{235}	η Mn bath activation	NSE,8,210(60)	Macklin
U^{235}	σ_t	60VIENNA,203(60)	Safford
U^{235}	σ_t	NSE,7,187(60)	Simpson
U^{235}	$\bar{\sigma}_s$ analysis	PR,118,724(60)	Vogt
U^{235}	η pile osci.	NSE,5,225(59)	Muehlhause
U^{235}	σ_f	AERE-R-2998,9(59)	Raffle
U^{235}	$\sigma_t\sigma_f$ ratio	PR,113,1285(59)	Safford
U^{235}	$\sigma_t\bar{\sigma}_s$	NSE,6,433(59)	Safford
U^{235}	$\sigma_t\sigma_f$	PR,113,1285(59)	Safford
U^{235}	$\sigma_t\bar{\sigma}_s$	NUC,17,(11),134(59)	Safford
U^{235}	σ_t	NSE,6,433(59)	Safford
U^{235}	σ_f	58GENEVA,16,125(58)	Bigham
U^{235}	I_f	58GENEVA,16,233(58)	Campbell
U^{235}	$\sigma_t\sigma_f$ ratio	JNE,6,285(58)	Cocking
U^{235}	ν_p	58GENEVA,16,121(58)	Colvin
U^{235}	α mass spectrometry	58GENEVA,16,83(58)	Craig
U^{235}	$\bar{\sigma}_s$	PR,109,1641(58)	Foote
U^{235}	ν_p	AERE-R/R-2212(58)	Kenward
U^{235}	η	AERE-R/R-2457(58)	Rose
U^{235}	σ_f	58GENEVA,16,103(58)	Saplakoglu
U^{235}	$\bar{\sigma}_s$ analysis	PR,112,203(58)	Vogt
U^{235}	σ_t	AERE-NP/R-2104(57)	Egelstaff
U^{235}	delayed neutrons	JNE,6,1(57)	Keepin
U^{235}	delayed neutrons	PR,107,1044(57)	Keepin
U^{235}	σ_t	HW-33384,33(57)	Leonard
U^{235}	η pile osci.	AERE-NP/R-2140(57)-	Littler
U^{235}	σ_f	HW-47012,50(56)	Friesen
U^{235}	σ_f	HW-44525,34(56)	Friesen
U^{235}	σ_f	BAP,1,249(56)	Friesen
U^{235}	η reactivity coefficient	55GENEVA,4,301(55)	Alichanov
U^{235}	σ_f	AECD-4167(55)	Clayton
U^{235}	σ_t	JNE,1,92(55)	Egelstaff
U^{235}	σ_t	55GENEVA,4,210(55)-	Egelstaff
U^{235}	η pile osci.	55GENEVA,4,307(55)	Egelstaff
U^{235}	ν_p	55MOSCOW,131(55)	Kalashnikova
U^{235}	α mass spectrometry	55GENEVA,4,315(55)	Kanne
U^{235}	σ_f	55GENEVA,4,210(55)	Lynn
U^{235}	$\bar{\sigma}_s$	55GENEVA,4,199(55)-	Melkonian
U^{235}	σ_t	55GENEVA,4,224(55)	Nikitin
U^{235}	absorption	55GENEVA,4,295(55)	Spivak
U^{235}	η neutron density	55GENEVA,4,295(55)	Spivak
U^{235}	α mass spectrometry	TID-2019,405(55)	Tingey
U^{235}	σ_t	JNE,1,92(54)	Egelstaff
U^{235}	σ_t	PR,94,1088(54)	Palevsky
U^{235}	σ_t	CU-115(53)	Melkonian

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Isotope	Measurement	Reference	Author
U^{235}	$\bar{\sigma}_s$	ANL-4680,5(51)	Hibdon
U^{235}	RI	LA-512(46)	Williams
U^{235}	α mass spectrometry	LA-512(46)	Williams
U^{235}	η pile osci.	CF-3651(46)	Zinn
U^{235}	$\eta\nu_p$	LA-102(44)	Snyder
U^{236}	mass spectrometry	AERE-R-6761(71)	Cabell
U^{236}	ν_{sp}	JNE,25,331(71)	Conde
U^{236}	σ_γ	NP/A,141,577(70)	Carlson
U^{236}	RI activation	GAP,14,497(69)	Schuman
U^{236}	reduction rate	68WASH,2,1271(68)	Henneley
U^{236}	activation	NSE,32,265(68)	Baumann
U^{236}	activation	PRIVATE COMM.(62)	Berreth
U^{236}	activation	JNE,7,81(58)	Cabell
U^{236}	activation	58GENEVA,16,64(58)	Halperin
U^{236}	activation	NSE,3,395(58)	Halperin
U^{236}	σ_t	JNE,6,181(58)	McCallum
U^{236}	activation	JPR,17,564(56)	Charon
U^{236}	activation	AE,1,(5),130(56)	Efimov
U^{236}	activation	55GENEVA,4,235(55)	Auclair
U^{236}	activation	ANL-4873,9(52)	Huizenga
U^{236}	pile osci.	ORNL-CF51-12-151(51)	Pomerance
U^{237}	production rates	68WASH,2,1271(68)	Henneley
U^{237}	σ_f	PRIVATE COMM.(68)	Barr
U^{237}	σ_a	NSE,31,149(68)	Cornman
U^{237}	chemical separation	ANS,10,230(67)	Cornman
U^{237}	mass spectrometry	ORNL-3994,1(66)	Halperin
U^{237}	σ_f	LA-1669(55)	Cowan
U^{238}	I_γ activation	JIN,34,2699(72)	Steinnes
U^{238}	ν_{sp}	JNE,25,331(71)	Conde
U^{238}	activation	JNE,23,705(69)	Hunt
U^{238}	activation	PRIVATE COMM.(68)	Bigham
U^{238}	RI,activation	ANS,7,27(64)	Baumann
U^{238}	ν_{sp}	JNE,15,213(63)	Asplund-Nilsson
U^{238}	diffraction	PRS/A,274,122(63)	Willis
U^{238}	RI,activation	NSE,14,358(62)	Hardy
U^{238}	diffraction	ACR,15,351(62)	Roof
U^{238}	ν_{sp}	JPR,21,617(60)	Leroy
U^{238}	RI,absorption	JNE,12,32(60)	Tattersall
U^{238}	ν_{sp}	ZET,37,406(59)	Kuzminov
U^{238}	mass spectrometer	NSE,3,395(58)	Halperin
U^{238}	RI,absorption	AE,3,507(57)	Klimentov
U^{238}	RI,activation	JNE,2,243(56)	Macklin
U^{238}	σ_t ratio	NRDC-84,9(55)-	Cocking

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
U^{238}	RI,activation	JNE,1,234(55)	Crocker
U^{238}	σ_t	JNE,1,92(55)	Egelstaff
U^{238}	σ_t	NRDC-84,9(55)	Egelstaff
U^{238}	σ_t	55GENEVA,4,147(55)-	Palevsky
U^{238}	pile osci.	JNE,1,319(55)	Small
U^{238}	pile osci.	ANL-5032,7(53)	Harris
U^{238}	ν_{sp}	PR,86,21(52)	Segre
U^{238}	$\bar{\sigma}_s$	ANL-4680,5(51)	Hibdon
U^{238}	oscillator	ORNL-CF51-12-151(51)	Pomerance
U^{238}	reactivity	CP-2079(44)	Anderson
U^{238}	activation	MC-70(44)	Grummitt
U^{238}	activation	CP-2376(44)	Seren
U^{239}	σ_f	PRIVATE COMM.(56)	Crane
U^{239}	σ_f	NSE,2,33(57)	Fields
U^{239}	activation	ANL-4667(51)	Studier

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Isotope	Measurement	Energy Range (eV)	Reference	Author
U^{232}	σ_f	-.6-74.24	NP/A,112,329(68)	Auchampaugh
U^{232}	σ_f		BAP,13,1409(68)+	Farrell
U^{232}	σ_t	-.6-27.75	NSE,29,415(67)	Simpson
U^{232}	σ_f	5.93-258.	NP,55,517(64)	James
U^{232}	σ_t	5.95-27.65	ANS,6,44(63)	Berreth
U^{232}	σ_t	5.95-27.65	IDO-16917,14(63)	Berreth
U^{233}	σ_f	6.82-52.1	NSE,51,130(73)+	Blons
U^{233}	σ_f	1.55-29.54	PRIVATE COMM.(72)	Felvinci
U^{233}	σ_f	1.55-29.54	71KNOX,2,855(71)	Felvinci
U^{233}	σ_t	1.79-20.6	YF,13,457(71)	Ryabov
U^{233}	$\bar{\sigma}_s$	6.8-12.4	NP/A,164,34(71)	Simpson
U^{233}	σ_f	-2.79-64.77	70HELSINKI,1,419(70)	Cao
U^{233}	$\sigma_\gamma\sigma_f$	-2.81-64.30	70HELSINK,2,1757(70)	DeSaussure
U^{233}	σ_t	2.80-52.15	70HELSINKI,1,387(70)	Kolar
U^{233}	σ_t	1.79-20.6	JINR-P3-4992(70)	Ryabov
U^{233}	σ_γ	4.8-16.3	PRIVATE COMM.(69)	Felvinci
U^{233}	$\sigma_f\sigma_\gamma$	20.58-62.72	PR,166,1178(68)	Bergen
U^{233}	$\bar{\sigma}_s$	1.59-30.76	PR,174,1413(68)	Sauter
U^{233}	analysis	0.17-61.3	68WASH,1,615(68)	Schneider
U^{233}	analysis	-0.590-10.37	AUJ,20,617(67)	Musgrove
U^{233}	σ_f	1.823-29.54	65SALZBURG,1,245(65)	Nifenecker
U^{233}	σ_f	1.785-5903	JPR,24,254(64)	Nifenecker
U^{233}	σ_f	1.799-38.05	JPR,25,877(64)	Nifenecker
U^{233}	σ_f	1.78-55	JPR,24,254(64)	Nifenecker
U^{233}	σ_f	1.799-59.3	JPR,24,254(64)	Nifenecker
U^{233}	analysis	-0.5-2.29	AE,11,408(62)	Gordeev

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
U^{233}	$\sigma_t\sigma_f$	0.150-10.47	PR,118,714(60)	Moore
U^{233}	$\sigma_t\sigma_f$	0.150-10.47	PR,118,718(60)	Moore
U^{233}	$\sigma_t\sigma_f$	0.150-10.476	PR,118,718(60)	Moore
U^{233}	$\sigma_t\sigma_f$	0.150-10.476	PR,118,714(60)	Moore
U^{233}	σ_t	-1.0-25.48	60KINGSTON,882(60)	Pattenden
U^{233}	$\sigma_t\sigma_f$ mla	0.10-6.8	PR,118,724(60)	Vogt
U^{233}	$\sigma_t\sigma_f$ anal.	0.10-6.77	PR,118,724(60)	Vogt
U^{233}	σ_f	1.47-19.0	AE,5,69(58)	Vladimirskii
U^{233}	σ_f	1.77-3.60	JNE,6,114(57)	Sanders
U^{233}	σ_t	6.80-58.0	AE,2,129(57)	Sokolovskii
U^{233}	σ_f	-5.0-10.47	BAP,1,327(56)	Moore
U^{233}	σ_f	-5.0-4.7	BAP,1,327(56)	Moore
U^{233}	σ_t	1.78-11	JNE,3,28(56)	Pattenden
U^{233}	σ_f	1.82-16	55GENEVA,4,216(55)	Adamchuk
U^{233}	σ_f	1.82-10.7	55GENEVA,4,216(55)	Adamchuk
U^{233}	$\sigma_f\sigma_t$	1.45-12.2	55MOSCOW,81(55)	Nikitin
U^{233}	σ_t	1.775-98.1	55GENEVA,4,210(55)	Lynn
U^{233}	σ_t	3.21-19.0	PRIVATE COMM.(55)	Pilcher
U^{233}	σ_t	3.21-19.0	PRIVATE COMM.(55)	Pilcher
U^{233}	σ_t	1.785-10.4	PR,100,1249(55)+	Sailor
U^{233}	σ_t	1.785-9.25	PR,100,1249(55)+	Sailor
U^{234}	$\bar{\sigma}_s$	5.19	NP/A,164,34(71)	Simpson
U^{234}	σ_t	5.19	JINR-P3-4992(70)	Ryabov
U^{234}	σ_t	5.19-817.6	NP/A,139,471(69)	James
U^{234}	σ_f	5.19-13939.	NP/A,118,313(68)	James
U^{234}	σ_f	5.20	BAP,6,8(61)	Leonard
U^{234}	σ_f	5.20	HW-64866,4(61)	Odegaarden
U^{234}	σ_t	5.20-369	PR,109,471(58)	Harvey
U^{234}	σ_t	-2.0-5.19	JNE,6,181(58)	McCallum
U^{234}	σ_t	5.18	AE,2,129(57)	Sokolovskii
U^{235}	σ_γ (spectra)	2.04-41.9	NP/A,203,145(73)	Corvi
U^{235}	multiplicity	8.79-39.4	PRIVATE COMM.(73)	Corvi
U^{235}	$\sigma_f\sigma_\gamma$	-1.97-60.9	PR/C,7,2018(73)	DeSaussure
U^{235}	polarization	0.29-14.0	PRIVATE COMM.(73)	Reddingius
U^{235}	$\sigma_t\sigma_f$ polar.	1.13-56.6	PRIVATE COMM.(73)	Keyworth
U^{235}	σ_f	6.82-52.1	PRIVATE COMM.(72)	Blons
U^{235}	multiplicity	2.04-41.90	JP,33,20(72)	Corvi
U^{235}	multiplicity	0.29-26.48	COO-3058,29(72)	Reed
U^{235}		6.39-32.05	NP/A,194,657(72)	Wagnemans
U^{235}	σ_f	1.13-45.04	PRIVATE COMM.(71)	Felvinci
U^{235}	σ_γ(spectra)	2.04-32.1	BAP,16,1181(71)+	Graves
U^{235}	$\bar{\sigma}_s$	8.79-19.29	NP/A,164,34(71)	Simpson
U^{235}	σ_f	9.28-147.35	71KNOX.,2,829(71)	Blons
U^{235}	analysis	2.775-49.42	71KNOX.,1,410(71)	Krebs
U^{235}	analysis	-1.49-29.64	ANCR-1016,292(71)	Smith
U^{235}		19.3-61.1	PR/C,2,615(70)	Cowan

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Isotope	Measurement	Energy Range (eV)	Reference	Author
U^{235}	σ_γ(spectra)	2.04-6.39	PRL,25,953(70)	Kane
U^{235}	$\bar{\sigma}_s$	8.78-56.49	70HELSINKI,1,449(70)	Poortmans
U^{235}	$\sigma_t\sigma_\gamma\sigma_f$	2.026-50.2	JINR-P3-4992(70)	Ryabov
U^{235}	multiplicity	1.14-39.4	PRIVATE COMM.(69)	Bowman
U^{235}	σ_f	16.67-70.88	NP/A,126,471(69)	Cramer
U^{235}	σ_γ(spectra)	6.39-39.41	NP/A,134,535(69)	Weigmann
U^{235}	σ_γ multiplic.	6.39-23.65	69VIENNA,477(69)	Weinstein
U^{235}	multiplicity	1.13-39.41	PL,B26,664(68)	Asghar
U^{235}	σ_f	6.39-147	JNE,22,211(68)	Cao
U^{235}	polarization	0.275-2.08	PR,167,1121(68)	Schermer
U^{235}	analysis	0.286-37.0	BNL-50045(67)	Adler
U^{235}	analysis	2.806-62.443	66PARIS,2,251(66)	Drawbaugh
U^{235}	$\bar{\sigma}_s$	8.8-12.4	66PARIS,2,211(66)	Poortmans
U^{235}		8.78-39.5	65SALZBURG,2,355(65)	Melkonian
U^{235}	$\sigma_t\sigma_f$	1.14-147.35	NP,69,545(65)	Michaudon
U^{235}	σ_t	18.04-99.50	65ANTWERP,95(65)	Rainwater
U^{235}	σ_f	2.026-39.47	AE,19,43(65)	Wang
U^{235}	σ_f	2.026-72.49	AE,19,43(65)	VanShi-di
U^{235}	$\sigma_f\sigma_\gamma$	0.282-50.2	65SALZBURG,1,287(65)	VanShi-di
U^{235}	σ_t	18.04-300.5	PRIVATE COMM.(64)	Garg
U^{235}	$\sigma_t\eta$	-2.0-19.4	AE,16,110(64)	Ignatiev
U^{235}	σ_t analysis	0.3-6.20	AE,16,211(64)	Kirpichnikov
U^{235}	$\sigma_t\sigma_f$	1.14-147.35	CEA-R-2552(64)	Michaudon
U^{235}	$\sigma_t\sigma_f$	2.03-50.1	PRIVATE COMM.(64)	Michaudon
U^{235}	σ_f	2.026-39.47	JINR-P-1761(64)	Wang
U^{235}	σ_f	5.5-38.25	PR,130,1482(63)	Bowman
U^{235}		8.8-39.4	PR,130,2380(63)	Cowan
U^{235}		0.282-61.0	PR,122,1286(61)	Cowan
U^{235}	σ_f	48.15-95.52	JPR,21,429(60)	Michaudon
U^{235}	$\sigma_t\sigma_f$ anal	-0.95-3.16	PR,118,724(60)	Vogt
U^{235}	$\sigma_f\sigma_t$	6.1-24.4	NRDC-117(59)	Collins
U^{235}	η/ν	6.1-48.5	NRDC-123(59)	Brooks
U^{235}	$\sigma_t\sigma_f$	6.2-64.4	PR,116,1538(59)	Havens
U^{235}	$\sigma_t\sigma_f$	0.290-7.16	NSE,3,435(58)	Melkonian
U^{235}	$\sigma_t\sigma_f$	-1.45-8.795	PR,112,191(58)	Shore
U^{235}	$\sigma_t\sigma_f$	0.29-35.4	JNE,5,389(57)	Sokolovskii
U^{235}	σ_t	0.290-35.3	PR,103,1342(56)+	Pilcher
U^{235}	σ_f	0.30-34	NRDC-81(56)	Price
U^{235}	σ_t	14.1-61.0	PR,103,971(56)	Simpson
U^{235}	σ_f	8.8-19.3	PR,104,479(56)	Yeater
U^{235}	$\sigma_t\sigma_f$	5.15-20	55MOSCOW,81(55)	Nikitin
U^{235}	σ_f	12.2-13.9	JNE,2,128(55)	Price
U^{236}	σ_t	153.6-747.06	72BUD,200(72)	Carraro
U^{236}	σ_f	5.45-415.	NP/A,181,639(72)	Theobald
U^{236}	σ_γ	-9.7-956.	NP/A,141,577(70)	Carlson
U^{236}	σ_t	5.46-376.	IN-1317,10(69)	Harlan
U^{236}	integral	5.48	NSE,32,265(68)	Baumann
U^{236}	measurement	5.48	NSE,32,265(68)	Baumann

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Isotope	Measurement	Energy Range (eV)	Reference	Author
U^{236}	σ_f	5.49	BAP,6,8(61)	Leonard
U^{236}	σ_t	5.49-384	PR,109,471(58)	Harvey
U^{236}	σ_t	-8.-5.49	JNE,6,181(58)	McCallum
U^{237}	σ_f	46.2-235	LA-4420,91(70)+	McNally
U^{237}	σ_f	46.2-235	BAP,13,1665(68)+	McNally
U^{238}	σ_f	720-1210	PRL,31,247(73)+	Block
U^{238}	σ_γ	511-598	NSE,51,385(73)	DeSaussure
U^{238}	σ_t	6.65-3456.3	NSE,51,119(73)	Wynchank
U^{238}	$\sigma_t\sigma_\gamma$	66-1197	AE,32,49(72)	Maletski
U^{238}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	6.7-4593	PR/C,6,1854(72)	Rahn
U^{238}	σ_t	765-3597	71KNOX,2,701(71)	Carraro
U^{238}	$\bar{\sigma}_s$	6.7-66.2	NP/A,164,34(71)	Simpson
U^{238}	σ_γ(spectra)	10.2-264	PR/C,4,900(71)	Wasson
U^{238}	σ_t	66-5762	70HELSINKI,1,403(70)	Carraro
U^{238}	σ_γ	66-1055	70HELSINKI,1,413(70)	Rohr
U^{238}	σ_t	4.4-190	PR,171,1293(68)	Bollinger
U^{238}	σ_γ	4.4-2031	68WASH,1,573(68)	Glass
U^{238}	σ_γ	6.7-823	NP,85,305(66)	Asghar
U^{238}	σ_t	6.7-3904	PR/B,134,985(64)	Garg
U^{238}	σ_t	6.7-1802	NP,41,614(63)	Firk
U^{238}	σ_t	6.7	PR,127,461(62)	Jackson
U^{238}	σ_t	6.7	CR,255,2086(62)	Michaudon
U^{238}	σ_γ	36.5-705	PRIVATE COMM.(62)	Moxon
U^{238}	σ_f	6.7	BAP,6,8(61)	Leonard
U^{238}	σ_γ(SI)	6.7-997	PR,118,687(60)	Rosen
U^{238}	σ_t	6.7-237	PR,105,661(57)	Bollinger
U^{238}	σ_t	6.7-405	JNE,5,92(57)	Radkevich
U^{238}	σ_t	21.2-200	PR,103,1778(56)	Fluharty
U^{238}	σ_t	6.7-37.1	PR,101,1328(56)	Levin
U^{238}	σ_t	6.7-418	PR,99,10(55)+	Harvey
U^{238}	σ_t	6.7-118	55GENEVA,1,210(55)	Lynn

$^{234}_{93}Np$

[4.4 day]

THERMAL CROSS SECTIONS

σ_f = 900±300 b

$^{235}_{93}Np$

[396 day]

THERMAL CROSS SECTIONS

σ_γ = 1600±200 b [22.5 hr $^{236}Np^m$]
σ_γ = 184±4 b [1.29X10^6 yr $^{236}Np^g$]

$^{236}_{93}Np$

[1.29 × 10^8 yr]

THERMAL CROSS SECTIONS

σ_f = 2500±150 b
ν_{sp} = 3.12±0.14

$^{237}_{93}Np$ [2.14×10^6 yr]

THERMAL CROSS SECTIONS

σ_γ = 169±3 b
σ_f = 0.019±0.003 b
a_{coh} = 10.56±0.10 fm

RESONANCE PROPERTIES

I_γ = 660±50 b
<D> = 0.7±0.1 eV
S_0 = 1.0±0.1

RESONANCE PARAMETERS

I^π = 5/2⁺ S_n = 5487.3±2.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (μeV)
.489± .002	34 ± 2	.032 ± .002		34 ± 2	.0458 ± .0003	1.24± .26
1.33 ± .01	39.8± .8	.032 ± .004		39.8± .8	.0277 ± .0035	5.10± 1.02
1.48 ± .01	48.3± 1.0	.143 ± .002	2	48.2± 1.0	.118 ± .002	1.41± .32
1.97 ± .01	41.2± 1.3	.0166± .0003	3	41.2± 1.3	.01183± .00024	5.43± 1.66
3.07 ± .01			[3]			
3.86 ± .01	41.6± 1.3	.240 ± .004	3	41.4± 1.3	.122 ± .002	3.0 ± .5
4.26 ± .01	37.5± 1.9	.027 ± .001	2	37.5± 1.9	.0131 ± .0005	.2 ± .2
4.87 ± .01	38.7± 1.9	.034 ± .002	2	38.7± 1.9	.0154 ± .0009	.07± .07
5.77 ± .01	44.8± 1.8	.628 ± .012	3	44.2± 1.8	.261 ± .005	5.0 ± 0.5
6.38 ± .02	38.2± 1.9	.094 ± .004	3	38.1± 1.9	.0372 ± .0016	1.4 ± .8
6.67 ± .02	48 ± 12	.012 ± .002	2	48 ±12	.0047 ± .0005	2.9 ± 1.6
7.19 ± .02	35 ± 14	.0078± .0012	[2]	35 ±14	.0029 ± .0005	1.5 ± 1.5
7.43 ± .02	40 ± 2	.148 ± .002	3	40 ± 2	.0543 ± .0007	4.2 ± 1.0
8.31 ± .02	38 ± 2	.107 ± .004	3	38 ± 2	.0371 ± .0014	2.1 ± 0.6
8.98 ± .02	38.5± 2.5	.125 ± .006	3	38.4± 2.5	.0417 ± .0020	8.8 ± 1.2
9.30 ± .02	42.7± 2.6	.522 ± .005	2	42.2± 2.6	.171 ± .002	0.3 ± 0.1
10.23 ± .02	38 ± 12	.025 ± .002	2	38 ±12	.0078 ± .0008	1.3 ± 1.3
10.68 ± .02	36 ± 2	.510 ± .020	3		.155 ± .006	1.5 ± 0.3
10.84 ± .02	45 ± 3	.87 ± .03	3	44 ± 3	.264 ± .009	0.8 ± 0.3
11.09 ± .02	44 ± 3	.89 ± .02	2	43 ± 3	.267 ± .006	0.4 ± 0.1
12.20 ± .02	50 ± 8	.062 ± .003	[3]	50 ± 8	.0178 ± .0009	1.9 ± 1.3
12.62 ± .02	43 ± 3	.795 ± .008	2	42 ± 3	.224 ± .002	0.5 ± 0.2
13.14 ± .02	40 ± 20	.020 ± .003	[3]		.0052 ± .0008	1.6 ± 1.6
15.81 ± .02		.12 ± .02	[3]		.030 ± .005	1.8 ± 1.3
16.08 ± .02	50 ± 4	.93 ± .02	2	49 ± 4	.232 ± .005	0.5 ± 0.2

$^{237}_{93}Np$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_γ (μeV)
16.87 ± .02	35 ± 4	.243 ± .006	2	35 ± 4	.0592 ± .0015	0.3 ± 0.3
17.02 ± .02		.006 ± .003			.0014 ± .0007	4.9 ± 4.9
17.59 ±0.02	40 ± 4	.184 ± .007	3	40 ± 4	.0439 ± .0017	0.5 ± 0.3
17.89 ± .02	40 ± 20	.018 ± .004			.0043 ± .0009	3.9 ± 2.8
18.88 ± .02	40 ± 20	.037 ± .011	2		.0084 ± .0023	2.6 ± 2.0
19.12 ± .02	48 ± 17	.106 ± .011	3		.0243 ± .0023	3.1 ± 1.1
19.90 ± .02	36 ± 13	.071 ± .007	[3]	36 ±13	.0159 ± .0016	3.0 ± 1.8
20.39 ± .02	43 ± 3	1.13 ± .02	2	42 ± 3	.250 ± .005	0.7 ± 0.4
21.09 ± .02	35 ± 5	.53 ± .03	3	35 ± 5	.115 ± .007	1.9 ± 0.7
21.30 ± .02	40 ± 20	.023 ± .007			.0050 ± .0015	5.8 ± 5.8
22.01 ± .02	42 ± 4	1.26 ± .03	2	41 ± 4	.269 ± .005	1.0 ± 0.4
22.86 ± .02	40 ± 6	.440 ± .014	3	40 ± 6	.0920 ± .0029	4.1 ± 1.1
23.67 ± .02	44 ± 5	1.69 ± .03	3	42 ± 5	.347 ± .007	0.3 ± 0.1
23.97 ± .02	61 ± 18	.17 ± .02	2		.035 ± .004	0.6 ± 0.6
24.97 ± .02	52 ± 4	4.61 ± .07	3	47 ± 4	.923 ± .014	3.6 ± 0.5
26.19 ± .02	40 ± 10	.26 ± .02	3		.0508 ± .0039	30.6 ± 8.5
26.56 ± .02	45 ± 5	2.80 ± .08	3	42 ± 5	.543 ± .016	22.5 ± 3.2
27.07 ± .02	40 ± 20	.025 ± .006			.0047 ± .0011	4.3 ± 4.3
28.48 ± .02	40 ± 20	.146 ± .015	2		.0274 ± .0028	0.2 ± 0.2
28.92 ± .02	40 ± 20	.17 ± .01	[2]		.032 ± .002	0.1 ± 0.1
29.46 ± .02	40 ± 20	.086 ± .013			.0158 ± .0024	9.9 ± 6.1
30.42 ± .02	47 ± 5	3.76 ± .05	3	42 ± 5	.644 ± .018	79.8 ± 10.2
30.75 ± .03	54 ± 13	.30 ± .03		54 ±13	.054 ± .005	5.1 ± 2.7
31.32 ± .03	36 ± 7	.26 ± .02	3		.0465 ± .0036	6.9 ± 2.4
31.65 ± .03	40 ± 20	.048 ± .012			.0085 ± .0021	3.9 ± 3.9
33.43 ± .03	28 ± 7	.46 ± .02	3	28 ± 7	.080 ± .004	3.7 ± 1.5
33.90 ± .03	66 ± 10	.44 ± .02	2	66 ±10	.076 ± .003	4.1 ± 2.0
34.67 ± .03	40 ± 20	.184 ± .014	3		.0313 ± .0024	6.6 ± 4.4
35.20 ± .03	37 ± 10	.39 ± .02	2	37 ±10	.056 ± .003	2.1 ± 1.1
36.36 ± .03	69 ± 24	.159 ± .021	3		.0264 ± .0033	12.7 ± 5.1
36.81 ± .03	40 ± 20	.072 ± .014			.012 ± .002	34.7 ± 24.4
37.14 ± .03	47 ± 8	1.36 ± .04	3	45 ± 8	.223 ± .007	142.3 ± 28.5
37.92 ± .03	40 ± 20	.064 ± .032			.010 ± .005	50.6 ± 25.0
38.16 ± .03	62 ± 12	1.61 ± .06	3		.261 ± .010	8.6 ± 3.0
38.92 ± .03	58 ± 12	1.29 ± .06	3	56 ±12	.207 ± .010	380.2 ± 84.0
39.24 ± .03	47 ± 14	.650 ± .045	3	46 ±14	.104 ± .007	333.1 ±105.8
39.69	40 ± 20	.062				1686.9 ±800
39.90 ± .04	80 ± 14	.56 ± .03	3	74 ±13	.105 ± .004	864.7 ±122.7
41.34 ± .04	40 ± 6	2.26 ± .05	3	37 ± 6	.352 ± .007	216.7 ± 32.5
42.38 ± .04	40 ± 20	.091 ± .02			.014 ± .004	11.1 ± 7.3
42.80 ± .04	40 ± 20	.12 ± .03			.018 ± .004	236.8 ±153.4

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (μeV)
43.65 ± .04	42 ± 13	.30 ± .03	2	42 ±13	.045 ± .005	5.3 ± 2.5
45.70 ± .04	63 ± 19	.48 ± .06	2		.071 ± .009	4.7 ± 2.1
46.01 ± .04	60 ± 20	.66 ± .04	3		.097 ± .006	276.1 ±139.8
46.35 ± .04	52 ± 5	3.07 ± .06	3	49 ± 5	.451 ±0.009	2.4 ± 1.1
47.30 ± .04	47 ± 5	2.40 ± .05	2	45 ± 5	.349 ± .007	.4 ± .3
48.47 ± .04	40 ± 20	.11 ± .02			.016 ± .003	12.3 ± 8.6
48.78 ± .04	40 ± 20	.53 ± .03	2		.076 ± .004	7.9 ± 4.9
49.84 ± .04	47 ± 7	5.09 ± .09	3	39 ± 7	.721 ± .013	4.6 ± 1.6
50.37 ± .04	62 ± 5	8.93 ± .16	3	53 ± 5	1.26 ± .02	23.2 ± 5.9
51.69 ± .04	40 ± 20	0.091 ±0.033			.013 ± .005	8.7 ± 4.7
52.19 ± .04	40 ± 20	0.37 ±0.05	2		.052 ± .007	0.7 ± 0.5
52.65 ± .05	40 ± 20	.72 ± .06	2		.099 ± .008	2.8 ± 1.9
53.03 ± .05	40 ± 20	.062 ± .015			.0085 ± .0021	18.1 ± 12.7
53.86 ± .05	40 ± 20	.39 ± .04	2		.053 ± .006	3.2 ± 2.0
54.22 ± .05	40 ± 20	.13 ± .02			.018 ± .003	6.9 ± 4.5
55.02 ± .05	40 ± 20	.32 ± .03	3		.043 ± .004	15.5 ± 11.0
56.08 ± .05	109 ± 22	1.99 ± .06	[2]		.266 ± .008	1.1 ± 0.5
58.36 ±0.05	40 ± 20	.46 ± .07	3		.061 ± .009	1.3 ± 0.8
58.60 ± .05	40 ± 20	.295 ± .044			.039 ± .006	13.0 ± 10.1
59.49	45 ± 9	2.01 ± .08	2	43 ± 9	.261 ± .010	1.1 ± 0.9
60.02	46 ± 9	2.6 ± .1	3	39 ± 9	.34 ± .01	5.1 ± 5.1
60.93	41 ± 9	1.6 ±0.2	3		.21 ± .03	0.6 ± 0.5
61.62	40 ± 20	.52 ± .05	3		.066 ± .006	2.9 ± 2.3
62.45	82 ± 18	1.9 ± .2	3		.24 ± .03	4.9 ± 4.9
62.89	47 ± 12	1.7 ± .1	3		.214 ± .013	1.2 ± 0.6
63.94	40 ± 20	.28 ± .03			.035 ± .004	5.4 ± 4.9
64.94	45 ± 13	1.01 ± .06	[3]		.125 ± .007	0.3 ± 0.3
65.68	51 ± 9	4.55 ± .08	3		.561 ± .010	1.7 ± 0.8
66.7			[3]			
67.46	44 ± 8	5.8 ± .1	3		.70 ± .01	2.1 ± 0.7
67.94	46 ± 10	2.39 ± .11	2		.290 ± .013	1.3 ± 0.9
68.75	40 ± 20	.359 ± .032	3		.0433 ± .0039	2.1 ± 2.1
70.23	68 ± 14	2.14 ± .09	3		.256 ± .011	1.6 ± 0.9
70.66	40 ± 20	.50 ± .04			.060 ± .005	4.8 ± 4.7
71.18	40 ± 20	2.30 ± .46	3		.273 ± .055	1.2 ± 1.0
71.44	40 ± 20	2.68 ± .54			.317 ± .064	0.9 ± 0.8
73.86	40 ± 20	.31 ± .03			.036 ± .003	9.6 ± 9.0
74.26	40 ± 20	1.47 ± .07	[2]		.171 ± .008	1.4 ± 1.3
74.54	40 ± 20	.51 ± .06			.059 ± .007	5.9 ± 5.8
75.09	40 ± 20	.11 ± .03			.013 ± .004	5.5 ± 5.5
76.53	40 ± 20	.19 ± .03			.021 ± .003	0.7 ± 0.7

$^{237}_{93}Np$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (μeV)
76.97	40 ± 20	.38 ± .03			.043 ± .003	2.8 ± 2.8
78.33	79 ± 16	2.45 ± .10	3		.277 ±0.011	2.8 ± 2.8
79.24	54 ± 11	2.52 ± .08	2		.283 ± .008	2.0 ± 2.0
80.35	40 ± 20	.16 ± .08			.018 ± .008	4.9 ± 4.9
80.60	40 ± 20	.54 ± .07	3		.060 ± .007	0.9 ± 0.9
81.59	40 ± 20	.42 ± .02			.047 ± .002	2.6 ± 1.9
82.09	40 ± 20	.82 ± .04	3		.090 ± .004	1.2 ± 0.9
83.39	40 ± 20	3.1 ± .6			.34 ± .07	1.0 ± 0.7
83.70	40 ± 20	5.6 ±1.1			.61 ± .12	1.1 ± 0.7
85.19	64 ± 16	1.2 ± .1			.13 ± .01	8.8 ± 4.0
86.07	40 ± 20	.84 ± .12			.090 ± .013	4.5 ± 2.8
86.50	49 ± 10	5.7 ± .2	3		.62 ± .03	2.0 ± 0.7
87.65	40 ± 10	3.7 ± .1	2		.40 ± .01	0.7 ± 0.4
88.13	40 ± 20	1.03 ± .06			.110 ± .006	3.6 ± 2.3
88.90	40 ± 20	1.85 ± .07			.196 ± .007	1.8 ± 1.1
89.43	51 ± 11	4.29 ± .17			.454 ± .018	2.9 ± 1.1
90.84	54 ± 13	4.98 ± .20	3		.52 ± .02	1.6 ± 0.8
91.32	40 ± 20	.16 ± .05			.017 ± .005	3.2 ± 2.3
91.95	40 ± 20	.51 ± .07			.053 ± .007	8.8 ± 5.5
92.75	40 ± 20	.19 ± .03			.020 ± .003	9.1 ± 5.9
93.36	49 ± 17	1.8 ± .13	2		.19 ± .01	3.1 ± 1.7
94.22	40 ± 20	.37 ± .06			.038 ± .006	1.4 ± 1.0
95.37	40 ± 20	.36 ± .06			.037 ± .006	7.0 ± 4.7
96.14	40 ± 20	.055 ± .027			.0056 ± .0028	2.7 ± 2.2
96.61	40 ± 20	.35 ± .09			.036 ± .009	1.8 ± 1.3
97.72	65 ± 14	3.48 ± .14	2		.352 ± .014	2.3 ± 1.2
98.46	77 ± 19	2.38 ± .10	2		.240 ± .010	4.1 ± 2.0
98.99	40 ± 20	.10 ± .05			.010 ± .005	21.3 ± 19.1
99.49	52 ± 17	1.94 ± .14			.195 ± .014	3.2 ± 1.7
100.19	58 ± 12	5.30 ± .16	3		.530 ± .016	1.9 ± 0.9
101.03	63 ± 13	5.41 ± .16	2		.538 ± .016	4.2 ± 2.3
101.62		1.23 ± .25			.122 ± .025	5.1 ± 3.3
101.92	40 ± 20	1.67 ± .33			.165 ± .034	0.5 ± 0.3
102.15	40 ± 20	.30 ± .15			.030 ± .015	2.6 ± 2.2
103.76	40 ± 20	1.60 ± .08			.157 ± .006	3.0 ± 2.1
104.52	40 ± 20	.34 ± .07			.033 ± .007	6.0 ± 4.4
105.18	80 ± 28	2.18 ± .21			.212 ± .020	5.1 ± 3.0
105.70	44 ± 13	3.29 ± .25			.320 ± .019	12.7 ± 4.5
107.21	40 ± 20	.51 ± .06			.049 ± .006	7.0 ± 5.0
108.79	40 ± 20	0.81 ±0.12			0.078	1.2 ± 1.2
109.12	40 ± 20	2.29 ±0.13			0.219	2.1 ± 1.6

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (μeV)
110.30	40 ± 20	1.21 ±0.31			0.115	1.9 ± 1.9
110.58	40 ± 20	1.09 ±0.23			0.104	3.4 ± 2.1
110.96	68 ± 16	3.07 ±0.32			0.291	0.1 ± 0.1
111.71	40 ± 20	3.27 ±0.10			0.309	0.1 ± 0.1
112.22	40 ± 20	.40 ± .28			0.038	12.3 ± 12.3
113.33	40 ± 20	1.21 ± .20			0.114	3.2 ± 3.1
113.71	95 ± 10	4.30 ±0.31			0.403	0.5 ± 0.5
114.73	44 ± 11	2.21 ±0.15			0.206	0.4 ± 0.4
115.46	40 ± 20	0.50 ±0.27			0.046	4.5 ± 4.0
115.79	68 ± 20	2.08 ±0.39			0.193	22.5 ± 8.8
116.76	40 ± 20	0.44 ±0.07			0.041	5.7 ± 5.7
117.62	42 ± 10	2.02 ±0.14			0.186	37.7 ± 11.9
119.07	40 ± 20	1.24 ±0.11			0.114	547.4 ±137.0
119.46	40 ± 20	0.75 ±0.11	3		0.069	2276.0 ±181.0
120.10	40 ± 20	0.33 ±0.08			.030	122.8 ± 70.1
121.96	40 ± 20	0.35 ±0.08			0.032	64.3 ± 39.0
123.76	40 ± 20	0.40 ±0.08			0.036	66.0 ± 39.7
125.01	40 ± 20	1.21 ±0.09			0.108	31.0 ± 17.3
125.68	40 ± 20	2.71 ±0.11			0.242	4.6 ± 4.6
126.20	40 ± 20	1.74 ±0.10			0.155	4.3 ± 3.9
127.12	40 ± 20	0.50 ±0.13			0.044	3.5 ± 3.4
127.50	40 ± 20	0.41 ±0.13			0.036	2.7 ± 2.5
129.48	40 ± 20	0.97 ±0.11			0.085	1.3 ± 1.3
129.72		0.20 ±0.20			0.018	25.0 ± 25.0
131.41		0.63 ±0.10			0.055	4.0 ± 2.4
131.85		1.14 ±0.10			0.099	6.6 ± 4.5
132.81		0.20 ±0.20			0.017	6.3 ± 6.3
133.48	52 ± 20	5.54 ±0.22			0.480	2.3 ± 2.3
134.06		0.41 ±0.10			0.035	18.4 ± 18.4
137.44	124 ± 42	3.52 ±0.30			0.300	7.2 ± 7.2
138.47	419 ± 47	4.98 ±1.50			0.423	2.0 ± 2.0
138.98		1.67 ±0.98			0.141	9.3 ± 9.3
140.04		1.35 ±0.48			0.114	8.0 ± 8.0
141.24		1.69 ±0.11			0.142	3.0 ± 3.0
142.20		0.44 ±0.09			0.037	5.7 ± 5.7
144.30	82 ± 29	4.93 ±0.26			0.410	2.0 ± 1.3
145.50		0.64 ±0.12			0.053	3.9 ± 3.9
146.58		1.59 ±0.14			0.131	1.6 ± 1.6
147.23		1.90 ±0.15			0.157	4.0 ± 4.0
148.50		1.03 ±0.14			0.085	6.1 ± 6.1
149.69		1.94 ±0.17			0.159	1.3 ± 1.3

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (μeV)
150.27		3.02 ±0.75			0.246	3.3 ± 2.5
150.55		3.23 ±0.80			0.263	0.8 ± 0.8
152.22		2.87 ±0.28			0.232	1.7 ± 1.7
154.17	98 ± 49	2.73 ±0.24			0.220	0.7 ± 0.7
155.35		1.17 ±0.12			0.094	6.4 ± 6.4
156.35		1.82 ±0.19			0.146	
156.78		0.82 ±0.14			0.066	
157.98		1.50 ±0.25			0.119	
158.38		3.99 ±0.24			0.317	
160.61	74 ± 27	5.32 ±0.25			0.420	
161.83		0.98 ±0.13			0.077	
162.91	46 ± 34	3.92 ±0.24			0.307	
164.25		2.21 ±0.14			0.172	
165.11		0.39 ±0.13			0.030	
166.79		4.78 ±0.21			0.370	
168.93		5.05 ±0.21			0.389	
169.96		1.58 ±0.17			0.121	
170.95		3.85 ±0.20			0.295	
172.25		1.14 ±0.17			0.087	
173.02		2.38 ±0.19			0.180	
174.78		1.26 ±0.29			0.095	
175.22		2.85 ±0.31			0.215	
176.20		4.46 ±0.23			0.336	
176.85		6.44 ±0.26			0.484	
180.07	94 ± 35	6.90 ±0.39			0.514	
181.00		2.92 ±0.19			0.217	
182.34		2.36 ±0.19			0.175	
183.23		1.92 ±0.19			0.142	
184.04	82 ± 42	6.01 ±0.40			0.443	
185.65		0.34 ±0.21			0.025	
186.18		0.72 ±0.21			0.052	
187.93	26 ± 24	11.89 ±0.44	2		0.867	
189.06	41 ± 25	6.35 ±0.40			0.462	
190.62		6.07 ±0.27			0.440	
191.63		1.24 ±0.22			0.090	
193.52		3.33 ±0.24			0.239	
194.47		1.32 ±0.22			0.095	
195.67		3.00 ±0.54	2		0.215	
196.57	52 ± 26	15.48 ±0.62			1.104	
198.44		0.57 ±0.22			0.041	
199.82		1.28 ±0.24			0.091	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (μeV)
200.78		2.27 ±0.21	3		0.160	
202.94		0.53 ±0.19			0.037	
204.22		3.25 ±0.23			0.227	
205.60		1.28 ±0.64			0.089	
206.58		8.65 ±0.92	3		0.602	
207.85		3.39 ±0.73			0.235	
210.28		7.00 ±0.87			0.483	
213.02		1.81 ±0.70			0.124	
214.52		1.34 ±0.69			0.092	
216.97		12.93 ±1.20			0.878	
218.45		2.15 ±0.30			0.146	
219.23		0.78 ±0.28			0.053	
220.12		1.43 ±0.29			0.096	
221.97	274 ±130	4.18 ±0.70			0.281	
224.20		4.12 ±0.32			0.275	
226.42	106 ± 34	14.05 ±0.67			0.934	
228.17		2.28 ±0.32			0.151	
229.00		4.39 ±0.35	2		0.290	
231.63	97 ± 35	15.15 ±0.76			0.995	
232.83		2.48 ±0.34			0.163	
233.97		2.56 ±0.35	2		0.167	
235.30		2.64 ±0.37			0.172	
253			3			
283			[2]			
370			2			
373			2			
427			3			
476			2			
668			3			
718			3			
808			3			
873			2			
884			3			

Note - Single-level Breit-Wigner parameters.

$^{238}_{93}Np$

[2.12 day]

THERMAL CROSS SECTIONS

σ_f = 2070±30 b

RESONANCE PROPERTIES

I_f = 880±70 b

$^{239}_{93}Np$

[2.35 day]

THERMAL CROSS SECTIONS

σ_γ = 31±6 b [7.5 min $^{240}Np^m$]
σ_γ = 14±14 b [65 min $^{240}Np^g$]
σ_f < 1 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Np^{234}	σ_f	ANL-4152(48)	Hyde
Np^{234}	σ_f	CC-3699,6(46)	Bentley
Np^{236}	$\sigma_f \nu_{sp}$	BNL-732(N-6),2(62)-	Jaffey
Np^{236}	$\sigma_f \nu_{sp}$	ANL-6600,124(61)+	Jaffey
Np^{236}	σ_f	PR,97,88(55)	Studier
Np^{237}	σ_γ chemical separation	UCRL-51263(72)	Landrum
Np^{237}	$\sigma_\gamma I_\gamma$	KFK-1456,47(71)	Eberle
Np^{237}	RI pile osci.	BNL-50242(70)	Hellstrand
Np^{237}	I_γ activation	BAP,14,497(69)	Schuman
Np^{237}	I_a reactivity	JN-1195(68)	Scoville
Np^{237}	$I_a \sigma_a \sigma_f$ production rate	68WASH,2,1271(68)	Henneley
Np^{237}	diffraction	PCS,28,1649(67)	Cox
Np^{237}	diffraction	PCS,28,1651(67)	Heaton
Np^{237}	I_a reactivity	ANS,10,259(67)	Rogers
Np^{237}	$\sigma_a I_a$ pile osci.	JNE,12,32(60)	Tattersall
Np^{237}	σ_f	BAP,4,31(60)	Leonard
Np^{237}	σ_f	HW-59126,3(59)	Leonard
Np^{237}	σ_c	PR,107,525(57)	Smith
Np^{237}	σ_γ alpha counting	JIN,2,205(56)	Brown
Np^{237}	σ_γ activation	IDO-16226(55)	Smith
Np^{237}	σ_γ activation	ANL-4030(47)	Jaffey
Np^{237}	σ_f	TRANSU.EL.,2,148(49)	Ghiorso
Np^{237}	σ_f	PRIVATE COMM.(46)	Farwell
Np^{238}	σ_f RI	ANS,12,284(69)	Spencer
Np^{238}	$\sigma_f \sigma_a$ production rates	68WASH,2,1271(68)	Henneley
Np^{238}	σ_γ activation	BAP,1,62(56)	Lefevre
Np^{238}	σ_f	PRIVATE COMM.(51)	Perlman
Np^{238}	σ_f	CF-3762(47)	Studier
Np^{239}	σ_γ analysis	NSE,6,100(59)	Stoughton
Np^{239}	σ_γ activation	NSE,5,264(59)	Kinderman
Np^{239}	σ_f	58GENEVA,16,54(58)	Eastwood
Np^{239}	σ_γ mass spectrometry	NSE,1,108(56)	Halperin
Np^{239}	σ_γ activation	55GENEVA,7,258(55)	Halperin
Np^{239}	σ_γ activation	HW-38202,37(55)	Lefevre
Np^{239}	σ_f	PRIVATE COMM.(46)	Borst

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Np^{237}	$\sigma_t\sigma_f$ polar.	1.47-884	PRIVATE COMM.(73)	Keyworth
Np^{237}	σ_f	3.86-155.35	THESIS(73)	Plattard
Np^{237}	$\sigma_t\sigma_f$	1.32-235.3	PRIVATE COMM.(72)	Paya
Np^{237}	σ_f	20.40-50.37	ZP,248,355(71)	Kolar
Np^{237}	$\sigma_t\overline{\sigma}_s$	5.77-50.40	71KNOX,2,667(71)	Poortmans
Np^{237}	σ_γ	8.32-56.1	PRIVATE COMM.(71)	Weigmann
Np^{237}	σ_f	0.49-7.5	AE,28,362(70)	Gavrilov
Np^{237}	σ_γ	30.4-50.4	PL,B30,624(69)	Weigmann
Np^{237}	$\sigma_t\sigma_f$	1.32-107.21	PRIVATE COMM.(67)	Paya
Np^{237}	$\sigma_t\sigma_f$	1.32-107.21	66PARIS,2,128(66)	Paya
Np^{237}	σ_f	0.49-1.47	BAP,4,31(60)	Leonard
Np^{237}	σ_t	0.5-4	55GENEVA,4,210(55)	Adamchuk
Np^{237}	σ_t	3.86-18.9	AE,6,569(55)	Adamchuk

$^{236}_{94}Pu$ [2.85 yr]

THERMAL CROSS SECTIONS

σ_f = 165±20 b
ν_{sp} = 2.21±0.18

$^{237}_{94}Pu$ [45.6 day]

THERMAL CROSS SECTIONS

σ_f = 2400±300 b

$^{238}_{94}Pu$ [87.8 yr]

THERMAL CROSS SECTIONS

σ_γ = 547±20 b
σ_f = 16.5±0.5 b
σ_a = 564±20 b
σ_t = 588±20 b
ν_p = 2.90±0.03
ν_{sp} = 2.24±0.08

RESONANCE PROPERTIES

I_γ = 141±15 b
I_f = 24±4 b
I_a = 165±15 b
<D> = 9.5±0.7 eV
S_0 = 1.3±0.3

RESONANCE PARAMETERS

I^π = 0⁺ S_n = 5656±4 ke

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
Bound level				
2.90± .02	.075± .003	38 ±2	.044 ± .002	<.08
9.98± .02	.215± .01	37 ±6	.066 ± .004	<.2
18.6 ± .1	3.8 ± .4	37 ±6	0.88 ± .09	1.6 ± 0.4
32.2 ± .1	.068± .04	(34)	.012 ± .007	4.8
36.6 ± .1	.024± .012	(34)	.004 ± .002	5.9
59.8 ± .1	1.4 ± 0.1	(36 ±2)	0.18 ± .01	.67± .17
70.2 ±0.1	2.51 ± .16	(36 ±2)	.30 ± .04	7.8 ± .8
77.7 ± .1	.026± .018	(36 ±2)	.003 ± .002	9.4
83.1 ±0.1	19.1 ± 1.9	(36 ±2)	2.10 ± .21	4.0 ± .4
96.2 ± .1	.056± .030	(36 ±2)	.0057± .0031	4.8
99.6 ± .1	.26 ± .07	(36 ±2)	.026 ± .007	5.1 ± 2.1
110.1 ± .1	5.5 ± .8	(36 ±2)	0.53 ± .08	5.0 ± 0.8
111.2 ± .1	.13 ± .06	(36 ±2)	.012 ± .006	3.1 ± 2.1

$^{238}_{94}Pu$

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
113.7 ± .1	11.3 ± 1.4	(36 ±2)	1.06 ± .13	5.4 ± 1.0
118.6 ± .1	31.3 ± 4.0	(36 ±2)	2.87 ± 0.37	2.0 ± .4
122.4 ± .1	28.8 ± 4.4	(36 ±2)	2.62 ± 0.40	8.6 ± 1.6
129.0 ± .1	.22 ± .17	(36 ±2)	.019 ± .015	1.0
132.4 ± .1	.85 ± .18	(36 ±2)	.074 ± .016	5.3 ± 1.8
139.7 ± .1	2.8 ± .4	(36 ±2)	.24 ± .03	6.3 ± 1.6
151.1 ± .1	18 ± 4	(36 ±2)	1.5 ± 0.3	9.2 ± 2.4
165.0 ± .2	.22 ± .10	(36 ±2)	.017 ± .008	10.7
171.1 ± .2	55 ± 10	(36 ±2)	4.00 ± .73	.72± .18
176.8 ± .2	2.7 ± .4	(36 ±2)	.20 ± .03	44 ± 17
182.7 ± .2	30 ± 5	(36 ±2)	2.22 ± 0.37	7.1 ± 1.8
192.5	15.5 ± 3.7	(36 ±2)	1.12 ± .27	130
203	4.9 ± .6	(34)	.35 ± .04	2.2 ± .5
216	17.6 ± 3.5	(34)	1.20 ± .24	23 ± 7
221	59.0 ± 25.6	(34)	3.97 ± 1.72	1.2 ± .3
232	.72 ± .29	(34)	.047 ± .019	.84± .44
245	6.7 ± 1.4	(34)	.43 ± .09	25 ± 10
252	16 ± 5	(34)	.98 ± .29	57
261		(34)	.016 ± .010	7
285	26.0 ± 9.6	(34)	1.54 ± .57	3500 ±500
289	37.6 ± 11.6	(34)	2.21 ± .68	24 ± 7
300	55.5 ± 23.0	(34)	3.20 ± 1.33	102
305	8.0 ± 1.8	(34)	.46 ± .10	68
320	180 ±180	(34)	10 ±10	5.5 ± 1.4
327	27.7 ± 6.7	(34)	1.53 ± .37	15 ± 4
337	15.4 ± 2.7	(34)	.84 ± .15	8.4 ± 2.2
361	.80 ± .53	(34)	.042 ± .028	7
368	17.3 ± 4.4	(34)	.90 ± .23	4.4 ± 1.3
382	.39 ± .24	(34)	.020 ± .012	17
391	13 ± 3	(34)	.66 ± .15	2.8 ± .9
408	18.6 ± 3.6	(34)	.92 ± .18	2.5 ± .7
419	53 ± 27	(34)	2.6 ± 1.3	29 ± 12
426	47.7 ± 21.7	(34)	2.31 ± 1.05	11.3 ± 3.5
448	6.56 ± 1.69	(34)	.31 ± .08	71
461	49.6 ± 23.2	(34)	2.31 ± 1.08	6.7 ± 2.1
465	85.6 ± 60.8	(34)	3.97 ± 2.82	6.7 ± 2.1
473	23.1 ± 6.7	(34)	1.06 ± .31	2.3 ± .7
496	9.5 ± 2.0	(34)	.42 ± .09	6.8 ± 2.2

* See Young(67) for parameters of bound levels.

Note - Single-level Breit-Wigner parameters. Resonances in the energy region around 285 eV have been fitted by a multilevel Breit-Wigner formula. Fission widths with no associated errors have large uncertainties in them.

THERMAL CROSS SECTIONS

σ_γ = 268.8±3.0 b
σ_f = 742.5±3.0 b
σ_a = 1011.3±4.2 b
$\bar{\sigma}_s$ = 7.7±0.5 b
σ_t = 1019±6 b
α = 0.362±0.004
η = 2.108±0.008
ν = 2.871±0.006
a_{coh} = 7.5±0.3 fm

RESONANCE PROPERTIES

I_γ = 200±20 b
I_f = 301±10 b
<D> = 2.3±0.1 eV
S_0 = 1.3±0.1
S_1 = 2.3±0.4

RESONANCE PARAMETERS

I^π = 1/2⁺ S_n = 6534±0.8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
.296± .002	99 ± 4	0.110± .005	1	39 ± 3	.202 ± .009	60 ± 4
7.82 ± .01	88 ± 4	1.23 ± .03	1	40.0± 2.3	.440 ± .011	47 ± 3
10.93 ± .01	185 ± 10	2.75 ± .10	1	46 ± 6	.832 ± .032	138 ± 6
11.48 ± .01		.26 ± .15			.077 ± .044	
11.89 ± .01	67 ± 4	1.52 ± .08	1	42 ± 4	.441 ± .023	24 ± 3
14.31 ± .01	102 ± 6	.89 ± .05	1	37 ± 6	.235 ± .013	65 ± 7
14.68 ± .01	79 ± 5	2.80 ± .05	1	38 ± 4	.731 ± .013	33 ± 3
15.46 ± .01	700 ± 50	.94 ± .08	0	37 ± 6	.24 ± .02	662 ± 50
17.66 ± .01	82 ± 7	2.66 ± .05	1	43 ± 5	.638 ± .012	38 ± 4
22.29 ± .01	112 ± 10	3.8 ± 0.2	1	44 ± 4	.805 ± .042	65 ± 5
23.90 ± .01	73 ± 8	.13 ± .01	1	32 ±10	.0266± .0020	41 ± 7
26.24 ± .01	81 ± 4	2.23 ± .10	1	37 ± 6	.435 ± .020	43 ± 5
27.24 ± .01	43 ± 5	.20 ± .01		39 ± 7	.038 ± .002	4 ± 1
32.31 ± .01	154 ± 15	.42 ± .02	0	43 ± 6	.074 ± .004	110 ± 15
34.60 ± .01		.02			.0034	
35.50 ±0.02	45 ± 4	.45 ± .02	1	40 ± 4	.076 ± .003	5 ± 2
41.42 ± .02	52 ± 8	6.20 ± .20	1	44 ± 8	.963 ± .031	4 ± 1

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
41.66 ± .02	105 ± 16	2.3 ± .2		54 ±11	.36 ± .03	50 ± 12
44.48 ± .02	55 ± 6	9.1 ± 0.2	1	44 ± 6	1.36 ± .03	5 ± 1
47.60 ± .02	300 ± 20	2.95 ± .15	0	44 ±16	.428 ± .022	230 ± 30
49.60 ± .02	810 ± 200	2.0 ± .2	0		.284 ± .028	746 ±200
50.08 ± .02	57 ± 10	4.45 ± .20	1	42 ± 8	.629 ± .028	13 ± 3
52.60 ± .02	63 ± 6	15.7 ± .3	1	43 ± 6	2.16 ± .041	8 ± 2
55.63 ± .02	63 ± 10	2.20 ± .12	1	35.6± 8.0	.295 ± .016	23 ± 3
57.44 ± .03	530 ± 60	7.2 ± 0.7	0	56 ±17	.95 ± .09	459 ± 60
58.84 ± .03	900 ± 200	4.5 ± .5	[0]	42 ±15	.59 ± .07	849 ±200
59.22 ± .03	190 ± 12	8.6 ± .5	1	44 ± 6	1.12 ± .07	140 ± 13
60.94 ± .03	6800	11	0		1.40	6736
63.08 ± .03	155 ± 17	1.20 ± .25	1		.15 ± .031	111 ± 30
65.36 ± .03		.54			.067	
65.71 ± .03	130 ± 13	18.2 ± 0.5	1	48 ± 8	2.25 ± .06	70 ± 8
74.05 ± .04	71 ± 8	4.75 ± .20	1	36 ± 5	.552 ± .023	32 ± 4
74.95 ± .04	152 ± 10	34.5 ± 1.5	1	40 ± 5	3.99 ± .17	89 ± 9
78.95 ± .04	180	.06		(40)	.007	140
81.76 ± .04	2050	6	0		.66	1996
82.68 ± .04	70	.75 ± .15		(40)	.083 ± .017	49
83.52 ± .04	1750	1.2			.13	1706
85.32 ± .04	~2300	28 ± 4			3.03 ± .43	~2100
85.48 ± .04	80 ± 10	11.80 ± .36	[0]	41 ±15	1.277 ± .039	17 ± 9
90.75 ± .05	60 ± 10	18.45 ± .42	1	39 ± 6	1.937 ± .044	9 ± 2
92.97 ± .05	57 ± 5	1.05 ± .04	[1]	47 ± 6	.109 ± .004	9 ± 3
95.36 ± .05	98 ± 10	3.15 ± .15	1		.32 ± .02	33 ± 5
96.49 ± .05	1700 ± 350	6.68 ± .26	0		.680 ± .026	1645 ±350
100.25 ± .06	6000	5.6			.559	5947
102.99 ± .06	48 ± 5	2.42 ± .08	[1]	35 ± 5	.239 ± .008	11 ± 3
105.30 ± .06	48 ± 7	7.2 ± .4	1	37 ± 7	.70 ± .04	6 ± 1
106.67 ± .06	75 ± 4	13.0 ± .6	1	40 ± 4	1.25 ± .06	26 ± 2
110.38 ± .06	43 ± 16	.56 ± .07	[1]		.0628± .007	13 ± 3
114.44 ± .07	1500	.8			.075	1456
115.10 ± .07	200	.32 ± .10	[1]	(40)	.030 ± .009	160
116.03 ± .07	245 ± 15	5.41 ± .13	0	30	.502 ± .012	205 ± 20
118.83 ± .07	102 ± 6	25.92 ± .60	1	42 ± 5	2.38 ± .06	43 ± 3
120.99 ± .07	78 ± 12	3.77 ± .15	[0]	35 ± 7	.343 ± .014	39 ± 7
123.44 ± .08	63 ± 13	.75 ± .08	[1]		.068 ± .007	39
126.20 ± .08	96 ± 10	2.96 ± .12	[0]		.264 ± .011	20
127.51 ± .08	64 ± 10	.80 ± .08	1		.071 ± .007	25
131.75 ± .09	3800 ± 250	18.0 ± 1.2	[0]	(40)	1.56 ± .11	3724
133.78 ± .09	56 ± 6	8.38 ± .30	1	44 ± 7	.725 ± .026	6 ± 2

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
136.75 ± .09	126 ± 10	5.12 ± .16	0	32 ± 8	.438 ± .014	84 ± 10
139.28 ± .09		.18			.015	
142.92 ± .09	137 ± 20	5.0 ± .5	1	54	.42 ± .04	80 ± 15
143.47 ± .10	83 ± 12	6.3 ± .2	1	42 ±13	.53 ± .02	37 ± 5
146.25 ± .10	73 ± 7	10.8 ± .3	[0]	40 ± 7	.893 ± .025	12 ± 2
147.44 ± .10	1000	1.6 ± .2	0		.13 ± .02	956
148.21 ± .10	150	.70 ± .10			.058 ± .008	102
149.42 ± .10	100 ± 15	2.50 ± .12	1	47 ±15	.205 ± .010	52 ± 13
157.08 ± .11	700 ± 50	17.2 ± .4	0	(40)	1.37 ± .03	626 ± 50
160.8 ± .11		.2			.016	
161.96 ± .11	150	.21 ± .07		(40)	.0165± .006	110
164.54 ± .12	78 ± 10	41 ± 3	1	42.7± 8.0	3.20 ±0.23	8 ± 1
167.10 ± .12	110 ± 8	8.68 ± .30	1	32 ± 6	.671 ± .023	72 ± 7
170.49 ± .12	158 ± 60	.86 ± .02		(40)	.066 ± .002	117 ± 60
171.08 ± .12	900 ± 200	.89 ± .30		(40)	.068 ± .023	900 ±200
174.56 ± .12		.05 ± .01			.0038± .0008	
175.98 ± .13	73 ± 5	3.14 ± .10		41 ± 8	.237 ± .008	31 ± 6
177.22 ± .13	51 ± 6	5.36 ± .18	1	41 ± 6	.403 ± .014	6 ± 2
178.90 ± .13	58 ± 9	1.83 ± .06	[1]	43 ± 7	.137 ± .005	14 ± 3
183.64 ± .13		2.4 ± .2			.18 ± .02	28
184.87 ± .14	2100 ± 200	8 ± 1	(0)	(40)	.59 ± .07	2028 ±500
188.27 ± .14	53 ± 10	.78 ± .07		41 ±10	.056 ± .005	10 ± 2
190.64 ± .14	67 ± 9	2.51 ± .09	[0]	51 ±10	.182 ± .007	11 ± 3
195.36 ± .15	428 ± 40	28.5 ± 1.5	0	36 ±12	2.04 ± .11	335 ± 40
196.69 ± .15	112 ± 18	7.23 ± .35	1	46 ±11	.516 ± .025	61 ± 12
199.39 ± .15	133 ± 13	14.0 ± .5	1	41 ± 8	.992 ± .035	83 ± 10
203.46 ± .16		6			.42	
203.93 ± .16	410 ± 40	27.1 ± 1.0	0	(40)	1.90 ± .07	316
207.37 ± .16	57 ± 3	10.5 ± .4	1	43.6± 5.0	.729 ± .028	6 ± 2
211.09 ± .17	800	1.6 ± .3			.11 ± .02	745
212.02 ± .17	1500	1.2			.082	1456
213.28 ± .17	200 ± 60	.7			.048	163
216.53 ± .17	67 ± 5	9.5 ± 0.2	1	39 ± 6	.646 ± .014	11 ± 4
219.49 ± .18	70 ± 10	5.36 ± .27	1	40 ±12	.362 ± .018	26 ± 6
220.22 ± .18	52 ± 8	11.6 ± .5	1	33 ± 9	.782 ± .033	11 ± 3
223.16 ± .18	59 ± 6	5.0 ± 0.2	1		.335 ± .013	9
224.89 ± .18	85 ± 17	2.56 ± .15			.171 ± .010	25
227.77 ± .13	8000 ±1000	17 ± 3	(0)	(40)	1.13 ± .20	7926
227.89 ± .19	67 ± 10	2.54 ± .15	1	33 ±14	.168 ± .010	32 ± 10
231.40 ± .19	56 ± 8	17.3 ± 1.0	1	39 ± 8	1.14 ± .07	5 ± 2
232.63 ± .20		.66 ± .15			.043 ± .010	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
234.32 ± .20	74 ± 6	15.0 ± .6	[1]	49 ± 6	.98 ± .04	15 ± 2
239.04 ± .21	73 ± 8	7.9 ± .4	1	52 ± 9	.51 ± .03	16 ± 4
240.60 ± .24		.05			.003	
242.88 ± .21	97 ± 6	9.4 ± .4	1	35 ± 7	.60 ± .03	56 ± 6
247.50 ± .22	312 ± 60	1.39 ± .20			.088 ± .013	227
248.86 ± .22	62 ± 6	22.13 ± .72	1	42 ± 6	1.403 ± .046	5 ± 1
251.23 ± .22	83 ± 5	40.0 ± 1.2	1	40 ± 7	2.52 ± .08	16 ± 2
254.58 ± .22	55 ± 5	4.0 ± .3	1		.25 ± .02	25 ± 6
256.11 ± .22	91 ± 16	9.0 ± .5	1		.56 ± .03	32 ± 7
259.00 ± .23		.4 ± .1	1		.025 ± .006	
262.37 ± .23	6300	46 ± 4	0		2.84 ± .25	6148
262.74 ± .23	60 ± 10	3.64 ± .45			.22 ± .03	10
264.23 ± .24		.25			.015	
269.11 ± .24	140	2.1 ± .5			.13 ± .03	83
269.54 ± .24	72 ± 20	6.2 ± .6	1		.39 ± .04	28 ± 10
272.62 ± .25	92 ± 10	40.3 ± 1.5	1		2.44 ± .09	31 ± 12
274.80 ± .25	800	14.0 ± 2.0			.845 ± .121	730
275.57 ± .25	150 ± 30	36.6 ± 1.5	1		2.20 ± .09	72 ± 20
277.23 ± .26	5300	9			.54	5260
279.59 ± .26	111 ± 8	11.0 ± 0.2	0		.658 ± .012	56 ± 8
282.92 ± .27	85 ± 6	37.2 ± 2.7	1		2.21 ± .16	11 ± 2
285.73 ± .27		.10			.006	
288.00 ± .27	7000	15			.88	6028
288.30 ± .28		.08			.0047	
292.33 ± .28	115 ± 13	5.94 ± .24	0		.347 ± .014	72 ± 12
296.46 ± .29	81 ± 12	4.8 ± .2	1		.279 ± .012	30
298.59 ± .29	74 ± 7	15.8 ± .6	1		.914 ± .035	20 ± 5
301.81 ± .29	108 ± 6	27.3 ± 1.0	1		1.57 ± .06	48 ± 10
308.20 ± .30		4.40 ± .27			.25 ± .015	98 ± 45
309.01 ± .30	85 ± 12	21.10 ± .72	1		1.20 ± .04	24 ± 5
311.12 ± .31		.73 ± .18			.041 ± .010	
313.62 ± .31	62 ± 6	20.40 ± .72	1		1.15 ± .04	10 ± 3
316.66 ± .32	73 ± 10	7.75 ± .30	1		.436 ± .017	25 ± 5
321.75 ± .32		.20 ± .08			.011 ± .005	
323.36 ± .32	160 ± 20	30.2 ± .9	[0]		1.68 ± .050	47 ± 9
325.30 ± .33	105 ± 9	12.8 ± .5	1		.710 ± .028	46 ± 12
329.65 ± .34	2000	5.6			.31	1947
333.91 ± .34	67 ± 7	8.24 ± .30	1		.451 ± .016	10
335.93 ± .34	83 ± 6	26.60 ± .72	1		1.45 ± .04	18 ± 4
337.95 ± .35	74 ± 7	12.09 ± .42	1		.658 ± .023	11 ± 4
339.24 ± .35	81 ± 12	4.92 ± .21	0		.267 ± .011	33 ± 12

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
343.18 ± .35	75 ± 6	23.69 ± .78	1		1.28 ± .04	18 ± 3
346.56 ± .36	1200	5.2 ± .6			.28 ± .03	1148
350.30 ± .36	97 ± 6	32.25 ± .90	1		1.72 ± .05	35 ± 4
352.82 ± .37	69 ± 13	5.84 ± .24	1		.311 ± .013	17 ± 5
354.89 ± .38	100	.60 ± .10			.032 ± .005	
357.87 ± .38	6000	4.5			.24	5949
359.99 ± .39	114 ± 20	1.66 ± .18			.088 ± .010	80
361.28 ± .39		.33 ± .10			.017 ± .005	
366.0 ± .40	5000	5.4			.28	4947
368.33 ± .40		.60 ± .20			.031 ± .010	
370.31 ± .40	105 ± 20	3.90 ± .24			.203 ± .012	23
371.72 ± .40	3400	11.5 ± 1.4			.57 ± .07	3335
375.02 ± .41	43 ± 12	4.0 ± .3	0		.21 ± .02	6
377.10 ± .41	100 ± 20	2.98 ± .30			.154 ± .015	39 ± 16
378.04 ± .41	223 ± 60	1.88 ± .30			.097 ± .015	
382.43 ± .41	130	.63 ± .15			.032 ± .008	85
384.26 ± .42	109 ± 30	8.55 ± .50	1		.434 ± .026	75 ± 25
385.90 ± .42	1000	1.4			.071	955
389.51 ± .43	74 ± 14	2.09 ± .18			.106 ± .009	21
391.52 ± .44	142 ± 28	1.89 ± .18			.0955± .009	68
394.43 ± .44	106 ± 13	9.78 ± .33	1		.492 ± .017	52 ± 10
396.91 ± .44	108 ± 20	3.17 ± .21			.159 ± .011	61 ± 20
401.56 ± .45	220 ± 20	29.1 ± 1.2	1		1.45 ± .06	154 ± 25
404.24 ± .45	155 ± 25	34.8 ± 1.3	1		1.73 ± .07	76 ± 15
406.03 ± .45	320	2.73 ± .60			.135 ± .030	
406.95 ± .46	330	1.46 ± .60			.072 ± .030	302
408.71 ± .46	150	1.94 ± .30			.0960± .015	58
412.31 ± .47	145 ± 15	13.41 ± .63	1		.660 ± .031	70 ± 13
415.66 ± .47	152 ± 30	4.89 ± .36			.240 ± .018	18
417.60 ± .48	267 ± 64	2.40 ± .36			.117 ± .018	178
419.85 ± .48	139 ± 25	9.11 ± .45	1		.445 ± .022	74 ± 20
425.67 ± .49		.40			.019	
426.37 ± .49	7000	14.8			.72	6913
429.64 ± .50	780	5.66 ± .81			.273 ± .039	727
431.29 ± .50	3500	7.3			.35	3443
432.73 ± .50		1.54 ± .30			.074 ± .014	
437.76 ± .51	62 ± 15	4.04 ± .30	1		.193 ± .014	10
438.72 ± .52	61 ± 15	4.36 ± .30	1		.208 ± .014	3
440.07 ± .52		.42 ± .15			.020 ± .007	
442.41 ± .52		10.5 ± .5	0		.499 ± .024	337 ± 70
449.75 ± .53		2.0 ± .3			.094 ± .014	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
451.35 ± .53	58	21.1 ± 1.4	1		.99 ± .07	3.7
454.45		0.7			.033	
455.73 ± .53	614	39.7 ± 2.5	0	(40)	1.86 ± .12	495
457.33		11.1 ± 1.1			.52 ± .05	118
458.80	78	6.9 ± .6	1	(40)	.32 ± .02	33
461.26		3.5 ± 0.4			0.16 ± .02	52.4
462.64		.8 ± .2			.04 ± .01	86
468.20	2098	6.5		(40)	.30	2045
470.0	5100	15		(40)	.69	5030
473.10	54	6.2 ± .4	1	(40)	.29 ± .02	10
475.31	586	5.7		(40)	.26	535
476.90	1995	2.7		(40)	0.12	1950
479.24		0.2			.009	
484.15		3.9 ± 0.4			.18 ± .02	
487.29		3.3			0.15	
487.81		5.2			.24	
490.65		20 ± 3			.90 ± .14	2220
494.10	115	6.9 ± .4	1	(40)	.31 ± .02	70
495.63		1.2			.054	
500.50	75	5.1 ± 1.3	1	(40)	.23 ± .06	32
502.86	84	17.8 ± 1.4	1	(40)	.793 ± .062	32
505.78		0.9			0.04	
508.22		0.7			0.031	
509.74	363	78.2 ± 4.0	1	(40)	3.46 ± .18	167
511.52	3366	12.9	0	(40)	.57	3300
515.16		1			.044	
516.57		.3			.013	
517.98		.7			.03	
520.22	98	22.4 ± 1.8	1	(40)	.98 ± .08	43
524.21	91	45.9 ± 4.8	1	(40)	2.00 ± .21	20
525.40	10782	121	0	(40)	5.28	10500
526.00		1.5			.065	51
527.38		1.5			.065	~16
530.52	243	63.8 ± 5.1	0	(40)	2.77 ± .22	75
539.17	54	17.1 ± 3.0	1	(40)	.736 ± .129	2.4
540.71		4			.17	
541.55		8			.34	
543.08	57	17.6 ± 3.0	1	(40)	.755 ± .129	5
545.85	1195	17.5 ± 2.5	0	(40)	.749 ± .11	1120
547.14		1.8			.077	
549.67	59	17.7 ± 1.5	1	(40)	.755 ± .064	7

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
553.50	68	17	1	(40)	.72	~3
554.13	1284	52.2	0	(40)	2.22	1140
555.72		4.9			.21	
559.16	88	40.8 ± 2.4	1	(40)	1.73 ± .10	21
562.64		53.6 ± 4.0			2.26 ± .17	
564.03		9.8 ± 1.6			.412 ± .067	~2
565.81		14.2 ± 1.2			.597 ± .050	5
571.11	82	12.9 ± .9	1	(40)	.540 ± .038	33
574.00	419	79.5 ± 6.0	0	(40)	3.32 ± .25	220
575.77	88	59.7 ± 5.6	1	(40)	2.49 ± .23	8
578.00		2.5		(40)	.10	36
579.04	54	10.3 ± .9	1	(40)	.428 ± .037	7
584.81		.7		(40)	.029	
588.09	61	16.9 ± 1.2	1	(40)	.697 ± .049	10
589.94		.5		(40)	.021	
593.52		3.2 ± .5		(40)	.13 ± .02	4
597.35	54	12.9 ± 1.5	1	(40)	.528 ± .061	5
598.04	5998	21.6 ± 4.0	0	(40)	.88 ± .16	5915
604.01	65	37.6 ± 3.3	1	(40)	1.53 ± .13	3.5
607.64	57	14.6 ± 1.2	1	(40)	.592 ± .049	7.7
609.29	62	23.6 ± 2.4	1	(40)	.956 ± .097	6.6
612.82		8.8 ± .8		(40)	.36 ± .03	14
620.24	57	17.8 ± 1.5	1	(40)	.715 ± .060	5.4
622.39		14.7 ± 1.2	1	(40)	.589 ± .048	9.8
625.17		11.8 ± 1.2	1	(40)		7.5
628.21		2.2 ± .7		(40)	.088 ± .028	9
632.97	3908	34 ± 4	0	(40)	1.35 ± .16	3800
636.47		8.0 ± 1.2		(40)	.32 ± .05	16
639.28	55	13.9 ± 1.5	1	(40)	.550 ± .059	6
641.42		.7		(40)	.027	
644.94	49	8.8 ± 1.2	1	(40)	.35 ± .05	3
646.65		1.5			.059	
658.29	140	122 ±13	1	(40)		19

Note - Single-level Breit-Wigner parameters. For multi-level parameters see Derrien 70 and Farrel 67.

$^{240}_{94}Pu$ [6540 yr]

THERMAL CROSS SECTIONS

σ_γ = 289.5±1.4 b
σ_f = 0.030±0.045 b
$\bar{\sigma}_s$ = 1.54±0.09 b
σ_t = 291.1±1.4 b
ν_{sp} = 2.17±0.01
a_{coh} = 3.5±0.1 fm

RESONANCE PROPERTIES

I_γ = 8013±960 b
<D> = 13.6±0.4 eV
S_0 = 0.94±0.09

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 5240.6±3.0 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
1.056± .002	33.3±3.0	2.30± .15	31 ±3	2.24 ± .15	
20.46 ± .01	31.1±3.4	2.65± .07	32.2±3.4	.586± .016	
38.34 ± .02		17.5 ± .5		2.83 ± .08	
41.64 ± .02		16.3 ± .5	32.8±1.0	2.53 ± .08	
66.62 ± .04		53.2 ± 1.0	28 ±1	6.52 ± .12	
72.80 ± .04		21.0 ± .5	28 ±1	2.46 ± .06	
90.78 ± .06		13.0 ± .3		1.36 ± .03	
92.51 ± .06		3.2 ± .1		.33 ± .01	
105.05 ± .07		46.0 ± 1.5	36.5±1.0	4.49 ± .15	
121.67 ± .09		14.5 ± .5		1.31 ± .05	
130.8 ± .1		.17± .03		.015± .003	
135.3 ± .1		18.5 ± 1.0		1.59 ± .09	
151.9 ± .1		13.8 ± .5	29.5±1.1	1.12 ± .04	
162.7 ± .1		9.0 ± .3	27.5± .9	.706± .024	
170.2 ± .1		16 ± 1	27.3± .9	1.23 ± .08	
186.2 ± .2		17.5 ± .5	28.8± .9	1.28 ± .04	
192.1 ± .2		.30± .04		.022± .003	
199.6 ± .2		1.0 ± .1		.071± .007	
239.2 ± .2		13.1 ± .6	27.7±1.0	.847± .004	
260.5 ± .2		24 ± 1	31.0±1.0	1.49 ± .06	
287.1 ± .2		136 ± 1	32.0±1.1	8.03 ± .06	
304.9 ± .2		7.4 ± .2		.42 ± .01	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
316.4 ± .2		6.1 ± .3		.34 ± .02	
320.8 ± .2		19.6 ± .4		1.09 ± .02	
338.5 ± .2		7.3 ± .4		.40 ± .02	
346.1 ± .2		17.2 ± .5		.925± .03	
363.7 ± .2		30.5 ± 1.0	32.8±1.7	1.60 ± .05	
372.0 ± .2		14.2 ± .8	27.5± .3	.74 ± .04	
405.0 ± .2		105 ± 5	30.2± .2	5.22 ± .25	
419.0 ± .2		6.2 ± .3		.30 ± .15	
445.8 ± .3		1.9 ± .3		.090± .014	
449.8 ± .2		17.2 ± 1.5		.81 ± .07	
466.5 ± .2		2.7 ± .3		.125± .014	
473.3 ± .2		4.2 ± .3		.19 ± .01	
493.8 ± .2		6.1 ± .5		.27 ± .02	
499.3 ± .3		18 ± 1	33.5±1.5	.81 ± .05	
514.3 ± .3		21.5 ± 1.5		.95 ± .070	
526.1 ± .4		.92± .48		.040± .021	
530.8 ± .4		.70± .40		.030± .017	
546.8 ± .3		30.0 ± .7	36 ±4	1.28 ± .03	
553.3 ± .3		17.5 ± 1.5		.74 ± .06	
566.4 ± .3		31.5 ± 1.7	29.5±2.0	1.32 ± .07	
584.1 ± .5		1.2 ± .6		.05 ± .02	
596.8 ± .2		57.5 ± 2.5	33.5±2.0	2.35 ± .10	
608.1 ± .2		22.8 ± 1.4	31.5±3.0	.924± .057	
632.5 ± .2		13.3 ± 1.3		.53 ± .05	
637.5 ± .2		13.5 ± 1.0		.53 ± .04	
665.1 ± .2		196 ± 8	33 ±2	7.64 ± .31	
678.6 ± .2		26.0 ± 1.8		1.00 ± .07	
712.1 ± .3		1.3 ± .6		.050± .023	
743.3 ± .3		1.0 ± .7		.037± .026	
750.0 ± .3		68.2 ± 3.4	(30 ±2)	2.49 ± .12	9.5± 2.0
758.9 ± .3		6.0 ± .9		.22 ± .03	
778.3 ± .3		1.2 ± .8		.04 ± .03	
782.2 ± .3		2.8 ± 1.0		.10 ± .04	~132
791.0 ± .3		23.9 ± 1.4		.85 ± .05	16.3± 1.7
810.5 ± .3		213 ±10	(30 ±2)	7.52 ± .35	10.2± 1.2
819.9 ± .3		110.0 ± 5.5	30 ±3	3.84 ± .19	1.4± .2
845.6 ± .3		10.3 ± 1.0		.35 ± .03	
854.9 ± .3		48.0 ± 2.5		1.64 ± .09	
876.5 ± .3		13.9 ± 1.3		.47 ± .04	
891.5 ± .3		94.5 ± 4.5		3.16 ± .15	
903.9 ± .3		21.8 ± 1.5		.73 ± .05	

$^{240}_{94}Pu$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
908.9 ± .3		79.1 ± 4.0		2.62 ± .13	
915.3 ± .3		36.1 ± 2.2		1.19 ± .07	
943.5 ± .3		122.8 ± 5.5		4.00 ± .18	
958.4 ± .3		71.5 ± 3.5		2.31 ± .12	
971.3 ± .3		80.4 ± 4.0		2.58 ± .13	
979.2 ± .3		7.3 ± 1.5		.23 ± .05	
1001.8 ± .3		98.2 ± 5.0		3.10 ± .16	
1024.1 ± .4		5.0 ± 1.5		.16 ± .05	
1041.6 ± .4		12.7 ± 1.9		.39 ± .06	
1045.7 ± .4		4.0 ± 1.6		.12 ± .05	
1072.6 ± .4		109.3 ± 5.5		3.34 ± .17	
1099.8 ± .4		84.1 ± 8.5		2.54 ± .26	
1115.7 ± .5		2.6 ± 1.6		.08 ± .05	
1128.8 ± .4		50.1 ± 3.0		1.49 ± .09	
1133.8 ± .4		6.7 ± 2.0		.20 ± .06	
1142.7 ± .4		40.6 ± 2.7		1.20 ± .08	
1159.6 ± .4		22.1 ± 2.0		.65 ± .06	
1185.5 ± .4		157.5 ± 8.0		4.57 ± .23	
1190.8 ± .4		114.9 ± 5.9		3.33 ± .17	
1208.9 ± .4		62.9 ± 3.8		1.81 ± .11	
1228.0 ± .4		10.0 ± 2.0		.29 ± .06	
1236.5 ± .4		11.4 ± 2.2		.32 ± .06	
1254.7 ± .4		76.8 ± 4.6		2.17 ± .13	
1281.4 ± .4		4.3 ± 2.1		.12 ± .06	
1300.7 ± .4		245.0 ±12.5		6.79 ± .35	
1328.1 ± .4		369.0 ±18.5		10.13 ± .51	
1345.0 ± .5		26.1 ± 3.1		.71 ± .08	
1350.7 ± .6		8.3 ± 2.5		.23 ± .07	
1362.9 ± .6		7.4 ± 3.0		.20 ± .08	
1377.0 ± .5		64.7 ± 4.5		1.74 ± .12	
1389.0 ± .6		14.2 ± 2.8		.38 ± .07	
1401.2 ± .6		5.2 ± 3.1		.14 ± .08	60.0±16.2
1408.6 ± .6		10.9 ± 2.5		.29 ± .07	60.0±38.3
1426.1 ± .5		36.7 ± 3.7	(30 ±2)	.97 ± .10	5.1± .5
1429.0 ± .5		15.0 ± 3.0		.40 ± .08	
*1450.2 ± .5		64.6 ± 5.2	(30 ±2)	1.67 ± .14	3.5
1462.9 ± .5		21.0 ± 3.3		.55 ± .09	
1481.2 ± .7		9.4 ± 3.0		.24 ± .08	
1540.7 ± .5		101.0 ± 6.1		2.57 ± .16	
1549.5 ± .5		156.7 ± 8.6		3.98 ± .22	
1563.7 ± .5		114.7 ± 8.0		2.90 ± .20	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
1575.3 ± .5		126.2 ± 7.6		3.18 ± .19	
1609.6 ± .6		34.8 ± 3.9		.87 ± .10	
1621.4 ± .6		28.6 ± 3.7		.71 ± .09	
1643.0 ± .6		107.1 ± 7.0		2.65 ± .17	
1662.6 ± .6		63.9 ± 5.2		1.59 ± .13	
1687.9 ± .6		32.7 ± 4.3		.80 ± .10	
1724.1 ± .6		83.5 ± 6.7		2.01 ± .16	
1741.6 ± .6		24.9 ± 4.3		.60 ± .10	
1763.7 ± .6		51.7 ± 4.8		1.23 ± .11	
1771.4 ± .8		9.8 ± 5.0		.23 ± .12	
1779.0 ± .6		491 ±25		11.7 ± .6	
1841.2 ± .7		125.8 ± 9.0	(30 ±2)	2.93 ± .21	10.6± 1.2
1852.7 ± .7		34.4 ± 5.5		.80 ± .13	
1872.7 ± .7		77.4 ± 7.0		1.79 ± .16	
1901.6 ± .7		209.0 ±12.5		4.80 ± .29	
1916.6 ± .7		35.9 ± 6.1	(30 ±2)	.82 ± .14	50 ±10
1943.3 ± .9		8.0 ± 5.0		.18 ± .11	
1949.1 ± .7		82.5 ± 7.6		1.87 ± .17	
1956.2 ± .7		261 ±16		5.90 ± .36	28 ± 4
1973.1 ± .7		68.1 ± 7.5		1.53 ± .17	
1991.5 ± .7		114.5 ± 9.5		2.57 ± .21	
1998.3 ± .7		5.6 ± 4.0		.12 ± .09	
2016.7 ± .7		52.5 ± 7.5		1.17 ± .17	
2022.9 ± .7		55.5 ± 7.5		1.23 ± .17	
2033.4 ± .7		101.5 ± 9.5	(30 ±2)	2.25 ± .21	7.6± .9
2055.6 ± .8		68.5 ± 7.5	(30 ±2)	1.51 ± .17	2.0± .2
2082.8 ± .8		98.8 ± 9.5		2.16 ± .21	
2110.7 ±1.0		13.7 ± 5.5		.30 ± .12	
2154.0 ±1.1		14.3 ± 7.0		.31 ± .15	
2182.0 ± .8		85.6 ± 8.5		1.83 ± .18	
2198.2 ± .8		130.0 ±10.5		2.77 ± .22	
2240.6 ± .8		34.1 ± 7.5		.72 ± .16	
2256.6 ± .8		134.5 ±11.0		2.83 ± .23	
2277.9 ± .8		427 ±26		8.94 ± .55	
2290.7 ± .9		208.5 ±17.0		4.36 ± .36	
2303.3 ±1.2		17.2 ± 7.0		.36 ± .15	
2334.4 ± .9		36.6 ± 7.5		.76 ± .16	
2350.9 ± .9		31.6 ± 8.0		.65 ± .17	
2365.8 ± .9		241 ±17		4.95 ± .35	
2373.4 ± .9					
2385.1 ± .9		18.7 ± 7.5		.38 ± .15	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
2405.0 ± .9		25.1 ± 7.5		.51 ± .15	
2416.0 ± .9		64.9 ± 9.0		1.32 ± .18	
2434.3 ± .9		205 ±15		4.16 ± .31	
2459.4 ± .9		25.6 ± 8.5		.52 ± .17	
2470.8 ± .9		45.5 ± 8.0		.92 ± .16	
2485.3 ± .9		21.2 ± 8.5		.42 ± .17	
2521.0 ±1.0		109.5 ±11.0		2.18 ± .22	
2538.6 ±1.0		287.5 ±20.0		5.70 ± .40	
2549.2 ±1.0		79.7 ±12.0		1.58 ± .24	
2575.3 ±1.0		47.5 ± 9.5		.94 ± .19	
2639.5 ±1.0		426 ±42		8.29 ± .83	
2652.4 ±1.0		36.3 ± 8.0		.71 ± .16	
2692.8 ±1.0		345 ±26		6.64 ± .50	95.7±11.7
2717.7 ±1.0		40.7 ±10.0		.78 ± .19	
2739.2 ±1.0		177 ±18		3.38 ± .34	
2748.4 ±1.0		102 ±13	(30 ±2)	1.95 ± .25	11.3± 1.3
2817.6 ±1.1		41.2 ±10.0		.78 ± .19	
2843.5 ±1.1		157 ±16		2.94 ± .30	
2859.7 ±1.1		27 ±11		.51 ± .21	
2882.0 ±1.1		30 ±12		.55 ± .22	
2895.6 ±1.1		60 ±12		1.11 ± .26	
2905.0 ±1.1		115 ±14		2.13 ± .26	
2930.0 ±1.1		132 ±15		2.43 ± .28	
2968.6 ±1.1		85.0 ±13.5		1.55 ± .25	
2980.5 ±1.2		108 ±20		1.98 ± .37	
2986.2 ±1.2		12.5 ± 8.0		.23 ± .15	
2994.7 ±1.2		55.8 ±11.5		1.02 ± .21	
3004.0 ±1.2		76.5 ±13.0		1.39 ± .24	
3018.0 ±1.2		117 ±18		2.12 ± .33	
3029.0 ±1.2		21.0 ±11.0		.38 ± .20	
3054.7 ±1.2		47.0 ±15.0		.85 ± .27	
3077.4 ±1.2		128 ±19	(30 ±2)	2.31 ± .34	12.9± 1.7
3088.0 ±1.2		35.0 ±17.0		.63 ± .31	
3112.7 ±1.2		38.5 ±14.0		.68 ± .25	
3172.5 ±1.3		225 ±23		3.99 ± .41	
3192.5 ±1.3		349 ±35		6.17 ± .62	
3237.5 ±1.3		72 ±15		1.26 ± .26	
3268.5 ±1.3		134 ±20		2.34 ± .35	
3332.0 ±1.3		14.5 ±10.0		.25 ± .17	
3423.0 ±1.4		34.5 ±12.0		.59 ± .21	126.9±43.9
3458.0 ±1.4		68.0 ±13.5		1.16 ± .23	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
3465.5 ±1.4		344 ±35		5.64 ± .58	
3493.5 ±1.4		65.0 ±13.5		1.11 ± .23	
3555.0 ±1.4		91.0 ±15.5		1.52 ± .26	
3567.5 ±1.4		162 ±20		2.71 ± .34	
3595.0 ±1.4		28.5 ±13.5		.47 ± .22	
3657.0 ±1.5		293 ±30		4.85 ± .50	
3665.0 ±1.5		54.5 ±19.0		.90 ± .32	
3702.0 ±1.5		51 ±17		.84 ± .28	
3723.0 ±1.5		60 ±20		.98 ± .33	
3800.0 ±1.6		101 ±23		1.64 ± .38	
3844.0 ±1.6		76 ±20		1.23 ± .32	
3852.0 ±1.6		98 ±20		1.59 ± .33	
3872.0 ±1.6		46 ±19		.74 ± .31	
3900.0 ±1.6		209 ±27		3.35 ± .43	
3917.0 ±1.6		163 ±23		2.61 ± .37	
3954.0 ±1.6		92 ±21		1.47 ± .33	
3975.0 ±1.7		102 ±22		1.62 ± .35	
3990.0 ±1.7		29 ±16		.47 ± .29	
4031.0 ±1.7		109 ±21		1.71 ± .33	
4084.0 ±1.7		120 ±23		1.88 ± .36	
4100.0 ±1.7		257 ±28		4.02 ± .44	
4122.0 ±1.7		497 ±40		7.74 ± .63	
4134.0 ±1.7		67 ±23		1.05 ± .36	
4149 ±1.7		265 ±29		4.11 ± .45	
4161.0 ±1.7		89 ±24		1.39 ± .38	
4203.0 ±1.8		438 ±43		6.75 ± .66	
4221.0 ±1.8		68 ±21		1.05 ± .32	
4270.0 ±1.8		159 ±27		2.43 ± .41	
4288.0 ±1.8		316 ±41		4.83 ± .61	
4329.0 ±1.8		302 ±35		4.58 ± .53	
4376.0 ±1.8		82 ±30		1.24 ± .45	
4386.0 ±1.8		32 ±24		.48 ± .36	
4398.0 ±1.9		76 ±25		1.17 ± .37	
4422.0 ±1.9		61 ±24		.91 ± .36	
4433.0 ±1.9		47 ±22		.71 ± .33	
4458.0 ±1.9		102 ±27		1.52 ± .40	
4570.0 ±1.9		220 ±45		3.26 ± .67	
4588.0 ±1.9		526 ±60		7.76 ± .89	
4599.0 ±1.9		75 ±30		1.11 ±2.44	
4615 ±2		262 ±63		3.85 ± .93	
4646 ±2		149 ±45		2.18 ± .66	

E_0 (eV)		Γ (meV)	$g\Gamma_n$ (meV)		Γ_γ (meV)	$g\Gamma_n^0$ (meV)		Γ_f (meV)
4721	±2		510	±75		7.43	±1.10	
4745	±2		245	±50		3.56	± .73	
4755	±2		56	±28		.82	± .41	
4766	±2		15	±15		.22	± .22	
4771	±2		22	±20		.32	± .29	
4779	±2		34	±25		.49	± .36	
4792	±2		133	±34		1.93	± .49	
4812	±2		172	±35		2.48	± .50	
4823	±2		63	±25		.91	± .36	
4894	±2		59	±27		.85	± .39	
4958	±2		291	±55		4.13	± .78	
4969	±2		158	±50		2.23	± .70	
4993	±2		92	±35		1.30	± .49	
5072	±2		509	±50		7.15	± .70	
5113	±2		93	±35		1.30	± .49	
5134	±2		42	±30		.58	± .41	
5148	±2		50	±35		.70	± .49	
5162	±2		40	±30		.55	± .41	
5194	±2		313	±55		4.26	± .75	
5215	±2		163	±40		2.21	± .54	
5249	±2		524	±70		7.24	± .97	
5279	±2		140	±45		1.93	± .62	
5299	±2		270	±45		3.71	± .62	
5334	±2		203	±50		2.78	± .69	
5350	±2		153	±50		2.09	± .68	
5367	±2		70	±40		.96	± .55	
5393	±2		84	±42		1.14	± .57	
5417	±2		255	±50		3.47	± .68	
5489	±2		50	±40		.67	± .54	
5499	±2		87	±40		1.17	± .54	
5510	±2		355	±70		4.78	± .94	
5522	±3		172	±45		2.32	± .61	
5544	±3		582	±90		7.82	±1.20	
5574	±3		758	±90		10.2	±1.2	
5592	±3		207	±60		2.77	± .80	
5615	±3		62	±50		.83	± .67	
5681	±3		106	±50		1.40	± .66	
5692	±3		91	±46		1.21	± .61	

* Probably doublet.

Note - Single-level Breit-Wigner parameters.

$^{241}_{94}Pu$ [15 yr]

THERMAL CROSS SECTIONS

σ_γ = 368±10 b
σ_f = 1009±8 b
σ_a = 1377±10 b
$\bar{\sigma}_s$ = 11±1 b
σ_t = 1388±10 b
α = 0.365±0.009
η = 2.145±0.014
ν_p = 2.927±0.014

RESONANCE PROPERTIES

I_γ = 162±8 b
I_f = 570±15 b
<D> = 1.0±0.1 eV
S_0 = 0.99±0.14

RESONANCE PARAMETERS

I^π = 5/2⁺ S_n = 6309.5±0.7 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
Bound level			3			
.257± .005	132 ± 13	.060± .005	3	35 ± 8	.12 ±.01	97 ± 10
4.28 ± .01	77 ± 10	.53 ± .12	3	32 ± 8	.26 ±.06	45 ± 10
4.58 ± .01	170 ± 10	.30 ± .04	2	(35)	.14 ±.02	135 ± 10
5.97 ± .05	1338 ±100	2.7 ±0.2	2	(35)	1.1 ±.1	1300 ±100
6.93 ± .02	156 ± 20	0.72 ± .05	3	(35)	.27 ±.02	120 ± 20
8.68 ± .03	131 ± 30	0.80 ± .15	3	30 ±10	.27 ±.05	100 ± 30
9.57 ± .04	385	0.44 ± .08	2	(35)	.14 ±.03	350
10.06 ± .05	636	1.1 ± .4	2	(35)	.35 ±.13	600
12.79 ± .03	281 ± 5	0.79 ± .04	3	50 ± 7	.22 ±.01	230 ± 20
13.40 ± .03	79 ± 10	2.7 ±0.2	2	36 ± 2	.74 ±.06	40 ± 10
14.74 ± .03	157 ± 6	6.2 ±0.2	3	41 ± 5	1.62 ±.05	110 ± 10
15.97 ± .04	556 ± 30	1.44 ± .12	3	(35)	.360 ±.030	520 ± 30
16.67 ± .04	213 ± 9	1.28 ±0.08	2	42 ± 9	.314 ±.020	170 ± 20
17.83 ± .04	65 ± 4	3.18 ± .20	2	39 ± 3	.753 ±.047	23 ± 5
18.22 ± .04	80 ± 20	0.15 ± .04		(35)	.035 ±.009	40 ± 16
20.38 ± .05	40 ± 20	.14 ± .02			.031 ±.004	10
20.69 ± .05	105 ± 5	.36 ± .04	3	43 ± 6	.079 ±.009	62 ± 8
21.05 ± .06	335 ±100	.060		(35)	.013	300 ±100

$^{241}_{94}Pu$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
21.91 ± .05	70 ± 20	.17 ± .02		50 ±20	.036 ±.004	20
23.00 ± .05	370 ± 20	1.15 ± .08	3	(35)	.240 ±.017	335 ± 50
23.70 ± .06	350 ± 50	.39 ± .08		55 ±15	.080 ±.016	325 ± 30
24.04 ± .06	127 ± 6	1.38 ± .14	3	46 ± 7	.281 ±.029	80 ± 20
24.61 ± .06		0.35 ± .15			.071 ±.030	
26.39 ± .06	310 ± 10	4.5 ±0.2	3	45 ±10	.875 ±.039	265 ± 20
27.50 ± .12		.08 ± .04			.015 ±.008	
28.89 ± .07	700 ± 30	4.8 ±0.2	2	(40)	.893 ±.037	655 ± 30
29.42 ± .07	125 ± 30	.55 ± .06	[3]	(40)	.10 ±.01	85 ± 30
30.96 ± .07	300 ± 20	2.57 ± .13	3	56 ±14	.462 ±.023	241 ± 11
32.20 ± .14		.017		(40)	.0030	
33.30 ± .07	160 ± 30	.26 ± .05		40 ±15	.045 ±.009	120 ± 30
33.77 ± .07	140 ± 20	0.36 ± .12		(40)	.062 ±.021	100 ± 20
34.90 ± .08	1142 ±200	2.07 ±0.21		(40)	.350 ±.036	1100 ±200
34.98 ± .08	55.4	.74 ± .32		(40)	.13 ±.06	
36.15 ± .08	75 ± 4	.13 ± .07		(40)	.022 ±.012	35 ± 4
37.50 ± .08	640 ±200	.24 ± .04		(40)	.039 ±.007	600 ±200
38.14 ± .08	240 ± 30	.50 ± .07		(40)	.081 ±.011	200 ± 30
39.35 ± .08	202 ± 10	1.52 ± .08		(40)	.242 ±.013	160 ± 10
39.89 ± .08	110 ± 12	1.61 ± .08		53 ±13	.255 ±.013	55 ± 5
40.87 ± .09		2.36 ± .18			.369 ±.028	1000 ±200
42.75 ± .09		.35 ± .04			.054 ±.006	200 ± 50
43.40 ± .09	70 ± 20	.27 ± .04		(40)	.041 ±.006	30 ± 5
46.52 ± .09	282 ± 10	1.71 ± .17		(40)	.251 ±.025	240 ± 40
48.11 ± .09	446 ± 80	6.2 ±0.7		(40)	.89 ±.10	400 ± 80
50.33 ± .09	371 ± 40	.69 ± .15		(40)	.097 ±.021	330 ± 40
52.07 ± .09	140 ± 50	.04		(40)	.0055	100 ± 50
58.30 ± .05	622 ± 70	1.9 ±0.2		(40)	.25 ±.03	580 ± 70
59.18 ± .05	580 ± 50	2.20 ± .11		(40)	.285 ±.014	540 ± 80
60.48 ± .05	192 ± 8	5.0 ± .5		27 ± 8	.64 ±.06	160 ± 10
62.20 ± .06	446 ±100	5.7 ±1.0		(40)	.72 ±.13	400 ±100
62.65 ± .06	823 ±100	2.9 ±0.3		(40)	.37 ±.04	780 ±120
64.52 ± .06		.25 ± .06			.031 ±.008	276 ± 50
65.66 ± .06	343 ± 20	5.40 ± .14		39 ±12	.666 ±.017	300 ± 20
66.51 ± .06	195 ± 22	~3.04		(40)	~.373	152
67.44 ± .06		.32 ± .09			.039 ±.011	80 ± 43
68.19 ± .06	141 ± 10	1.27 ± .09		(40)	.154 ±.011	100 ± 10
69.15 ± .06	136 ± 20	1.19 ± .12			.143 ±.014	60 ± 10
72.12 ± .07	412 ±100	1.53 ± .24		(40)	.180 ±.028	370 ±100
73.80 ± .07	54 ± 2	0.50 ± .07		(40)	.058 ±.008	13 ± 2
75.94 ± .07	160 ± 13	5.0 ±0.3		52 ±17	.57 ±.03	103 ± 15

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
77.06		5.3 ±0.9			.60 ±.10	
77.73	800 ±120	~1.70			~.19	
80.14 ± .08	145 ± 30	5.4 ± .6		(40)	.60 ±.07	100 ± 30
81.36 ± .08	262 ± 20	6.9 ±0.3		(40)	.77 ±.03	215 ± 20
81.98 ± .08	1018 ±100	2.9 ±0.2		(40)	.32 ±.02	975 ±100
83.12 ± .08	113 ± 25	5.4 ±0.3		(40)	.59 ±.03	73 ± 13
85.35 ± .08	201	3.5 ±0.4		52	.38 ±.04	145
85.67 ± .08	273 ± 50	2.8 ±0.3		(40)	.30 ±.03	230 ± 50
86.00 ± .09	350 ± 50	~.72		(40)	~.078	310 ± 50
86.93 ± .09	130 ± 20	7.4 ±0.3		43	.79 ±.03	80 ± 20
87.80 ± .09	322 ± 50	2.35 ± .13		(40)	.25 ±.01	280 ± 50
89.12 ± .09	792 ±150	2.23 ±0.18		(40)	.236 ±.019	750 ±150
90.54 ± .10	218 ± 40	2.7 ±0.4		(40)	0.28 ±.04	175 ± 40
91.34 ± .10						
91.74 ± .10						
93.71 ± .10		.36 ± .14			.037 ±.015	
95.24 ± .10		.49 ± .20			.050 ±.020	
96.12 ± .10	860 ± 60	1.67 ± .20		(40)		818 ±100
97.53 ± .11	500 ± 50	.59 ± .18		(40)	.17 ±.02	459 ± 50
98.28 ± .11	193 ± 10	7.30 ± .16		(40)	.736 ±.016	146 ± 10
99.66 ± .11		1.81 ± .14			.181 ±.014	
100.50		~1.3			~.13	*14.3
101.42	~148	1.61		72	.160	74
102.33		~1.40			~.138	*17.3
103.52		1.53			0.150	*7.2
107.54		0.50			0.048	*.7
107.85	84	1.20			0.116	51
109.05	470	1.92			0.184	450
110.20	800	0.45			0.043	751
113.13	80	0.75		34	0.071	46
115.40	~1600	~1.70			~.158	~1540
117.23	360	3.48		43	0.321	314
120.33	~600	~0.80			~.0729	~505
122.11	480	6.95		54	0.629	419
123.24	105	2.35		43	0.212	59
124.08						*3.9
125.34						*.9
125.96						*1.7
128.06	~1000	~1.50			0.133	~968
128.43	90	5.10		45	0.450	40
129.96	390	1.75			0.150	333

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
130.64	96	10.77		41	0.942	44
132.90	600	1.90		35	0.165	563
133.57	76	5.51		38	0.477	32
134.73	1260	2.82			0.243	1188
136.50	80	0.92		44	0.0787	35
138.24	400	3.96			0.337	329
140.05	200	5.84		44	0.493	150
141.33						*5.0
142.03	180	14.64		57	1.23	
144.91	~330	1.06			0.08806	~299
146.01	220	6.88		57	0.56937	156
147.11	1500					*12.0
148.73	146	1.94		39	0.159	105
149.90		4.40			0.359	*29.6
151.01	220	2.14		35	0.174	183
151.84	~1100	2.20			0.179	~1065
153.55	380	7.27		33	0.587	341
155.34	154	1.90		42	0.152	110
158.84	209	5.00		63	0.397	141
159.54		~1.55			~.123	*9.6
160.51	430	3.07		51	.242	376

* $\sigma_0\Gamma_f$ (b-eV). for the 100.50 and 102.33 eV resonances, values are approximate.

Note - Single-level Breit-Wigner parameters.

$^{242}_{94}Pu$ [3.87×10^5 yr]

THERMAL CROSS SECTIONS

σ_γ = 18.5±0.4 b
σ_f < 0.2 b
$\bar{\sigma}_s$ = 8.0±0.2 b
σ_t = 26.5±0.5 b
ν_{sp} = 2.10±0.02
a_{coh} = 8.1±0.1 fm

RESONANCE PROPERTIES

I_γ = 1130±60 b
I_f = 5 b
R' = 9.6±0.2 fm
<D> = 16.5±0.5 eV
S_0 = 0.9±0.1

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 5037±6 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
2.67± .01	27 ± 2	2.00 ± .08	25 ± 2	1.22 ± .05	
14.60± .01		.061± .013		.016 ± .003	
22.57± .01	23.3± 5.0	.29 ± .02	23 ± 5	.060 ± .004	
40.95± .01	27.5± 4.0	.45 ± .04	27 ± 4	.070 ± .006	
53.46± .01	73.2± 2.0	52 ± 1	21.2± 1.7	7.11 ± .02	.044
67.60± .02	27.5± 3.0	4.5 ± .4	23 ± 3	.55 ± .05	.077
88.45± .02		.66 ± .05		.070 ± .005	.032
107.32± .03	38 ± 2	17 ± 1	21 ± 2	1.64 ± .01	.051
131.4 ± .1	32.1± 1.0	6.1 ± .2	26 ± 1	.53 ± .02	.049
141.43			(29)	.010 ± .002	
149.7 ± .1	37.0± 2.0	14.0 ± .5	23 ± 2	1.14 ± .04	.049
163.5 ± .1				.041 ± .004	
204.8 ± .1	73 ± 4	52 ± 3	21 ± 2	3.6 ± .2	.49
210.0 ±				.029 ± .006	
215.3 ± .1				.358 ± .007	.19
219.3 ±		.30 ± .03		.020 ± .002	
232.7 ±		4.9 ± .3		.32 ± .02	.074
264.5 ± .2		0.36 ± .04		.022 ± .002	
271.95				.010 ± .002	.091
273.6 ± .2	38.6± 2.0	16.6 ± .5	22 ± 2	1.00 ± .03	

$^{242}_{94}Pu$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
274.75		.17 ± .03		.010 ± .002	
281.05		.13 ± .05		.008 ± .003	
298.7 ± .2	33 ± 7	8.0 ± .3	26 ± 7	.48 ± .02	
303.6 ± .2	40.8± 2.2	18.3 ± .9	22.5± 2.0	1.05 ± .05	.11
319.9 ± .2	251 ± 8	229 ± 7	22 ± 3	12.8 ± .4	.23
327.6 ± .2		.5 ± .3		.028 ± .017	
332.4 ± .2	96 ± 4	71 ± 2	25 ± 3	3.9 ± .1	.10
374.3 ± .2		6.4 ± .4		.33 ± .02	
379.63± .2		0.27 ± .04		.014 ± .002	
382.2 ± .2	69.4± 3.2	45.9 ± 2.5	23.5± 2.0	2.60 ± .13	.084
396.1		2.5 ± 1.0		.13 ± .05	
399.9 ± .2		1.8 ± .2		.09 ± .01	
410.6 ± .2		7.5 ± .4		.37 ± .02	
424.1 ± .2		4.1 ± .4		.20 ± .02	
425.15		.28 ± .04		.0134 ± .002	
473.7 ± .2		.96 ± .09		.044 ± .004	
482.5 ± .2	44.4± 2.7	20.9 ± 1.8	23.5± 2.0	.95 ± .08	
494.75		.27 ± .07		.012 ± .003	
*503.9 ± .3		150 ± 50		6.68 ±2.23	
536.6 ± .3	121 ± 5	100 ± 5	21 ± 2	4.32 ± .22	
548.6 ± .3	99 ± 4	74 ± 3	25 ± 2	3.16 ± .13	
576.4 ± .3		30 ± 5		1.25 ± .21	
595.0 ± .3		31.8 ± 3.0		1.30 ± .12	.026 ± .007
599.8 ± .3		8.7 ± .8		.36 ± .03	.134 ± .043
610.8 ± .3		11 ± 2		.45 ± .08	.084 ± .026
638.5 ± .3		4.4 ± .6		.17 ± .02	<.05
665.0 ± .3		2.7 ± .5		.105 ± .019	<.08
669.3 ± .3		13.0 ± 1.0		.50 ± .04	.11 ± .04
693.2 ± .3	57 ± 4	35 ± 3	22 ± 2	1.33 ± .11	.28 ± .06
711.6 ± .3	140 ±10	120 ± 10	20 ± 2	4.50 ± .37	.048 ± .017
727.6 ± .3		3.2 ± .8		.12 ± .03	<.06
736.7 ± .3		105 ± 5		3.87 ± .18	.61 ± .14
755.1 ± .4	154.5± 6.0	132 ± 5	22.5± 2.5	4.80 ± .18	1.65 ± .39
761.2 ± .4		3.8 ± 0.5		.14 ± .02	>80
788.5 ± .4		64 ± 14		2.28 ± .50	1.24 ± .49
794.0 ± .4		120 ± 40		4.26 ±1.42	.043 ± .009
824.5 ± .5		3 ± 1		.10 ± .04	.17 ± .06
837.7 ± .5		38 ± 2		1.31 ± .07	.049 ± .017
856.6 ± .5	57 ± 4	35 ± 2	22 ± 3	1.20 ± .07	.17 ± .06
865.6 ± .5		10.5 ± 1.0		.36 ± .03	.048 ± .018
878.1 ± .5	84 ± 4	58 ± 3	26 ± 3	1.96 ± .10	.031 ± .012

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
886.5 ± .5	51.8±10	22.8 ± 1.5	29 ±10	.77 ± .05	.015 ± .006
923.2 ± .5	78 ± 4	60 ± 3	18 ± 3	1.97 ± .10	.037 ± .011
935.4		11 ± 2		.36 ± .07	
939.6		10 ± 3		.33 ± .10	
949.1	40 ± 6	14.0 ± 1.5	26 ± 6	.45 ± .05	
977.9		14.5 ± 1.5		.46 ± .05	
1004		43 ± 3		1.36 ± .09	
1030		46.0 ± 2.5		1.43 ± .08	
1045		118 ± 10		3.65 ± .31	
1062.5		33 ± 3		1.0 ± .09	
1087.5		200 ± 10		6.0 ± .3	
1117		5 ± 3		.15 ± .09	
1129.5		10 ± 5		.30 ± .15	
1148		300 ±100		9 ±3	
1182.5		13 ± 3		.40 ± .09	
1197		95 ± 6		2.75 ± .17	
1207		40 ± 5		1.15 ± .14	
1248		9 ± 3		.25 ± .08	
1267		27 ± 3		.76 ± .08	
1286		59 ± 5		1.65 ± .14	
1308					
1403					
1457					
1696		39.1 ± 5.5		.949 ± .134	.067 ± .02
1708		93.2 ± 12.1		2.26 ± .29	.0010± .0005
1737		9.1 ± 2.4		.22 ± .06	.10 ± .03
1739		21.5 ± 3.6		.516 ± .086	
1751		9.4 ± 2.8		.22 ± .07	.51 ± .20
1762		85.4 ± 10.2		2.03 ± .24	.017 ± .004
1783		.022± .009		.000052± .000021	
1789		.13 ± .01		.0031 ± .0002	>1
1806		12.9 ± 3.7		.304 ± .087	.13 ± .05
1820		4.1 ± 3.8		.096 ± .089	.38 ± .37
1836		3.0 ± .3		.070 ± .007	>30
1862		4.9 ± 3.6		.11 ± .08	.49 ± .39
1881		84.3 ± 10.9		1.94 ± .25	.056 ± .013
1891		4.1 ± 4.6		.094 ± .11	.96 ±1.13
2699		250 ± 38		4.81 ± .73	.11 ± .03
2734		108 ± 15		2.07 ± .29	.094 ± .031
2741		6.9 ± 2.0		.13 ± .04	1.45 ± .63
2756		220 ± 31		4.19 ± .59	.031 ± .016

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
2772		2.8 ± 1.0		.053 ± .019	0.91 ±0.42
3107		.28 ± .05		.0050 ± .0009	>3.4
3112		1.2 ± .1		.022 ± .002	>5.8
3135		226 ± 32		4.04 ± .57	
3142		40.2 ± 12.1		.72 ± .22	1.22 ± .25
3156		52.3 ± 11.9		.93 ± .21	0.10 ± .04
3164		3.0 ± 1.5		.053 ± .027	0.8 ±0.5
3412		380 ± 61		6.51 ±1.04	.09 ± .03
3422		10.4 ± 5.0		.178 ± .085	<.3
3438		7.8 ± 4.0		.13 ± .07	<.3
3451		220 ± 29		3.75 ± .49	.13 ± .03
3472		78 ± 17		1.32 ± .29	<.1
3485		102 ± 19		1.73 ± .32	.28 ± .08
3496		122 ± 23		2.06 ± .39	.36 ± .10
3521		95 ± 21		1.60 ± .35	<.2
3532		.32 ± .05		.00054 ± .00008	>3
3558		.12 ± .03		.0020 ± .0005	
3568		1.2 ± .1		.020 ± .002	
3581		143 ± 24		2.39 ± .40	.18 ± .05
3588		8.2 ± 4.0		.14 ± .07	<.8
3620		13.7 ± 5.0		.23 ± .08	.29 ± .16
3629		5.5 ± 3.0		.091 ± .050	<1.9
3651		155 ± 25		2.57 ± .41	.67 ± .18
3670		13.9 ± 5.0		.23 ± .08	7.1 ±3.2
3698		13.1 ± 5.0		.22 ± .08	<.3
3712		12.2 ± 5.0		.20 ± .08	.81 ± .38
3721		940 ±200		15.41 ±3.28	.05 ± .03
3734		9.4 ± 5.0		.15 ± .08	.19 ± .16
3773		246 ± 44		4.00 ± .72	.21 ± .08
3790		62 ± 22		1.01 ± .36	.07 ± .04
3812		683 ±130		11.06 ±2.11	.15 ± .06
3836		948 ±161		15.31 ±2.60	.05 ± .02

[a] Probably doublet.

Note - Single-level Breit-Wigner parameters.

$^{243}_{94}Pu$ [4.96 hr]

THERMAL CROSS SECTIONS

σ_γ = 60±30 b
σ_f = 196±16 b

$^{244}_{94}Pu$ [8.3×10^7 yr]

THERMAL CROSS SECTIONS

σ_γ = 1.7±0.1 b
ν_{sp} = 2.30±0.19

RESONANCE PROPERTIES

I_γ = 43±4 b
<D> = 2.4±0.5 eV

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 4720±32 keV

E_0 (eV)	$\sigma_0\Gamma_\gamma$(b-eV)	E_0 (eV)	$\sigma_0\Gamma_\gamma$(b-eV)	E_0 (eV)	$\sigma_0\Gamma_\gamma$(b-eV)
30.7	408 ±16	102	864 ±16	227	534 ±31
40.3	157 ± 8	128	134 ±16	233	94 ±16
53.5	94 ± 8	161	75 ±14	285	456 ±47
64.3	880 ±16	185	424 ±16		
87.6	204 ±16	191	94 ±16		

$^{245}_{94}Pu$ [10.5 hr]

THERMAL CROSS SECTIONS

σ_γ = 150±30 b

RESONANCE PROPERTIES

I_γ = 220±40 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pu^{236}	σ_f	PRIVATE COMM.(61)	Hulet
Pu^{236}	σ_f	PR,115,1271(59)	Gindler
Pu^{236}	ν_{sp}	PR,101,1016(56)	Hicks
Pu^{236}	ν_{sp}	PR,101,1804(56)	Crane
Pu^{237}	σ_f	PRIVATE COMM.(61)	Hulet
Pu^{237}	σ_f	PR,115,1271(59)	Gindler
Pu^{238}	ν_p	NP/A,145,1(70)	Jaffey
Pu^{238}	ν_p	NE,29,95(70)	Kroshkin
Pu^{238}	ν_p	70HELSINKI,2,182(70)	Zamyatnin
Pu^{238}	production rate	68WASH,2,1271(68)	Henneley
Pu^{238}	σ_c	NSE,30,355(67)	Young
Pu^{238}	σ_c	BNP,7,305(62)	Young
Pu^{238}	σ_f	58GENEVA,16,5%(58)	Eastwood
Pu^{238}	σ_f	XNPL-178(57)*	Bigham
Pu^{238}	mass spectrometry	CJP,35,147(57)	Butler
Pu^{238}	$\sigma_\gamma\sigma_f$	PR,107,1294(57)	Hulet
Pu^{238}	σ_f	PR,81,893(51)	Hanna
Pu^{238}	activation	ANL-4215,17(48)	Bruehlman
Pu^{238}	σ_f	ANL-4112(48)	Reed
Pu^{239}	delayed neutrons	NSE,44,173(71)	Conant
Pu^{239}	I_γ	NSE,44,180(71)	Eiland
Pu^{239}	α mass spectrometry	ANS,14,371(71)	Iskenderian
Pu^{239}	α analysis	NSE,44,266(71)	Magnusson
Pu^{239}	I_γ alpha counting	NE,28,359(70)	Bah
Pu^{239}	ν_{sp}	THESIS(70)	Boldeman
Pu^{239}	ν_p	THESIS(70)	Boldeman
Pu^{239}	σ_f	70HELSINKI,1,117(70)	Derwytter
Pu^{239}	$\alpha\sigma_f$	70HELSINKI,1,287(70)	Lounsbury
Pu^{239}	σ_f fission chamber	JNE,22,477(68)	Keith
Pu^{239}	ν_{sp}	AWEC/E-172(67)	Boldeman
Pu^{239}	α reactivity	IN-1060(67)	Fast
Pu^{239}	I_γ	NSJ,4,43(67)	Tasuno
Pu^{239}	α	66PNAIS,2,3(66)	Cabell
Pu^{239}	$\sigma_f\sigma_\gamma\alpha$ mass spectrometry	JIN,28,2467(66)	Cabell
Pu^{239}	α	66PNAIS,2,17(66)	Durham
Pu^{239}	α Mn bath	IDO-17083(66)	Smith
Pu^{239}	α Mn bath	66WASH,2,919(66)	Smith
Pu^{239}	σ_f ratio to U-235	66PNAIS,2,291(66)	White
Pu^{239}	ν	65SALZBURG,2,25(65)	Colvin
Pu^{239}	σ_f	65SALZBURG,1,255(65)	Fraysse
Pu^{239}	I_γ	AE-181(65)	Hellstrand
Pu^{239}	ν_p liquid scintillator	NP,66,149(65)	Mather
Pu^{239}	σ_f	CNP-118(64)	Bigham
Pu^{239}	α	JNE,18,105(64)	Carter
Pu^{239}	ν_p liquid scintillator	NP,40,433(63)	Hopkins
Pu^{239}	α mass spectrometry	JIN,24,607(62)	Cabell

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pu^{239}	α	NSE,12,359(62)	Gwin
Pu^{239}	α Mn bath	NSE,14,101(62)	Machlin
Pu^{239}	diffraction	ACA,15,351(62)	Roof
Pu^{239}	σ_f	NSE,9,341(61)	Hardy
Pu^{239}	σ_γ	NSE,11,65(61)	Safford
Pu^{239}	ν_p Hornyak button	NSE,5,49(59)	DeSaussure
Pu^{239}	α pile osci.	NSE,5,225(59)	Muehlhause
Pu^{239}	σ_f	ANNE-R-2990,20(59)	Raffle
Pu^{239}	σ_f	SBGENEVA,16,125(58)	Bigham
Pu^{239}	σ_γ	SBGENEVA,15,127(58)	Bollinger
Pu^{239}	$\alpha\sigma_\gamma/\sigma_f$	JNE,6,285(58)	Cocking
Pu^{239}	η_f	SBGENEVA,16,233(58)	Campbell
Pu^{239}	ν_p	SBGENEVA,16,121(58)	Colvin
Pu^{239}	α reactivity	NSE,3,758(58)	Gaerttner
Pu^{239}	ν_p BF3 counters	CEA-652(58)	Jacob
Pu^{239}	α pile osci.	SBGENEVA,16,34(58)	Rose
Pu^{239}	σ_γ/α pile osci.	ANNE-R/R-2457(58)	Rose
Pu^{239}	delayed neutrons	JNE,6,1(57)	Keepin
Pu^{239}	delayed neutrons	PR,107,1044(57)	Keepin
Pu^{239}	σ_f	HW-48893,98(57)	Leonard
Pu^{239}	σ_f ratio	TID-7547,115(57)	Leonard
Pu^{239}	σ_γ	HW-44525(56)	Leonard
Pu^{239}	σ_γ	JNE,2,187(56)	Pattenden
Pu^{239}	σ_f	ORNL-2081,102(56)	Pratt
Pu^{239}	ν_p BF3 counters	JNE,2,247(56)	Sanders
Pu^{239}	α reactivity	SSGENEVA,4,301(55)	Alichanov
Pu^{239}	α reactivity	SSGENEVA,4,307(55)	Egelstaff
Pu^{239}	ν_p BF3 counters	SSMOSCOW,123(55)	Kalashnikova
Pu^{239}	ν_p BF3 counters	SSMOSCOW,131(55)	Kalashnikova
Pu^{239}	α reactivity	SSGENEVA,4,315(55)	Kanne
Pu^{239}	σ_γ	SSGENEVA,4,224(55)	Nikitin
Pu^{239}	α	KAPL-1464(55)	McMillan
Pu^{239}	ν_p BF3 counters	KAPL-1464(55)	McMillan
Pu^{239}	α reactivity	KAPL-1464(55)	McMillan
Pu^{239}	σ_γ	PRIVATE COMM.(55)	Palevsky
Pu^{239}	σ_γ/α n density changes	SSGENEVA,4,295(55)	Spivak
Pu^{239}	α n density	SSGENEVA,4,295(55)	Spivak
Pu^{239}	absorption,n density	SSGENEVA,4,295(55)	Spivak
Pu^{239}	σ_f ratio	JPR,15,16,(54)	Leveque
Pu^{239}	σ_γ	CUO-92(51)	Havens
Pu^{239}	σ_f	CRGP-458(51)	Tunnicliffe
Pu^{239}	σ_γ	LA-266(45)	Anderson
Pu^{239}	α	LA-102(44)	Snyder
Pu^{239}	ν_p ratio	LA-104(44)	Deline
Pu^{239}	ν_p ratio	LA-102(44)	Snyder
Pu^{240}	diffraction	ACA/B,27,2284(71)	Lander
Pu^{240}	ν_{sp}	NE,30,250(71)	Prokhorova
Pu^{240}	σ_γ	70HELSINKI,1,287(70)	Lounsbury

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pu^{240}	ν_{sp}	JNE,22,63(68)	Boldeman
Pu^{240}	ν_{sp}	66PARIS,2,57(66)	Baron
Pu^{240}	mass spectrometry	JIN,28,2467(66)	Cabell
Pu^{240}	ν	65SALZBURG,2,25(65)	Colvin
Pu^{240}	ν_{sp}	NSE,15,213(63)	Asplund-Nilsson
Pu^{240}	ν_{sp}	NP,48,433(63)	Hopkins
Pu^{240}	pile osci. RI absorption	AEEW-R-115(62)	Tattersall
Pu^{240}	ν_{sp}	JNE,15,102(61)	Moat
Pu^{240}	σ_t	NSE,8,112(60)	Block
Pu^{240}	σ_t	60VIENNA,535(60)	Block
Pu^{240}	activation	CJP,38,57(60)	Walker
Pu^{240}	ν_{sp}	TNCC(UK)-43(59)	Colvin
Pu^{240}	pile osci.	JIN,9,1(59)	Halperin
Pu^{240}	σ_t	JNE,11,14(59)	Pattenden
Pu^{240}	σ_f	CJP,36,503(58)	Bigham
Pu^{239}	I_f	58GENEVA,16,233(58)	Campbell
Pu^{240}	σ_f	58GENEVA,16,54(58)	Eastwood
Pu^{240}	RI,pile osci.	58GENEVA,16,34(58)	Rose
Pu^{240}	σ_f	KAPL-1781(57)	Butler
Pu^{240}	RI,absorption	JNE,4,86(57)	Erozolimsky
Pu^{240}	RI,absorption	JNE,6,155(57)	Krupchinsky
Pu^{240}		CRC-633(56)	Cornish
Pu^{240}	ν_{sp}	PR,101,1804(56)	Crane
Pu^{240}	ν_{sp}	PR,101,1012(56)	Diven
Pu^{240}	σ_a mass spectrometry	NSE,1,62(56)	Fields
Pu^{240}	σ_f	PR,102,1621(56)	Hulet
Pu^{240}	σ_f	ORNL-2081,102(56)	Pratt
Pu^{240}	ν_{sp}	PR,100,190(55)-	Carter
Pu^{240}	ν_{sp}	AERE-NP/R-1912(55)	Johnstone
Pu^{240}	ν_{sp}	SSMOSCOW,123(55)	Kalushnikova
Pu^{240}	ν_{sp}	AERE-PP/R-1655(55)	Sanders
Pu^{240}	ν_{sp}	AERE-N/R-831(51)	Barclay
Pu^{240}	ν_{sp}	LA-491(46)	Segre
Pu^{241}	$I_\gamma I_f$	NSE,44,180(71)	Eiland
Pu^{241}	α	ANS,14,371(71)	Iskenderian
Pu^{241}	I_f	AE,28,359(70)	Bak
Pu^{241}	ν_p	THESIS(70)	Boldeman
Pu^{241}	ν_p	NP/A,145,1(70)	Jaffey
Pu^{241}	η	68WASH,1,589(68)	Smith
Pu^{241}	σ_t (0.002,0.1 eV)	PRIVATE COMM.(68)	Young
Pu^{241}	ν_p	AAEC/E-172(67)	Boldeman
Pu^{241}	η	IN-1060(67)	Fast
Pu^{241}	$\sigma_\gamma\sigma_a$ mass spectrometry	JIN,28,2467(66)	Cabell
Pu^{241}	α	66PARIS,2,3(66)	Cabell
Pu^{241}	σ_f ratio	66PARIS,2,29(66)	White
Pu^{241}	α	JIN,27,2481(65)	Cabell
Pu^{241}	ν	65SALZBURG,2,25(65)	Colvin

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pu^{241}	σ_f	AECL-1910(64)	Bigham
Pu^{241}	σ_c	CJP,42,2384(64)	Craig
Pu^{241}	σ_f	IOO,16995(64)	Watanabe
Pu^{241}	delayed neutrons	PR,123,1735(61)	Cox
Pu^{241}	σ_f	NSE,9,341(61)	Hardy
Pu^{241}	σ_c	NSE,11,111(61)	Simpson
Pu^{241}	ν_p	PR,123,2140(61)	Smith
Pu^{241}	ν_p	NSE,8,66(60)	Evans
Pu^{241}	ν_p	NSE,5,49(59)	DeSaussure
Pu^{241}	ν_p	JNE,11,21(59)	Jaffey
Pu^{241}	σ_f ratio	HW-62727,19(59)	Leonard
Pu^{241}	σ_f	AERE-R-2998,23(59)	Raffle
Pu^{241}	σ_f	S8GENEVA,16,125(58)	Bigham
Pu^{241}	ν_p	S8GENEVA,16,121(58)	Colvin
Pu^{241}	η	NSE,3,758(58)	Gaerttner
Pu^{241}	σ_c	BAP,3,176(58)•	Schwartz
Pu^{241}	σ_f	HW-48893,98(57)	Leonard
Pu^{241}	mass spectrometry	NSE,1,62(56)	Fields
Pu^{241}	σ_f	NSE,1,62(56)	Fields
Pu^{241}	ν_p	JNE,2,247(56)	Sanders
Pu^{241}	σ_f	ANL-5397(55)	Jaffey
Pu^{241}	ν_p	SSMOSCOW,131(55)	Kalashnikova
Pu^{241}	ν_p	SSMOSCOW,123(55)	Kalashnikova
Pu^{241}	ν_p	KAPL-1464(55)	McMillan
Pu^{241}	η	KAPL-1464(55)	McMillan
Pu^{241}	σ_f	SSGENEVA,4,187(55)	Raffle
Pu^{242}	absorption 0.08	ACR/B,27,2284(71)	Lander
Pu^{242}	diffraction 0.08	ACR/B,27,2284(71)	Lander
Pu^{242}	σ_c	NSE,43,341(71)	Young
Pu^{242}	Am-243 production	CJP,48,716(70)	Durham
Pu^{242}	σ_c	IOO-1407,63(70)	Young
Pu^{242}	σ_c	NSE,40,389(70)	Young
Pu^{242}	ν	JNE,22,63(68)	Boldeman
Pu^{242}	mass spectrometry	68WASH,2,1279(68)	Folger
Pu^{242}	ν	AE,25,530(68)	Prokhorova
Pu^{242}	σ_c	PR,146,840(66)	Auchampaugh
Pu^{242}	production	OP-MS-66-69(66)	Ice
Pu^{242}	activation	ORNL-3679,14(64)	Halperin
Pu^{242}	σ_f	S0GENEVA,16,54(58)	Eastwood
Pu^{242}	σ_f	KAPL-1781(57)•	Bigham
Pu^{242}	activation	CJP,35,147(57)	Butler
Pu^{242}	ν	PR,101,1804(56)	Crane
Pu^{242}	mass spectrometry	NSE,1,62(56)	Fields
Pu^{242}	ν	PR,101,1016(56)	Hicks
Pu^{242}	mass spectrometry	PR,93,1433(54)	Studier
Pu^{243}	σ_f ion chamber	JIN,30,2553(68)	Diamond

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pu^{243}	σ_γ mass spectrometry	DP-1046(66)	Dukes
Pu^{243}	σ_γ mass spectrometry	DP-MS-66-69(66)	Ice
Pu^{243}	σ_γ activation	NSE,1,62(56)	Fields
Pu^{243}	σ_γ mass spectrometry	PR,93,1433(54)	Studier
Pu^{243}	σ_γ mass spectrometry	ANL-4983,1(52)	Inghram
Pu^{244}	$\sigma_\gamma I_\gamma$	ORNL-4706,55(71)	Druschel
Pu^{244}	ν_{sp}	NSE,43,54(71)	Orth
Pu^{244}	σ_γ RI,activation	PRIVATE COMM.(69)	Schuman
Pu^{244}	σ_γ chemical separation	PR,103,634(56)	Butler
Pu^{244}	σ_γ activation	NSE,1,62(56)	Fields
Pu^{244}	σ_γ activation	JIN,1,262(55)	Fields
Pu^{245}	$\sigma_\gamma I_\gamma$	ORNL-4706,55(71)	Druschel
Pu^{245}	σ_γ activation	NSE,1,62(56)	Fields

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pu^{238}	σ_γ	18.6-496.	PRIVATE COMM.(73)	Silbert
Pu^{238}	σ_f	18.6-496.	PRIVATE COMM.(73)	Silbert
Pu^{238}	σ_f	2.91-122.	PRL,18,15(67)	Bowman
Pu^{238}	σ_c	-10.-192.0	NSE,30,355(67)	Young
Pu^{238}	σ_f	2.91-280.	PR,154,1111(67)	Stubbins
Pu^{238}	σ_f	2.89-83.2	YF,4,985(66)	Gerasimov
Pu^{238}	σ_f	2.89-83.2	66PARIS,2,129(66)	Gerasimov
Pu^{238}	σ_f	-.5-18.57	65SALZBURG,1,235(65)	James
Pu^{238}	σ_c	-.5-83.2	IDO-16805,8(62)+	Young
Pu^{239}		0.296-50.1	3ROCHESTER(73)	Deruytter
Pu^{239}	analysis	0.296-628.29	CEA-N-1484(71)	Ribon
Pu^{239}	$\bar{\alpha}_s$	7.82-119.0	NP/A,164,34(71)	Simpson
Pu^{239}	analysis	-0.22-44.5	ANCR-1016,283(71)	Simpson
Pu^{239}	$\sigma_\gamma\sigma_f$	-1.6-100.1	ORNL-4707(71)	Gwin
Pu^{239}	analysis	-2.2-298.6	ANCR-1045(71)	Simpson
Pu^{239}	analysis	7.8-44.51	70HELSINKI,2,777(70)	Adler
Pu^{239}	σ_f	0.3-658.29	70HELSINKI,1,513(70)	Blons
Pu^{239}	σ_γ(spectra)	0.3-41.8	70HELSINKI,1,377(70)	Chrien
Pu^{239}	$\sigma_c\sigma_f$	0.296-157.0	70HELSINKI,1,481(70)	Derrien
Pu^{239}	α	0.3-90.8	NSE,40,306(70)	Gwin
Pu^{239}	$\sigma_\gamma\sigma_f$	0.3-90.8	NSE,40,306(70)	Gwin
Pu^{239}	analysis		NSE,40,342(70)	Lambropoulos
Pu^{239}	$\sigma_c\sigma_\gamma\sigma_f$	7.84-85.7	JINR-P3-4592(70)	Ryabov
Pu^{239}	$\bar{\nu}_s$	14.7-658.5	70HELSINKI,1,495(70)	Trochon
Pu^{239}	$\bar{\alpha}_s$	41.7-117.9	NP/A,138,556(69)	King
Pu^{239}	multiplicity	22.3-81.0	PRL,22,195(69)	Weinstein

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pu^{239}	analysis	14.29-85.60	PR,165,1371(68)	Farrell
Pu^{239}	analysis	60.84-100.25	JNE,22,263(68)	James
Pu^{239}	$\sigma_\gamma\sigma_f$	7.84-85.7	YF,5,925(67)	Ryabov
Pu^{239}	$\bar{\sigma}_s$	14.68-303.2	NP/A,98,33(67)	Asghar
Pu^{239}	$\bar{\sigma}_s$	14.68-303.2	66PARIS,2,185(66)	Asghar
Pu^{239}		15.42-81.7	PR,144,979(66)	Cowan
Pu^{239}	$\sigma_c\sigma_f$	0.3-442.41	66PARIS,2,195(66)	Derrien
Pu^{239}	σ_f	7.83-101.2	65SALZBURG,1,205(65)	DeSaussure
Pu^{239}	σ_γ	7.84-75.0	EON,2,77(65)	Ignatiev
Pu^{239}	σ_f	55.8-85.6	65SALZBURG,1,235(65)	James
Pu^{239}		7.8-73.6	65SALZBURG,2,355(65)	Melkonian
Pu^{239}	$\bar{\sigma}_s$	7.9-85.6	PRL,15,761(65)	Sauter
Pu^{239}	σ_c	102.9-195.1	65ANTWERP,98(65)	Uttley
Pu^{239}	$\sigma_c\eta$	7.84-95.5	AE,16,110(64)	Ignatiev
Pu^{239}	$\sigma_c\eta$ anal.	0-22.6	AE,16,211(64)	Kirpichnikov
Pu^{239}	$\bar{\sigma}_s$ analysis	7.8-44.5	NP,30,269(62)	Fraser
Pu^{239}	analysis	1.200-15.50	PR,118,724(60)	Vogt
Pu^{239}	$\sigma_c\sigma_f\nu$	-0.26-52.6	58GENEVA,15,127(58)	Bollinger
Pu^{239}	σ_c	0.296-38.5	JNE,6,303(58)	Egelstaff
Pu^{239}	$\sigma_c\sigma_f\eta$	0.3-26.10	JNE,6,163(57)	Kirpichnikov
Pu^{239}	σ_c	7.85-85.9	AE,2,129(57)	Sokolovskii
Pu^{239}	σ_c	7.85-32.5	NROC-81,19(56)	Lynn
Pu^{239}	σ_c	0.01-7.8	JNE,2,187(56)	Pattendan
Pu^{239}	σ_f	0.297-26.8	JNE,2,177(56)	Richmond
Pu^{239}	σ_c	-1-0.300	55MOSCOW,209(55)	Abov
Pu^{239}	σ_f	0.295-13.7	55GENEVA,4,216(55)	Adamchuk
Pu^{239}	σ_c	-0.19-0.299	55GENEVA,4,193(55)-	Anderson
Pu^{239}	$\sigma_c\sigma_f$	0.297	55GENEVA,4,235(55)	Auclair
Pu^{239}	σ_c	-0.23-0.298	55GENEVA,4,193(55)-	Havens
Pu^{239}	σ_f	-0.19-0.299	55GENEVA,4,193(55)	Leonard
Pu^{239}	σ_c	.295-22.8	55GENEVA,4,224(55)	Nikitin
Pu^{239}	$\sigma_c\eta$	.295-22.8	55MOSCOW,81(55)	Nikitin
Pu^{239}	σ_c	0.295	PRIVATE COMM.(55)	Palevsky
Pu^{239}	σ_f	0.297-26.8	55GENEVA,4,187(55)	Raffle
Pu^{240}	σ_f	749-2033	COO-3058-27,6(72)	Mockenbury
Pu^{240}	$\sigma_c\sigma_\gamma\sigma_f$	20.46-499.4	NSE,49,153(72)	Mockenbury
Pu^{240}	$\sigma_c\sigma_\gamma\sigma_f$	20.46-499.4	72BUD,224(72)	Mockenbury
Pu^{240}		20	JNE,26,643(72)-	Moxon
Pu^{240}	σ_γ	38.34-665.5	JNE,26,643(72)	Weigmann
Pu^{240}	$\sigma_\gamma\sigma_c$	20.46-499.7	71KNOX,2,721(71)	Mockenbury
Pu^{240}	σ_c	1.059	70HELSINKI,1,553(70)	Ramakrishna
Pu^{240}	$\bar{\sigma}_s$	20.45-287.1	68WASH,1,513(68)	Cao
Pu^{240}	σ_c	20.45-5692	68WASH,1,519(68)	Kolar
Pu^{240}	σ_c	20.45-5692	JNE,22,299(68)	Kolar
Pu^{240}	σ_f	750-3380	NP/A,112,603(68)	Migneco
Pu^{240}	σ_f	750-3380	68WASH,1,527(68)	Migneco
Pu^{240}	σ_γ	38.34-820.4	68WASH,1,533(68)	Weigmann
Pu^{240}	σ_γ	38.34-820.4	JNE,22,317(68)	Weigmann

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pu^{240}	σ_t	20.42-949	66PARIS,2,145(66)	Asghar
Pu^{240}	$\bar{\sigma}_s$	20.42-135.4	66PARIS,2,145(66)	Asghar
Pu^{240}	σ_γ	20.42-287.9	66PARIS,2,145(66)	Asghar
Pu^{240}	$\bar{\sigma}_s$	20.42-135.4	PRIVATE COMM.(66)	Asghar
Pu^{240}	σ_γ	20.42-287.9	PRIVATE COMM.(66)	Asghar
Pu^{240}	σ_t	20.42-949	PRIVATE COMM.(66)	Asghar
Pu^{240}	σ_t	20.46-5071	66PARIS,2,135(66)	Boeckhoff
Pu^{240}	σ_γ	1.05-320	AERE-PR/NP-4,16(63)	Moxon
Pu^{240}	σ_f	1.06-20.4	PRIVATE COMM.(61)	Leonard
Pu^{240}	σ_t	1.053-38.2	PR,114,505(59)	Cote
Pu^{240}	σ_t	1.056	NSE,5,32(59)	Leonard
Pu^{240}	σ_t	1.0575	JNE,11,14(59)	Pattenden
Pu^{240}	σ_t	1.057-37.8	JNE,6,303(58)	Egelstaff
Pu^{240}	σ_t	1.06-119	PTR-203(57)	Simpson
Pu^{240}	σ_t	1.06-119	BAP,2,219(57)	Simpson
Pu^{240}	σ_t	1.053	PRIVATE COMM.(56)	Zimmerman
Pu^{240}	σ_t	1.075	55MOSCOW,209(55)	Abov
Pu^{240}	σ_t	1.08	55MOSCOW,81(55)	Nikitin
Pu^{241}	σ_f	4.28-160.51	71KNOX,2,836(71)	Blons
Pu^{241}	$\sigma_t\sigma_f$	12.78-99.5	71KNOX,2,823(71)	Kolar
Pu^{241}	σ_f	4.28-62.40	70HELSINKI,1,469(70)	Blons
Pu^{241}	analysis	-0.209-59.30	IN-1407,57(70)	Smith
Pu^{241}	$\bar{\sigma}_s$	4.27-30.90	PR,174,1413(68)	Sauter
Pu^{241}	σ_f	14.73-62.08	66WASH,2,910(66)	Simpson
Pu^{241}	σ_f	12.84-16.70	NP,65,353(65)	James
Pu^{241}	σ_t	12.80-31.03	CJP,42,2384(64)+	Craig
Pu^{241}	σ_f	4.275-34.90	PR/B,135,945(64)	Moore
Pu^{241}	σ_t	12.75-50.4	AERE-PR/NP-7,6(64)	Pattenden
Pu^{241}	σ_t	14.74-31.03	PRIVATE COMM.(64)	Craig
Pu^{241}	σ_f	12.84-16.70	AERE-PR/NP-6,3(64)	James
Pu^{241}	σ_f	4.275-30.88	PR/B,135,945(64)	Moore
Pu^{241}	σ_t	12.75-50.4	AERE-PR/NP-6,10(64)+	Pattenden
Pu^{241}	σ_f	4.28-8.60	IDO-16954(63)	Marshall
Pu^{241}	σ_f	4.33-16.60	61SACLAY,115(61)	James
Pu^{241}	σ_t	0.264-10.20	PR,123,559(61)	Simpson
Pu^{241}	σ_f	0.255-8.61	HW-62727,19(59)	Leonard
Pu^{241}	σ_t	4.31-6.8	JNE,6,303(58)	Egelstaff
Pu^{241}	σ_t	0.25	BAP,3,176(58)+	Schwartz
Pu^{241}	σ_t	0.25	PRIVATE COMM.(58)	Schwartz
Pu^{241}	σ_f	0.255	JNE,2,177(56)	Richmond
Pu^{242}	σ_t	595.2-3836	PR/C,7,2085(73)+	Auchampaugh
Pu^{242}	σ_t	2.675-494.7	ORNL-4844,90(73)	Harvey
Pu^{242}	$\sigma_\gamma\sigma_t$	22.56-1286	NP/A,207,342(73)	Poortmans
Pu^{242}	$\bar{\sigma}_s\sigma_t$	2.68-1286	NP/A,207,342(73)	Poortmans
Pu^{242}	$\sigma_t\bar{\sigma}_s\sigma_\gamma$	22.56-1286	72BUD,56(72)+	Poortmans
Pu^{242}	σ_t	22.56-494.75	ANCR-1088,32(72)	Simpson

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pu^{242}	σ_f	374-110,000	NP/A,171,31(71)	Auchampaugh
Pu^{242}	σ_f	53.4-788.2	NP/A,163,577(71)	Bergen
Pu^{242}	analysis	-70-386	ANCR-1016,306(71)	Young
Pu^{242}	σ_t	2.68-149.6	NSE,40,389(70)	Young
Pu^{242}	σ_f	767-2960	NP/A,123,24(69)	James
Pu^{242}	σ_t	2.64-386	PR,146,840(66)	Auchampaugh
Pu^{242}	σ_t	14.6-311	65ANTWERP,93(65)	Pattenden
Pu^{242}	σ_f	2.65	BAP,6,8(61)	Leonard
Pu^{242}	σ_t	2.65-53.6	PR,114,505(59)	Cote
Pu^{242}	σ_t	2.67	JNE,6,303(58)	Egelstaff
Pu^{244}	σ_f	30.7-285	NP/A,171,31(71)	Auchampaugh

$^{241}_{95}Am$

[433 yr]

THERMAL CROSS SECTIONS

σ_γ = 0.10±0.05 mb [13 sec $^{242}Am^{m2}$]
σ_γ = 83.8±2.6 b [152 yr $^{242}Am^{m1}$]
σ_γ = 748±20 b [16.02 hr $^{242}Am^{g}$]
σ_γ = 832±20 b
σ_f = 3.15±0.10 b
ν_p = 3.219±.038

RESONANCE PROPERTIES

I_γ = 202±20 b [152 yr $^{242}Am^{m1}$]
I_γ = 1275±120 b [16.02 hr $^{242}Am^{g}$]
I_f = 21±2 b
<D> = 0.74±0.08 eV
S_0 = 1.2±0.2

RESONANCE PARAMETERS

I^π = 5/2$^-$ S_n = 5528±8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
.308±.003	41 ±4	.060± .003	41 ±4	.108±.006	.29 ± .03
.576±.005	40 ±5	.075±0.007	40 ±5	.098±.010	.14 ± .02
1.27 ±.01	44 ±7	.39 ± .02	44 ±7	.345±.018	.30 ± .05
1.68 ±.02					
1.93 ±.02		.125± .006	(41 ±5)	.090±.004	.074± .008
2.36 ±.02		.080± .010	(41 ±5)	.052±.008	.17 ± .03
2.60 ±.03		.20 ± .02	(41 ±5)	.124±.012	.12 ± .02
3.99 ±.04		.26 ± .02	(41 ±5)	.130±.013	.15 ± .04
4.40 ±.05		.027± .006	(41 ±5)	.013±.003	<.08
5.03 ±.04		.21 ± .04	(41 ±5)	.094±.020	.28 ± .05
5.46 ±.04		1.08 ± .05	(41 ±5)	.46 ±.02	.41 ± .03
6.10 ±.04		.13 ± .04	(41 ±5)	.052±.004	.29 ± .06
6.78 ±.02		.23 ± .09		.090±.036	
7.97 ±.02		.79 ± .34		.28 ±.12	
8.11 ±.03		.80 ± .34		.28 ±.12	
8.28 ±.04		.13 ± .08		.044±.026	
9.13 ±.05		.42 ± .06	(41 ±5)	.14 ±.02	.06 ± .03
9.90 ±.05		.33 ± .05		.105±.016	1.1 ±0.2
10.38 ±.03		.34 ± .03		.106±.010	
10.99 ±.03		.36 ± .05		.108±.014	
12.86 ±.04		.14 ± .04		.040±.012	
14.75 ±.07		2.4 ± .5	(41 ±5)	0.62 ±.12	.34 ± .04
15.60 ±.05		.17 ± .10		.044±.026	
15.73 ±.05		.16 ± .10		.040±.024	
16.02 ±.05		.14 ± .09		.036±.022	
16.38 ±.05		.97 ± .19		.24 ±.05	
16.82 ±.06		.41 ± .16		.10 ±.04	
17.68		.25 ± .10		.060±.024	
18.37		.43 ± .17		.10 ±.04	
19.48		.12 ± .12		.028±.028	
20.64		.27 ± .18		.06 ±.04	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
23.09		.38 ± .19		.08 ±.04	
23.28		.77 ± .23		.16 ±.05	
24.17		1.08 ± .20		.22 ±.04	
25.61		1.01 ± .41		.20 ±.08	
26.60		.62 ± .21		.12 ±.04	
27.68		.63 ± .21		.12 ±.04	
28.36		.48 ± .15		.090±.028	
28.93		.54 ± .16		.10 ±.03	
29.56		.82 ± .27		.15 ±.05	
30.79		.44 ± .33		.08 ±.06	
31.21		1.2 ± .3		.22 ±.06	
32.14		.57 ± .45		.10 ±.08	
34.02		.82 ± .47		.14 ±.08	
35.02		.71 ± .47		.12 ±.08	
35.53		.54 ± .27		.090±.046	
37.01		5.2 ±1.7		.86 ±.28	
38.39		2.85 ± .99		.46 ±.16	
39.71		2.14 ± .63		.34 ±.10	
40.42		1.78 ± .64		.28 ±.10	
41.71		.65 ± .65		.10 ±.10	
42.64		12 ±5		1.8 ±.8	
43.25		2.5 ±1.1		.38 ±.16	

[a] $\sigma_0\Gamma_f$ (b-eV)

Note - Single-level Breit-Wigner parameters. There is a discrepancy between measured and calculated capture resonance integrals.

$^{242}_{95}Am^{m1}$

[152 yr]

THERMAL CROSS SECTIONS

σ_γ = 1400±860 b
σ_f = 6600±300 b
σ_a = 8000±800 b
ν_p = 3.264±0.024

RESONANCE PROPERTIES

I_γ = 7000±2000 b
I_f = 1570±110 b
<D> = 0.6±0.2 eV

RESONANCE PARAMETERS

$I^\pi = 1^{(-)}$ S_n = 6377±8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
.173	280	.213	(50)	.512	230
.61	220	.077	(50)	.098	170
1.02	1050	.342	(50)	.339	1000
1.65	450	.108	(50)	.084	400
2.09	375	.186	(50)	.128	325
3.25	700	.806	(50)	.447	650

Note - Single-level Breit-Wigner parameters.

$^{242}_{95}Am^{g}$

[16.02 hr]

THERMAL CROSS SECTIONS

σ_f = 2900±1000 b

THERMAL CROSS SECTIONS

σ_γ = 79.3±2.0 b
σ_γ = 75.2±1.8 b [26 min ^{244}Am*]
σ_γ = 4.1±0.2 b [10.1 hr ^{244}Am^{g}]
σ_f < 0.07 b
σ_t = 85±4 b

RESONANCE PROPERTIES

I_γ = 1820±70 b
I_γ = 111±10 b [10.1 hr ^{244}Am]
<D> = 0.67±0.06 eV
S_0 = 0.96±0.10

RESONANCE PARAMETERS

I^π = 5/2$^-$ S_n = 5362.9±3.4 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-2.0			39	1.16
.420± .001	39 ± 2	.00084± .00006	39 ± 2	.0013± .0001
.983± .001	36 ± 2	.0146 ± .0007	38 ± 2	.0147± .0007
1.356± .002	44 ± 2	1.11 ± .05	43 ± 2	.950 ± .040
1.744± .002	38 ± 2	.240 ± .011	39 ± 2	.182 ± .008
3.140± .003	32 ± 6	.0113 ± .001	32 ± 6	.0064± .0006
3.424± .003	38 ± 4	.287 ± .011	38 ± 4	.155 ± .006
3.845± .004	43 ± 6	.013 ± .001	43 ± 6	.0067± .0006
5.125± .005	39 ± 3	.313 ± .014	39 ± 3	.139 ± .006
6.554± .006	38 ± 3	.968 ± .038	37 ± 3	.378 ± .015
7.067± .006	40 ± 6	.072 ± .005	40 ± 6	.027 ± .002
7.863± .006	40 ± 4	1.33 ± .056	39 ± 4	.475 ± .020
8.377± .007	39 ± 6	.009 ± .003	39 ± 6	.003 ± .001
8.770± .007	37 ±10	.112 ± .006	37 ±10	.040 ± .002
9.314± .008	39 ± 9	.153 ± .009	39 ± 9	.050 ± .003
10.314± .008	50 ± 5	.449 ± .032	49 ± 5	.140 ± .010
10.877± .008		.013 ± .007		.004 ± .002
11.278± .008	4 ± 6	.285 ± .013	41 ± 6	.085 ± .004
11.693± .008	26 ±14	.106 ± .007	26 ±14	.031 ± .002
12.122± .008	37 ±11	.174 ± .010	37 ±11	.050 ± .003
12.877± .008	38 ± 6	2.40 ± .11	36 ± 6	.670 ± .030
13.152± .008	42 ± 8	1.35 ± .07	41 ± 8	.385 ± .020
15.143± .009		.097 ± .027		.025 ± .007
15.404± .009	45 ±11	1.33 ± .12	44 ±11	.340 ± .030
16.210± .009	49 ± 9	.551 ± .028	48 ± 9	.137 ± .007
16.583± .009	36 ±10	.196 ± .016	36 ±10	.048 ± .004
17.874± .009	42 ±10	.228 ± .127	42 ±10	.054 ± .030
18.158± .009		.060 ± .009	(39)	.014 ± .002
19.533± .009		.24 ± .02	(39)	.053 ± .004
19.915± .010		.100 ± .018	(39)	.023 ± .004
20.974± .010		.50 ± .05	(39)	.109 ± .010
21.115± .010		1.00 ± .09	(39)	.218 ± .020
21.872± .010		.168 ± .014	(39)	.036 ± .003

$^{243}_{95}$Am

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_\gamma^0$ (meV)
22.011± .010		.052 ± .023	(39)	.011 ± .005
22.600±0.010		.49 ± .05	(39)	.103 ± .011
22.739± .010		1.34 ± .14	(39)	.28 ± .03
24.454± .011		.952 ± .049	(39)	.193 ± .010
25.415± .012		.161 ± .025	(39)	.032 ± .005
26.237± .012		.041 ± .020	(39)	.008 ± .004
26.750±0.012		1.66 ±0.10	(39)	.320 ± .020
27.355± .012		.52 ± .05	(39)	.100 ± .010
28.735± .012		1.09 ± .05	(39)	.203 ± .010
29.30 ± .01		.73 ± .05	(39)	.135 ± .010
30.13 ± .01		.52 ± .04	(39)	.095 ± .007
31.07 ± .01		.81 ± .06	(39)	.145 ± .010
31.49 ± .01		.17 ± .03	(39)	.031 ± .005
32.42 ± .01		.15 ± .02	(39)	.026 ± .004
33.20 ± .02		.98 ± .06	(39)	.17 ± .01
33.94 ± .02		1.83 ± .09	(39)	.314 ± .016
34.99 ± .02		.96 ± .06	(39)	.162 ± .010
36.67 ± .02		.85 ± .06	(39)	.14 ± .01
37.03 ± .02		2.01 ± .09	(39)	.330 ± .015
37.55 ± .02		.080 ± .031	(39)	.013 ± .005
37.83 ± .02		.62 ± .05	(39)	.100 ± .008
39.50 ± .02		.61 ± .06	(39)	.097 ± .010
40.50 ± .02		.096 ± .045	(39)	.015 ± .007
40.95 ± .02		.32 ± .13	(39)	.05 ± .02
41.26 ± .02		1.2 ±0.2	(39)	0.19 ± .03
41.54 ± .02		2.4 ±0.2	(39)	.37 ± .03
42.95 ± .02		2.7 ±0.2	(39)	.41 ± .03
44.11 ± .02		.49 ± .04	(39)	.074 ± .006
45.35 ± .02		1.15 ± .07	(39)	.170 ± .010
47.11 ± .02		.37 ± .06	(39)	.054 ± .009
48.55 ± .02		.46 ± .07	(39)	0.066 ±0.010
49.29 ± .02		.76 ± .07	(39)	0.108 ±0.010
50.20 ± .02		.11 ± .04	(39)	0.015 ±0.005
51.28 ± .02		1.07 ± .07	(39)	0.150 ±0.010
52.17 ± .02		.11 ± .04	(39)	0.015 ±0.005
53.03 ± .02		2.11 ± .15	(39)	.29 ± .02
53.60 ± .02		.095 ± .073	(39)	0.013 ±0.010
54.02 ± .02		.66 ± .07	(39)	0.090 ±0.010
54.55 ± .02		1.92 ± .15	(39)	0.260 ±0.020
54.93 ± .02		.17 ± .07	(39)	0.023 ±0.010
55.87 ± .02		1.64 ± .15	(39)	0.220 ±0.020
58.74 ± .02		.45 ± .12	(39)	0.058 ±0.015
59.13 ± .02		.90 ± .11	(39)	0.117 ±0.015
59.98 ± .02		.78 ± .09	(39)	0.100 ±0.012
60.76 ± .02		1.21 ± .16	(39)	0.155 ±0.020
61.20 ± .02		2.89 ± .15	(39)	0.370 ±0.020
62.51 ± .03		.27 ± .08	(39)	0.034 ±0.010
63.19 ± .03		.40 ± .08	(39)	0.050 ±0.010
64.82 ± .03		.40 ± .08	(39)	0.050 ±0.010
66.21 ± .03		1.36 ± .14	(39)	0.167 ±0.017
67.36 ± .03		1.10 ± .12	(39)	0.134 ±0.014
68.01 ± .03		1.24 ± .12	(39)	0.150 ±0.015

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
68.67 ± .03		1.60 ± .12	(39)	0.193 ±0.015
69.66 ± .03		3.93 ± .17	(39)	0.471 ±0.020
70.27 ± .03		2.42 ± .17	(39)	0.289 ±0.020
71.60 ± .03		.25 ± .13	(39)	0.030 ±0.015
72.22 ± .03		2.63 ± .17	(39)	0.309 ±0.020
72.88 ± .03		3.00 ± .17	(39)	0.351 ±0.020
73.93 ± .03		.36 ± .13	(39)	0.042 ±0.015
74.34 ± .03		.36 ± .13	(39)	0.042 ±0.015
74.88 ± .03		.31 ± .13	(39)	0.036 ±0.015
75.43 ± .03		3.13 ± .17	(39)	0.360 ±0.020
76.50 ± .03		.21 ± .09	(39)	0.024 ±0.010
77.00 ± .04		.53 ± .18	(39)	0.060 ±0.020
77.54 ± .04		1.50 ± .18	(39)	0.170 ±0.020
78.22 ± .04		.31 ± .09	(39)	0.035 ±0.010
80.50 ± .04		.94 ± .27	(39)	0.105 ±0.030
81.00 ± .04		2.38 ± .27	(39)	0.264 ±0.030
81.10 ± .04		1.71 ± .36	(39)	0.190 ±0.040
83.10 ± .04		1.04 ± .27	(39)	0.114 ±0.030
83.52 ± .04		2.51 ± .18	(39)	0.275 ±0.020
84.19 ± .04		2.20 ± .18	(39)	0.240 ±0.020
85.56 ± .04		6.81 ± .37	(39)	0.736 ±0.040
86.63 ± .04		1.58 ± .19	(39)	0.170 ±0.020
88.36 ± .04		1.45 ± .19	(39)	0.154 ±0.020
89.00 ± .04		1.28 ± .19	(39)	0.136 ±0.020
90.43 ± .04		1.43 ± .19	(39)	0.150 ±0.020
91.25 ± .04		1.15 ± .19	(39)	0.120 ±0.020
94.72		1.36 ± .20	(39)	0.140 ±0.020
95.80		.39 ± .15	(39)	0.040 ±0.015
97.53		2.17 ± .20	(39)	0.220 ±0.020
99.48		1.00 ± .20	(39)	0.100 ±0.020
101.12		3.72 ± .40	(39)	0.370 ±0.040
101.92		2.52 ± .40	(39)	0.250 ±0.040
104.06		.72 ± .20	(39)	0.071 ±0.020
104.96		1.95 ± .31	(39)	0.190 ±0.030
107.17		3.68 ± .52	(39)	0.355 ±0.050
109.72		1.28 ± .31	(39)	0.122 ±0.030
111.63		1.40 ± .32	(39)	0.132 ±0.030
112.12		1.05 ± .32	(39)	0.099 ±0.030
112.70		1.22 ± .32	(39)	0.115 ±0.030
113.19		10.35 ± .75	(39)	0.973 ±0.070
114.24		5.42 ± .53	(39)	0.507 ±0.050
116.60		7.38 ± .76	(39)	0.683 ±0.070
119.74		4.72 ± .55	(39)	0.432 ±0.050
122.31		7.08 ± .66	(39)	0.640 ±0.060
123.37 ± .06		18.55 ±1.33	(39)	1.670 ±0.120
125.18 ± .06		7.92 ± .78	(39)	0.708 ±0.070
126.40		.73 ± .28	(39)	0.065 ±0.025
127.38		2.37 ± .34	(39)	0.210 ±0.030
130.30		.55 ± .17	(39)	0.048 ±0.015
132.50		.86 ± .23	(39)	0.075 ±0.020
133.50		1.02 ± .35	(39)	0.088 ±0.030
134.10		1.45 ± .35	(39)	0.125 ±0.030

$^{243}_{95}Am$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
134.70		.75 ± .35	(39)	0.065 ±0.030
135.20		.73 ± .35	(39)	0.063 ±0.030
139.40		2.44 ± .83	(39)	0.207 ±0.070
140.03		6.92 ± .95	(39)	0.585 ±0.080
141.20		1.26 ± .24	(39)	0.106 ±0.020
144.00		3.80 ± .36	(39)	0.317 ±0.030
144.47		6.46 ± .48	(39)	0.537 ±0.040
145.00		3.61 ± .48	(39)	0.300 ±0.040
146.09		9.00 ± .73	(39)	0.745 ±0.060
146.60		4.07 ± .61	(39)	0.336 ±0.050
148.38		4.51 ± .61	(39)	0.370 ±0.050
149.80		.73 ± .25	(39)	0.060 ±0.020
151.10		.98 ± .25	(39)	0.080 ±0.020
152.80		2.05 ± .49	(39)	0.166 ±0.040
154.00		3.91 ± .75	(39)	0.315 ±0.060
154.70		4.12 ± .75	(39)	0.332 ±0.060
158.64		4.47 ± .50	(39)	0.355 ±0.040
160.64 ± .08		15.13 ±1.52	(39)	1.194 ±0.120
163.90		.54 ± .26	(39)	0.042 ±0.020
164.87		4.96 ± .64	(39)	0.386 ±0.050
166.10		2.45 ± .52	(39)	0.190 ±0.040
166.80		2.69 ± .52	(39)	0.177 ±0.040
168.01		6.52 ± .91	(39)	0.503 ±0.070
169.70		1.25 ± .26	(39)	0.096 ±0.020
171.70		1.26 ± .26	(39)	0.096 ±0.020
172.70		7.48 ± .92	(39)	0.569 ±0.070
173.60		7.44 ± .92	(39)	0.565 ±0.070
174.70		3.97 ± .66	(39)	0.300 ±0.050
175.80		3.99 ± .66	(39)	0.301 ±0.050
177.00		8.61 ± .93	(39)	0.647 ±0.070
180.00		2.95 ± .54	(39)	0.220 ±0.040
180.50		1.92 ± .54	(39)	0.143 ±0.040
181.50		2.20 ± .54	(39)	0.163 ±0.040
183.00		1.88 ± .54	(39)	0.139 ±0.040
184.05		3.34 ± .54	(39)	0.246 ±0.040
184.50		4.61 ± .54	(39)	0.339 ±0.040
186.20		2.05 ± .41	(39)	0.150 ±0.030
186.90		4.79 ± .55	(39)	0.350 ±0.040
188.00		8.57 ± .96	(39)	0.625 ±0.070
190.60		2.98 ± .55	(39)	0.216 ±0.040
191.60		3.18 ± .55	(39)	0.230 ±0.040
192.25		4.69 ± .56	(39)	0.338 ±0.040
193.35 ± .10		8.77 ± .97	(39)	0.631 ±0.070
195.90 ± .10		.14 ± .04	(39)	0.010 ±0.003
196.20		1.41 ± .28	(39)	0.101 ±0.020
196.90		2.30 ± .28	(39)	0.164 ±0.020
197.60		5.58 ± .84	(39)	0.397 ±0.060
199.20		1.20 ± .57	(39)	0.085 ±0.040
199.85		3.11 ± .57	(39)	0.220 ±0.040
202.10		.36 ± .11	(39)	0.025 ±0.008
203.70		.69 ± .21	(39)	0.048 ±0.015
205.00		3.39 ± .57	(39)	0.237 ±0.040

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
206.60		1.77 ± .29	(39)	0.123 ±0.020
208.20		3.75 ± .58	(39)	0.260 ±0.040
209.60		4.07 ± .58	(39)	0.281 ±0.040
210.95		5.69 ± .87	(39)	0.392 ±0.060
211.50		6.35 ± .97	(39)	0.437 ±0.060
213.40		1.85 ± .29	(39)	0.127 ±0.020
214.50		7.06 ± .88	(39)	0.482 ±0.060
217.00		2.84 ± .59	(39)	0.193 ±0.040
220.30		5.28 ± .89	(39)	0.356 ±0.060
221.20		2.75 ± .60	(39)	0.185 ±0.040
222.00		2.62 ± .60	(39)	0.176 ±0.040
224.30		2.40 ± .60	(39)	0.160 ±0.040
225.30		7.58 ±1.05	(39)	0.505 ±0.070
226.20		2.95 ± .60	(39)	0.196 ±0.040
227.30		3.47 ± .75	(39)	0.230 ±0.050
228.80 ± .11		1.12 ± .30	(39)	.074 ± .02
231.80		1.45 ± .46	(39)	.095 ± .030
232.90		8.79 ±1.07	(39)	.576 ± .070
234.10		8.23 ±1.07	(39)	.538 ± .070
236.00		1.75 ± .46	(39)	.114 ± .030
237.50		2.85 ± .62	(39)	.185 ± .040
238.70		1.70 ± .46	(39)	.110 ± .030
239.50		3.93 ± .77	(39)	0.254 ±0.050
241.20		1.72 ± .47	(39)	0.111 ±0.030
242.80		4.55 ± .94	(39)	0.292 ±0.060
244.10		1.45 ± .47	(39)	0.092 ±0.030
244.60		4.61 ± .94	(39)	0.295 ±0.060
246.30		1.85 ± .47	(39)	0.118 ±0.030
247.10		6.23 ± .94	(39)	0.396 ±0.060
248.60		12.8 ±1.9	(39)	0.812 ±0.120
249.70 ± .13		3.48 ± .79	(39)	0.220 ±0.050

Note - Single-level Breit-Wigner parameters.

$^{244}_{95}Am^{m}$

[26 min]

THERMAL CROSS SECTIONS

σ_f = 1600±300 b

$^{244}_{95}Am^{g}$

[10.1 hr]

THERMAL CROSS SECTIONS

σ_f = 2300±300 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Am^{241}	$\sigma_\gamma I_\gamma$ mass spectrometry	NSE,50,364(73)	Harbour
Am^{241}	I_f	AE,28,359(70)	Bak
Am^{241}	$\sigma_a I_a$ pile osci.	ORNL-50242(70)	Hellstrand
Am^{241}	ν_p	NP/A,145(70)	Jaffey
Am^{241}	σ_γ	ICD-6,42(69)	Dovbenko
Am^{241}	σ_f fission isomer	YF,10,65(69)	Gangrskii
Am^{241}	I_γ activation	BAP,14,497(69)	Schuman
Am^{241}	$\sigma_\gamma \sigma_f I_\gamma I_f$	AE,23,316(67)	Bak
Am^{241}	σ_f fission isomer	PRIVATE COMM.(67)	Wagemans
Am^{241}	σ_f	PR/B,137,326(65)	Bowman
Am^{241}	σ_f fission isomer	PL,19,226(65)	White
Am^{241}	RI,chemical separation	PRIVATE COMM.(64)	Deal
Am^{241}	isomeric transition	PR,120,934(60)	Asaro
Am^{241}	σ_γ alpha counting	JNE,8,224(59)	Hoff
Am^{241}	ν_p	AE,5,176(58)	Lebedev
Am^{241}	ν_p	JIN,4,1(57)	Cunninghane
Am^{241}	σ_f	PR,107,1294(57)	Hulet
Am^{241}	σ_c	55GENEVA,4,216(55)	Adamchuk
Am^{241}	σ_a pile osci.	ORNL-1879,50(55)	Pomerance
Am^{241}	σ_γ mass spectrometry	PR,85,135(52)	Street
Am^{241}	σ_f	PR,82,558(51)	Cunningham
Am^{241}	σ_f	PR,81,893(51)	Hanna
Am^{241}	σ_γ alpha counting	PR,81,486(51)	Hanna
Am^{241}	σ_γ alpha counting	CS-3471,4(46)	Seaborg
Am^{242M}	ν_{sp}	NP/A,145,1(70)	Jaffey
Am^{242M}	ν_{sp}	AE,29,95(70)	Kroshkin
Am^{242M}	ν_{sp}	70HELSINKI,2,182(70)	Zamyatnin
Am^{242M}	I_γ activation	BAP,15,497(69)	Schuman
Am^{242M}	I_γ	NSE,32,131(68)	Perkins
Am^{242}	$\sigma_f I_f$	AE,23,316(67)	Bak
Am^{242M}	ν_p	PR,152,1046(66)	Fultz
Am^{242M}	σ_f	JNE,20,588(66)	Wolfsberg
Am^{242}	σ_f fission chamber	PR,107,1294(57)	Hulet
Am^{242}	σ_f	PR,107,1294(57)	Hulet
Am^{242}	σ_f fission counter	PR,94,735(54)	Higgins
Am^{242M}	σ_f	PR,94,735(54)	Higgins
Am^{242}	σ_f decay alphas	PR,85,135(52)	Street
Am^{242}	$\sigma_a \sigma_\gamma$	PR,85,135(52)	Street
Am^{242}	mass spectrometry	PR,85,135(52)	Street
Am^{242}	σ_f fission counting	PR,85,135(52)	Street
Am^{242}	$\sigma_a \sigma_f$ alpha counting	PR,81,893(51)	Hanna
Am^{243}	$\sigma_\gamma I_\gamma$	KFK-1456,47(71)	Eberle
Am^{243}	σ_t	PRIVATE COMM.(70)	Berreth
Am^{243}	I_γ activation	BAP,14,497(69)	Schuman
Am^{243}	$\sigma_\gamma I_\gamma$ activation	68WASH,2,1279(68)	Folger
Am^{243}	$\sigma_\gamma I_\gamma$	AE,23,316(67)	Bak
Am^{243}	production rate	DP-MS-66-69(66)	Ice
Am^{243}	σ_γ RI alpha counting	JIN,26,219(64)	Vandenbosch

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Am^{243}	σ_t	PR,114,505(59)	Cote
Am^{243}	σ_γ Al alpha counting	CJP,35,147(57)	Butler
Am^{243}	σ_f	PR,107,1294(57)	Hulet
Am^{243}	σ_γ production	NSE,1,204(56)	Jaffey
Am^{243}	σ_γ	PR,95,581(54)	Harvey
Am^{243}	σ_γ	PR,94,974(54)	Stevens
Am^{243}	σ_γ spectrometry	PR,94,974(54)	Stevens
Am^{243}	σ_γ	PR,94,974(54)-	Thompson
Am^{243}	σ_γ alpha counting	PR,79,530(50)	Street
Am^{244G}	σ_f	PRIVATE COMM.(61)	Hulet
Am^{244}	σ_f	PRIVATE COMM.(61)	Hulet
Am^{244}	σ_f fission chamber	JIN,23,187(61)	Vandenbosch

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Am^{241}	analysis	4.0-6.20	PRIVATE COMM.(73)	Bowman
Am^{241}	σ_f	0.306-15.04	YF,4,985(66)	Gerasimov
Am^{241}	σ_f	0.306-15.04	66PARIS,2,129(66)	Gerasimov
Am^{241}	σ_f	0.66-15.04	PR/B,137,326(65)	Bowman
Am^{241}	σ_c	1.922-2.325	AERE-PR/NP-6,10(64)	Pattenden
Am^{241}	σ_f	0.307-1.265	PRIVATE COMM.(61)	Leonard
Am^{241}	σ_c	5.44-43.25	ORNL-3085,42(61)	Slaughter
Am^{241}	σ_t	0.306-1700	ORNL-2716,26(59)	Block
Am^{241}	σ_f	0.307-4.0	BAP,4,31(59)	Leonard
Am^{241}	σ_f	0.307-3.4	HW-59126,3(59)	Leonard
Am^{242M}	σ_f	0.173-3.25	PR,166,1219(68)	Bowman
Am^{243}	σ_c	-2.0-249.70	ANCR-1088,34(72)	Simpson
Am^{243}	σ_c	-2.0-249.7	ANCR-1060(72)	Simpson
Am^{243}	σ_c	0.420-7.076	PRIVATE COMM.(69)	Berreth
Am^{243}	σ_c	0.0107-15.3	PR,114,505(59)	Cote

$^{242}_{96}Cm$

[163 day]

THERMAL CROSS SECTIONS

σ_γ = 16±5 b
σ_f < 5 b
ν_{sp} = 2.48±0.03

RESONANCE PROPERTIES

I_γ = 150±40 b

$^{243}_{96}Cm$

[28 yr]

THERMAL CROSS SECTIONS

σ_γ = 225±100 b
σ_f = 600±50 b
σ_a = 825±125 b
$\bar{\sigma}_s$ = 825±125 b
ν_p = 3.430±0.047

RESONANCE PROPERTIES

$I_a{}^c$ = 2345±470 b
I_f = 1860±400 b

I^π =(5/2$^+$) S_n=6799.0±1.6keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_{F1} (meV)	Γ_{F2} (meV)
1.49±.03	.27± .06	(40)	.22± .05	-100	350 ± 70
2.27±.01	1.90± .03	(40)	1.26± .02	225	325 ± 80
3.09±.01	.74± .08	(40)	.42± .05	-130 ±20	
3.34±.02	.29± .54	(40)	.16± .03	80 ±15	
3.74±.02	.78± .12	(40)	.40± .06	-110 ±22	
5.40±.02	.81± .16	(40)	.35± .07	150 ±30	
5.96±.05	3.83± .98	(40)	1.57± .04	-150	1000 ±230
8.80±.05	.92± .24	(40)	.31± .08	-300 ±60	
10.32±.06	5.1 ±1.3	(40)	1.6 ±0.4	100	1400 ±300
11.07±.06	3.33± .83	(40)	1.00± .25	-90 ±20	
14.55±.08	.95± .23	(40)	.25± .06	250 ±80	
15.65±.10	1.74± .59	(40)	.44± .15	-250 ±80	
21.68±.15	4.3 ±1.4	(40)	.92± .30	250 ±80	
24.44±.15	3.0 ±1.0	(40)	.6 ± .2	-150 ±35	
25.84±.15	2.85± .81	(40)	.56± .15	150 ±35	

Note - Multilevel Reich-Moore parameters.

THERMAL CROSS SECTIONS

σ_γ = 13.9±1.0 b
σ_f = 1.2±0.1 b
$\bar{\sigma}_s$ = 8±3 b
σ_t = 23±3 b
ν_{sp} = 2.690±0.013

RESONANCE PROPERTIES

I_γ = 650±50 b
I_f = 12.5±2.5 b
<D> = 14±2 eV
S_0 = 1.1±0.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 5519.9±3.3 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
7.69± .03	9.71± 0.56	36 ±2	3.5 ±0.2	
16.81± .08	1.80± .16	37 ±3	.44 ± .04	
22.85± .05	.86± .10	(40)	.18 ± .02	3.7 ± .3
34.95± .05	3.49± .30	43.5±8.0	.59 ± .05	2.51± .07
52.78± .07	.54± .07	(37)	.075± .010	1.7 ± .2
69.99± .07	.55± .08	(37)	.066± .010	3.0 ±0.3
85.96± .09	22.3 ± 1.9	(37)	2.4 ±0.2	.65± .02
96.12± .11	7.0 ± .9	(37)	.71 ± .06	1.54± .05
132.8 ±0.2	15.3 ± 1.2	(37)	1.33 ± .10	1.17± .04
139.1 ±0.2	2.5 ± .3		.21 ± .03	2.8 ± .3
171.2 ±0.3	3.3 ± .5		.25 ± .04	1.3 ± .2
181.6 ±0.3	9.6 ± .9	(37)	.71 ± .07	2.1 ± .1
197.0 ±0.3	37.9 ± 5.6	(37)	2.7 ±0.4	1.00± .06
209.8 ±0.3	42.0 ± 3.6	(37)	2.90 ± .25	.52± .04
222.1 ±0.4	39 ± 4	(37)	2.6 ±0.3	1.25± .16
230.5 ±0.4	23 ± 5	(37)	2.0 ± .5	.40± .07
234.9	3.8 ± 1.2	(37)	.25 ± .08	.9 ± .3
242.7	1.3 ± 1.2	(37)	.083± .077	>2.2
264.9	10 ± 5	(37)	.61 ± .31	.9 ± .4
274.1	16 ± 7	(37)	.97 ± .42	.6 ± .2
316.8	5.5 ± .7	(37)	.31 ± .04	.30± .07
329.5	6.6 ± 1.4	(37)	.36 ± .08	.29± .03
343.6	26 ± 5	(37)	1.40 ± .27	1.16± .16
353.1	101 ±23	(37)	5.37 ±1.22	1.28± .11
361.7	34 ± 8	(37)	1.79 ± .42	1.03± .16
364.4	10 ± 2	(37)	.52 ± .11	2.1 ± .4
386.2	26 ± 3	(37)	1.32 ± .15	1.11± .09
397.6	23 ± 3	(37)	1.15 ± .15	.66± .08
415.0	19 ± 2	(37)	.93 ± .10	.27± .06
420.6	93 ±16	(37)	4.53 ± .78	.89± .08
426.9	13 ± 2	(37)	.63 ± .10	.35± .12
443.4	86 ±19	(37)	4.08 ± .90	.82± .11
470.9	167 ±58	(37)	7.7 ±2.7	1.84± .16

$^{244}_{96}Cm$

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
488.9	15 ± 2	(37)	.68 ± .09	.50± .13
491.9	54 ± 6	(37)	2.43 ± .27	.47± .10
[a]512.4				.20± .04
520.5	26 ± 4	(37)	1.14 ± .18	2.55± .26
[a]596.4	17 ±12	(37)	.70 ± .49	1.0 ± .5
612.4	30 ±22	(37)	1.2 ± .9	1.0 ± .5
620.0	27 ±10	(37)	1.1 ± .4	.8 ± .2
627.8	7 ± 4	(37)	.28 ± .16	<.5
637.9	10 ± 5	(37)	.40 ± .20	.7 ± .4
[a]646.9				.68± .10
652.4	81 ±27	(37)	3.2 ±1.1	<.1
691.3	13 ± 5	(37)	.49 ± .19	.8 ± .3
695.3	16 ± 5	(37)	.61 ± .19	.7 ± .3
704.5	64 ±28	(37)	2.4 ±1.1	1.5 ± .3
712.8	20 ± 7	(37)	.75 ± .26	<.2
[a]731.6	60 ±19	(37)	2.2 ± .7	.17± .09
[b]746.0	4 ± 2	(37)	.15 ± .07	1.6 ±1.0
[a]759.7				.17± .10
778.6	72 ±15	(37)	2.6 ± .54	1.7 ± .2
[b]790.1	4 ± 2	(37)	.14 ± .07	1.7 ±1.0
797.5	2 ± 2	(37)	.67 ± .07	>3.7
[a]802.5	7 ± 2	(37)	.25 ± .07	3.1 ±1.2
815.8	11 ± 2	(37)	.39 ± .07	3.0 ± .8
823.0	28 ± 7	(37)	.98 ± .24	9.3 ±1.9
846.3	6 ± 4	(37)	.21 ± .14	1.7 ±1.2
857.9	33 ±14	(37)	1.3 ± .5	1.4 ± .4
865.6	15 ± 9	(37)	.51 ± .31	4.1 ±2.0
872.0	23 ± 9	(37)	.78 ± .31	1.0 ± .4
884.9	62 ±29	(37)	2.1 ±1.0	.2 ± .1
899.7	128 ±62	(37)	4.27 ±2.07	.14± .09
[a]914.0				.6 ± .2
926.3	19 ± 7	(37)	.62 ± .23	<.5
946.9	34 ±11	(37)	1.1 ± .4	.4 ± .3
[a]971.5		(37)		.35± .11

[a] Resonance with large scattering widths.

[a] Probably unresolved doublet.

[b] Fission resonances probably attributed to Pu-240.

Note - Single-level Breit-Wigner parameters.

THERMAL CROSS SECTIONS

σ_γ = 345±20 b
σ_f = 2020±40 b
σ_t = 2375±100 b
ν_p = 3.832±0.034

RESONANCE PROPERTIES

I_γ = 101±8 b
I_f = 750±150 b
<D> = 1.8±0.3 eV
S_0 = 1.2±.3

RESONANCE PARAMETERS

I^π = 1/2⁺ S_n = 6450.7±3.9 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
1.95± .02	.313±.035	(40)	.224± .025	-285 ± 45
4.67± .02	2.08 ±.03	(40)	.961± .015	375 ± 45
9.17± .05	.67 ±.12	(40)	.22 ± .04	-150 ± 30
11.34± .06	.71 ±.10	(40)	.21 ± .03	130 ± 25
13.88± .06	.335±.075	(40)	.09 ± .02	-170 ± 30
16.0 ±0.1	1.20 ±.40	(40)	.3 ± .1	400 ±100
21.38± .05	2.68 ±.60	(40)	.58 ± .13	-490 ± 90
24.82± .06	3.0 ±.5	(40)	.6 ±0.1	223 ± 40
25.84± .06	.036	(40)	.007	549
26.83± .06	.76	(40)	.147	131
27.55± .07	.73 ±.16	(40)	.14 ± .03	200 ± 30
29.40± .07	3.58 ±.22	(40)	.66 ± .04	350 ± 40
31.71	.50	(40)	.088	
32.99	.37	(40)	.064	4
34.59	.23	(40)	.039	61
35.31	7.58	(40)	1.28	4195
36.32	1.54	(40)	.26	189
39.45	.65	(40)	.10	102
40.44	4.48	(40)	.71	585
42.45	5.37	(40)	.82	10
43.10	1.73	(40)	.26	537
44.57	2.61	(40)	.39	694
45.74	.59	(40)	.087	901
47.51	3.56	(40)	.52	28
49.20	5.04	(40)	.72	1399
50.48	1.79	(40)	.25	751
51.64	.63	(40)	.087	207
53.63	12.4	(40)	1.69	896
54.63	.33	(40)	.045	1057
56.32	1.40	(40)	.19	505
58.54	13.9	(40)	1.81	393
59.99	.61	(40)	.079	518

Note - Multilevel Reich-Moore parameters.

$^{246}_{96}Cm$

[4.76×10^3 yr]

THERMAL CROSS SECTIONS

σ_γ = 1.3±0.3 b
σ_f = 0.17±0.10 b
ν_{sp} = 2.96±0.03

RESONANCE PROPERTIES

I_γ = 121±7 b
I_f = 10.0±0.4 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 5157±7 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
4.31±.02	.35± .04	35 ±2	.17±0.01	
15.29±.08	.55± .08	35 ±3	.14± .02	
84.43	22 ± 5	(37)	2.39± .54	.70± .10
91.84	18.0 ± 1.5	(37)	1.88± .16	.17± .03
158.4	30 ± 3	(37)	2.39± .24	
250.7	9 ± 6	(37)	.57± .38	.38± .30
278.3	7 ± 6	(37)	.42± .36	1.3 ± 1.2
288.2	59 ±38	(37)	3.5 ±2.2	.31± .14
313.4	25 ± 8	(37)	1.4 ± .5	
[a]361.0		(37)		[a]2.3 ± 0.5
381.1	118 ±57	(37)	6.0 ±6.9	.18± .09

[a] Probably unresolved doublet.

[b] $\sigma_0\Gamma_f$ (b-eV)

Note - Single-level Breit-Wigner parameters.

$^{247}_{96}Cm$

[1.54×10^7 yr]

THERMAL CROSS SECTIONS

σ_γ = 60±30 b
σ_f = 90±10 b

RESONANCE PROPERTIES

I_γ = 800±400 b
I_f = 880±100 b
<D> = 1.4±0.3 eV
S_0 = 0.84±0.23

RESONANCE PARAMETERS

I^π = 9/2⁻ S_n = 6210±7 keV

E_0(eV)	$2g\Gamma_n$(meV)	Γ_γ(meV)	$2g\Gamma_n^0$(meV)	Γ_f(meV)
21.30	.13	(40)	0.027	404
24.03	.044	(40)	0.009	134
25.35	.010	(40)	0.002	26
26.19	.15	(40)	0.003	220
28.04	.058	(40)	0.011	53
30.25	3.45	(40)	0.627	4
30.62	.19	(40)	0.034	52
32.23	.51	(40)	0.089	26
36.36	1.63	(40)	0.270	61
37.74	.025	(40)	0.004	555
37.76	1.33	(40)	0.217	13
39.52	.005	(40)	0.001	705
39.95	.095	(40)	0.015	167
40.61	.032	(40)	0.005	48
41.25	.66	(40)	0.103	20
41.76	.052	(40)	0.008	546
43.39	.19	(40)	0.029	4
44.87	2.10	(40)	0.313	32
45.21	.58	(40)	0.086	60
47.92	1.17	(40)	0.169	164
48.85	6.80	(40)	0.973	82
50.08	2.36	(40)	0.334	55
50.69	3.18	(40)	0.447	52
51.78	1.66	(40)	0.231	14
52.19	1.26	(40)	0.175	4
53.63	.45	(40)	0.062	324
55.10	.53	(40)	0.072	38
56.18	.66	(40)	0.088	69
59.66	15.7	(40)	2.037	114

Note - Measurements below 21.3 eV are not yet carried out.

$^{248}_{96}Cm$

[3.5×10^5 yr]

THERMAL CROSS SECTIONS

σ_γ = 4±1 b
σ_f = 0.34±0.07 b
ν_{sp} = 3.157±0.015

RESONANCE PROPERTIES

I_γ = 275±75 b
I_f = 13.2±0.8 b

RESONANCE PARAMETERS

I^π = 0$^+$ S_n = 4713±6 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	Γ_f (meV)
7.26	1.6	(34)	*.6	
26.85± .05	19.6±1.5	40 ±5	3.8 ±0.3	.09± .01
35.00± .06	11.2	(34)	*1.9	
76.15± .10	105	53 ±6	*12	4.7 ±0.6
98.95± .15	160	53 ±6	*16	.67± .07
140.2 ±0.2	1.5		*.13	
186.2 ±0.2	4.2		*.31	
237.4 ±0.3	16.9		*1.1	
258.7	71		*4.4	
321.9	29		*1.6	
380.2	96		*4.9	
415.6				
457.9				
485.0				
541.9	14		*0.60	
605.3				
647.0				
692.7				
694.5				
721				
769				
866				
887				
959				
994				
1024				
1104				
1193				
1210				
1263				
1277				
1288				
1388				
1508				
1620				
1813				
1906				

$^{248}_{96}Cm$

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)	Γ_f (meV)
2042				
2070				
2137				
2215				
2291				
2370				
2391				
2585				

* Preliminary data.

$^{249}_{96}Cm$

[64 min]

THERMAL CROSS SECTIONS

σ_γ = 1.6±0.8 b
ν = 3.31±0.08

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cm^{242}	I_γ	BAP,14,497(69)	Schuman
Cm^{242}	σ_a	68WASH,2,1285(68)	Smith
Cm^{242}	ν_{sp}	PR,101,1804(56)	Crane
Cm^{242}	ν_{sp}	PR,101,1016(56)	Hicks
Cm^{242}	σ_f	PR,81,893(51)	Hanna
Cm^{243}	I_f	JIN,33,1553(71)	Thompson
Cm^{243}	ν_p	NP/A,145,1(70)	Jaffey
Cm^{243}	$\sigma_a\sigma_f$	68WASH,2,1285(68)	Smith
Cm^{243}	σ_f	PR,107,129[illegible](57)	Hulet
Cm^{244}	σ_f	YF,17,24(73)	Fomushkin
Cm^{244}	$\sigma_f I_f$	NSE,47,203(72)	Benjamin
Cm^{244}	σ_t	NSE,49,145(72)	Berreth
Cm^{244}	ν_{sp}	AE,33,767(72)	Prokhorova
Cm^{244}	$\sigma_f\sigma_\gamma I_\gamma I_f$	JIN,33,1553(71)	Thompson
Cm^{244}	ν_{sp}	NP/A,145,1(70)	Jaffey
Cm^{244}	$\nu_{sp}\sigma_f$	AE,29,95(70)	Kroshkin
Cm^{244}	ν_{sp}	70HELSINKI,2,182(70)	Zamyatnin
Cm^{244}	σ_t	IN-1317,17(69)	Berreth
Cm^{244}	I_γ	BAP,14,497(69)	Schuman
Cm^{244}	$\sigma_\gamma I_\gamma$	68WASH,2,1279(68)	Folger
Cm^{244}	$\sigma_a\sigma_f I_a$	68WASH,2,1285(68)	Smith
Cm^{244}	σ_a production rate	DP-MS-66-69(66)	Ice
Cm^{244}	ν_{sp}	AE,17,28(64)	Bol'shov
Cm^{244}	ν_{sp}	PR,101,1012(56)	Diven
Cm^{244}	ν_{sp}	PR,101,1804(56)	Crane
Cm^{244}	σ_f	PR,102,180(56)	Fields
Cm^{244}	ν_{sp}	PR,101,1016(56)	Hicks
Cm^{244}	ν_{sp}	PR,98,1521(55)	Hicks
Cm^{244}	σ_γ mass spectrometry	PR,94,974(54)	Stevens
Cm^{244}	σ_a	PRIVATE COMM.(51)	Thompson
Cm^{245}	σ_f	YF,17,24(73)	Fomushkin
Cm^{245}	$\sigma_f I_f$	NSE,47,203(72)	Benjamin
Cm^{245}	σ_t	NSE,49,145(72)	Berreth
Cm^{245}	$\sigma_f\sigma_\gamma I_\gamma I_f$	JIN,33,1553(71)	Thompson
Cm^{245}	$\sigma_f I_f$	ORNL-4581,37(70)	Halperin
Cm^{245}	ν_p	NP/A,145,1(70)	Jaffey
Cm^{245}	ν_p	AE,29,95(70)	Kroshkin
Cm^{245}	ν_p	70HELSINKI,2,182(70)	Zamyatnin
Cm^{245}	σ_t	IN-1317,17(69)	Berreth
Cm^{245}	σ_γ mass spectrometry	ORNL-4437,20(69)	Halperin
Cm^{245}	$\sigma_f I_f$	JIN,33,1553(69)-	Macmurdo
Cm^{245}	I_γ	BAP,15,497(69)	Schuman
Cm^{245}	σ_f	JIN,30,2553(68)	Diamond
Cm^{245}	I_γ	68WASH,2,1279(68)	Folger
Cm^{245}	$\sigma_a\sigma_f$	68WASH,2,1285(68)	Smith
Cm^{245}	σ_a production rate	DP-MS-66-69(66)	Ice

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cm^{245}	σ_f	PR,107,1294(57)	Hulet
Cm^{245}	σ_γ mass spectrometry	PR,94,974(54)	Stevens
Cm^{246}	ν_{sp}	JINR-P-15,7119(73)	Dakovski
Cm^{246}	σ_f	YF,17,24(73)	Fomushkin
Cm^{246}	ν_{sp}	ORNL-4844,109(73)	Stoughton
Cm^{246}	$\sigma_f I_f$	NSE,47,203(72)	Benjamin
Cm^{246}	ν_{sp}	AE,33,767(72)	Prokhorova
Cm^{246}	$\sigma_f \sigma_\gamma I_\gamma$	JIN,33,1553(71)	Thompson
Cm^{246}	ν_{sp}	PR/C,2,763(70)	Thompson
Cm^{246}	σ_γ mass spectrometry	ORNL-4437,20(69)	Halperin
Cm^{246}	I_γ	BAP,15,497(69)	Schuman
Cm^{246}	$\sigma_\gamma I_\gamma$	68WASH,2,1279(68)	Folger
Cm^{246}	$\sigma_a I_a$	68WASH,2,1285(68)	Smith
Cm^{246}	σ_γ mass spectrometry	PR,94,974(54)	Stevens
Cm^{247}	σ_f	YF,17,24(73)	Fomushkin
Cm^{247}	$\sigma_f I_f$	NSE,47,203(72)	Benjamin
Cm^{247}	$\sigma_f \sigma_\gamma I_\gamma I_f$	JIN,33,1553(71)	Thompson
Cm^{247}	$\sigma_f I_f$	ORNL-4581,37(70)	Halperin
Cm^{247}	$\sigma_f I_f$	JIN,33,1553(69)-	Macmurdo
Cm^{247}	σ_f	JIN,30,2553(68)	Diamond
Cm^{247}	$\sigma_a \sigma_f$	68WASH,2,1285(68)	Smith
Cm^{247}	σ_a production rate	DP-MS-66-69(66)	Ice
Cm^{247}	σ_γ growth rate	55GENEVA,7,261(55)	Bentley
Cm^{248}	σ_f	YF,17,24(73)	Fomushkin
Cm^{248}	ν_{sp}	ORNL-4844,109(73)	Stoughton
Cm^{248}	$\sigma_f I_f$	NSE,47,203(72)	Benjamin
Cm^{248}	ν_{sp}	AE,33,767(72)	Prokhorova
Cm^{248}	ν_{sp}	NSE,43,54(71)	Orth
Cm^{248}	$\sigma_f \sigma_\gamma I_\gamma$	JIN,33,1553(71)	Thompson
Cm^{248}	σ_a	68WASH,2,1285(68)	Smith
Cm^{248}	σ_γ	JIN,6,261(58)	Eastwood
Cm^{249}	$\sigma_\gamma \sigma_f$	AE,28,388(70)	Bol'shov
Cm^{249}	σ_γ mass spectrometry	ANL-7330(67)	Diamond
Cm^{250}	ν_{sp}	NSE,43,54(71)	Orth

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Cm^{243}	σ_t	1.49-25.64	NSE,49,145(72)	Berreth
Cm^{243}	σ_t	1.49-25.84	ANCR-1016,3(71)	Berreth
Cm^{243}	σ_t	2.263-6.005	ANS,12,280(69)	Berreth
Cm^{243}	σ_t	2.263-6.005	IN-1317,17(69)	Berreth
Cm^{244}	σ_t	7.66-85.4	NSE,49,145(72)	Berreth
Cm^{244}	σ_t	-1.48-520.6	PRIVATE COMM.(72)	Simpson
Cm^{244}	$\sigma_f \sigma_\gamma$	22.85-971.5	PR/C,3,1656(71)+	Moore
Cm^{244}	σ_t	7.66-195.0	ANCR-1016,3(71)	Berreth
Cm^{244}	σ_t	7.678-196.9	IN-1407,80(70)	Berreth
Cm^{244}	$\sigma_f \sigma_\gamma$	22.8-273	70HELSINKI,1,527(70)	Moore
Cm^{244}	σ_t	7.678	IN-1317,17(69)	Berreth
Cm^{244}	σ_t	7.73-768	PR/B,134,1281(64)	Cote
Cm^{245}	σ_t	1.95-29.3	NSE,49,145(72)	Berreth
Cm^{245}	σ_t	1.955-58.28	ANCR-1016,3(71)	Berreth
Cm^{245}	σ_f	21.36-59.99	PR/C,3,1656(71)	Moore
Cm^{245}	σ_t	1.969-9.168	ANS,12,280(69)	Berreth
Cm^{245}	σ_t	1.969-9.168	IN-1317,17(69)	Berreth
Cm^{246}	σ_t	4.31-15.29	NSE,49,145(72)	Berreth
Cm^{246}	$\sigma_f \sigma_\gamma$	84.43-381.1	PR/C,3,1656(71)	Moore
Cm^{246}	σ_t	4.308-158.00	ANCR-1016,3(71)	Berreth
Cm^{246}	σ_t	4.316-159.4	IN-1407,80(70)	Berreth
Cm^{246}	$\sigma_f \sigma_\gamma$	84.3-287.0	70HELSINKI,1,527(70)	Moore
Cm^{246}	σ_t	4.316	IN-1317,17(69)	Berreth
Cm^{246}	σ_t	4.316	ANS,12,280(69)	Berreth
Cm^{246}	σ_t	4.33-84.5	PR/B,134,1281(64)	Cote
Cm^{247}	σ_f	21.30-59.66	PR/C,3,1656(71)	Moore
Cm^{248}	σ_t	7.26-2985	BAP,18,539(73)+	Benjamin
Cm^{248}	σ_f	26.84-415.2	PR/C,3,1656(71)	Moore
Cm^{248}	σ_f	26.8-237.0	70HELSINKI,1,527(70)	Moore

$^{249}_{97}$Bk

[311 day]

THERMAL CROSS SECTIONS

σ_a = 1300±300 b
ν_{sp} = 3.39±0.03

RESONANCE PROPERTIES

I_a = 1240 b

$^{250}_{97}$Bk

[3.22 hr]

THERMAL CROSS SECTIONS

σ_f = 960±150 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Bk^{249}	ν	AE,33,788(72)	Kosyakov
Bk^{249}	$\sigma_a I_a$	ANS,14,344(71)	Rusche
Bk^{249}	σ_γ	AE,28,388(70)	Bol'shov
Bk^{249}	σ_a	68WASH,2,1279(68)	Folger
Bk^{249}	σ_a	DP-MS-66-69(66)	Ice
Bk^{249}	ν_{sp}	58GENEVA,15,353(58)-	Pyle
Bk^{249}	σ_γ	PR,95,581(54)	Harvey
Bk^{249}	σ_γ	PR,96,1576(54)	Magnusson
Bk^{250}	σ_γ	AE,28,388(70)	Bol'shov
Bk^{250}	σ_f	JIN,30,2553(68)	Diamond

$^{246}_{98}Cf$

[36 hr]

THERMAL CROSS SECTIONS

ν_{sp} = 3.14±0.09

$^{249}_{98}Cf$

[350.6 yr]

THERMAL CROSS SECTIONS

σ_γ = 465±25 b
σ_f = 1660±50 b

RESONANCE PROPERTIES

I_γ = 765±35 b
I_f = 2114±70 b
<D> = 1.07±0.14 eV
S_0 = 1.5±0.3

RESONANCE PARAMETERS

I^π = 9/2⁻ S_n = 6619±4 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
.702			[a]8000
3.89			
5.07			
7.51			
8.66			
9.52			
10.35			
11.90			
13.63			
16.0	.40 ± .04	0.10 ±.01	190 ± 19
16.7	1.6 ± .2	0.38 ±.04	170 ± 17
*17.7	.017	0.004	400
19.8	.18 ± .05	0.04 ±.01	110 ± 75
21.3	7.98 ± .80	1.73 ±.17	150 ± 15
21.7	1.8 ± .2	0.39 ±.04	140 ± 14
22.8	.96 ± .48	0.20 ±.10	2.4± 1.2
23.4	.63 ± .06	0.13 ±.01	106 ± 11
26.0	1.6 ± .2	0.31 ±.03	320 ± 32
27.6	.79 ± .08	0.15 ±.02	75 ± 26
28.1	4.1 ±1.2	0.77 ±.23	15 ± 5
*28.9	.05	0.01	500
30.3	.83 ± .25	0.15 ±.05	28 ± 14
31.0	2.3 ± .4	0.42 ±.08	480 ± 96
31.5	.84 ± .17	0.15 ±.03	200 ± 40
33.3	1.7 ± .02	0.29 ±.03	300 ± 30
34.9	.89 ± .27	0.15 ±.05	40 ± 20
36.3	6.0 ±2.4	1.0 ±.4	50 ± 30
37.0	3.95 ± .79	0.65 ±.13	130 ± 91

E_0 (eV)	$2g\Gamma_n$ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
*37.4	.6	0.1	20
*38.1	.49	0.08	400
39.7	2.6 ± .52	0.41 ±.08	220 ±110
40.3	3.3 ± .7	0.52 ±.10	110 ± 33
42.7	.28 ± .06	0.043±.009	130 ± 65
43.1	.37 ± .07	0.056±.011	100 ± 50
45.6	3.9 ±2.3	0.58 ±.35	55 ± 33
46.6	.49 ± .10	0.072±.014	150 ± 90
47.5	2.2 ±1.1	0.32 ±.16	70 ± 53
48.4	3.1 ± .3	0.44 ±.04	170 ± 17
51.2	1.7 ± .7	0.24 ±.10	300 ±225
52.1	8.3 ±1.2	1.15 ±.17	87 ± 17
53.9	4.8 ± .5	0.65 ±.07	490 ± 49
56.0	3.1 ± .6	0.41 ±.08	230 ±172
56.4	3.7 ± .7	0.49 ±.10	45 ± 34
57.6	4.6 ± .5	0.60 ±.06	450 ± 45
58.7	3.9 ±1.0	0.51 ±.13	10 ± 3
59.4	3.7 ±1.1	0.048±.014	260 ± 78
*60.2	.093	0.012	2100
*60.8	.39	0.05	1000
61.7	.24 ± .04	0.030±.005	500 ± 45
65.7	6.7 ± .7	0.83 ±.08	440 ± 44
*67.1	.82	0.10	50
69.3	.56 ± .08	0.067±.010	210 ± 32

* Resonance values are those required by the multilevel fit but are only approximately determined.

[a] σ_{0f} (b-eV)

$^{250}_{98}Cf$ [13.1 yr]

THERMAL CROSS SECTIONS

σ_γ = 2030±200 b
σ_f < 350 b
ν_{sp} = 3.50±0.09

RESONANCE PROPERTIES

I_a = 11600±500 b

$^{251}_{98}Cf$ [900 yr]

THERMAL CROSS SECTIONS

σ_a = 7150±350 b
σ_γ = 2850±150 b
σ_f = 4300±300 b

RESONANCE PROPERTIES

I_γ = 1600±30 b
I_f = 5900±1000 b

$^{252}_{98}Cf$

[2.63 yr]

THERMAL CROSS SECTIONS

σ_γ = 20.4±1.5 b
σ_f = 32±4 b
ν = 3.74±0.01

RESONANCE PROPERTIES

I_γ = 43.5±3.0 b
I_f = 110±30 b
<D> = 27±4 eV

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 4793±8 keV

E_0 (eV)	Γ_n (meV)	Γ_f (meV)	$\sigma_0\Gamma_f$ (meV)
24.55			12.9± .3
36.35			398 ±31
68.37	*53.5±3.0	*180 ±9	1360 ±42
79.16			62 ± 5
88.25			3.7± 1.0
138.1			15.8± 2.7
190.1			12.0± 3.0
217.7			293 ±24
246.2			21 ± 5
307.1			15.7± 2.3
338.0			9.4± 2.4
387.4			64 ± 7
393.6			9.2± 2.4
404.8			73 ± 8
417.0			14.4± 3.2
426.7			45 ± 6
445.4			41 ± 7
490.8			37 ± 7
520.2			12 ± 3
557.2	*<370	*>42.5	164 ±17
561.9			50 ± 7
606.4			75 ±10
626.4			7 ± 5
643.7			8 ± 6
674.2			20 ± 7
706.2			20 ± 5
726.1	*<1250	*>82	257 ±26
754.1			26 ± 7
771.1			37 ± 7
813.5			6 ± 4
833.1	*<1300	*>44	118 ±18
841.0			12 ± 5
877.6			20 ± 7
931.8			10 ± 5
983.5			7 ± 6

* Since these values are determined from the product and the sum of the neutron and fission widths, it is possible that the entries in the table could be reversed.

$^{253}_{98}Cf$

[17.8 day]

THERMAL CROSS SECTIONS

σ_γ = 17.6±1.8 b
σ_f = 1300±240 b

$^{254}_{98}Cf$

[60.5 day]

THERMAL CROSS SECTIONS

σ_a = 90±30 b
ν_{sp} = 3.93±0.05

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cf^{246}	ν_{sp}	JINR-P15,6730(72)	Dakovski
Cf^{246}	ν_{sp}	NSE,43,54(71)-	Pyle
Cf^{249}	half life	JIN-35,3369(73)	Stokely
Cf^{249}	$\sigma_f I_f$	NSE,47,203(72)	Benjamin
Cf^{249}	$\sigma_\gamma \sigma_f$	KFK-1338(71)-	Eberle
Cf^{249}	σ_f	YF,14,73(71)	Fomushkin
Cf^{249}	$\sigma_\gamma I_\gamma$	ORNL-4706,47(71)	Halperin
Cf^{249}	$\sigma_a \sigma_f I_a I_f$	ANS,14,344(71)	Rusche
Cf^{249}	$\sigma_f I_f$	ORNL-4581,37(70)	Halperin
Cf^{249}	σ_f	JIN,27,33(65)	Metta
Cf^{249}	σ_f fission chamber	PRIVATE COMM.(64)	Metta
Cf^{249}	σ_γ	PR,95,581(54)	Harvey
Cf^{249}	σ_γ activation	PR,95,581(54)	Harvey
Cf^{249}	σ_f Cf-250 fission	PR,95,581(54)	Harvey
Cf^{250}	$\sigma_\gamma I_\gamma$	ORNL-4706,47(71)	Halperin
Cf^{250}	ν_{sp}	NSE,43,54(71)	Orth
Cf^{250}	$\sigma_a I_a$	ANS,14,344(71)	Rusche
Cf^{250}	$\sigma_a I_a$	68WASH,2,1279(68)	Folger
Cf^{250}	σ_a	68WASH,2,1285(68)	Smith
Cf^{250}	σ_f	JIN,27,33(65)-	Diamond
Cf^{250}	σ_f	PRIVATE COMM.(64)	Diamond
Cf^{250}	σ_γ	ANL-6252(61)	Vandenbosch
Cf^{250}	σ_γ	PR,96,1576(54)	Magnusson
Cf^{251}	σ_f	PRIVATE COMM.(73)	Ragaini
Cf^{251}	$\sigma_\gamma \sigma_f I_\gamma I_f$	RCA,15,180(71)	Eberle
Cf^{251}	$\sigma_\gamma \sigma_f$	KFK-1338(71)-	Eberle
Cf^{251}	$\sigma_\gamma I_\gamma$	ORNL-4706,47(71)	Halperin
Cf^{251}	$\sigma_a \sigma_f I_a I_f$	ANS,14,344(71)	Rusche
Cf^{251}	$\sigma_a I_a$	68WASH,2,1279(68)	Folger
Cf^{251}	$\sigma_a \sigma_f$	68WASH,2,1285(68)	Smith
Cf^{251}	σ_f	JIN,27,33(65)	Metta
Cf^{251}	σ_f	PRIVATE COMM.(64)	Metta
Cf^{251}	σ_γ	ANL-6252(61)	Vandenbosch
Cf^{251}	σ_γ	PR,96,1576(54)	Magnusson
Cf^{252}	σ_a	AE,32,493(72)	Anufriev
Cf^{252}	ν_{sp}	PRIVATE COMM.(72)	DeVolpi
Cf^{252}	$\sigma_\gamma I_\gamma$	KFK-1456,47(71)	Eberle
Cf^{252}	$\sigma_\gamma I_\gamma$	KFK-1338(71)	Eberle
Cf^{252}	$\sigma_f I_f$	ORNL-4706,53(71)	Halperin
Cf^{252}	$\sigma_a \sigma_f I_a I_f$	ANS,14,344(71)	Rusche
Cf^{252}	ν_{sp}	PR/C,1,683(70)	DeVolpi
Cf^{252}	ν_{sp}	AE,29,95(70)	Kroshkin
Cf^{252}	ν_{sp}	70HELSINKI,2,182(70)	Zamyatnin

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cf^{252}	$\sigma_\gamma I_\gamma$	NSE,37,228(69)	Halperin
Cf^{252}	$\sigma_a I_a$	68WASH,2,1279(68)	Folger
Cf^{252}	ν_{sp}	JNE,22,73(68)	White
Cf^{252}	ν_{sp}	66PARIS,2,57(66)	Baron
Cf^{252}	ν	PRIVATE COMM.(66)	Caldwell
Cf^{252}	ν_{sp}	ANL-7210,21(66)	DeVolpi
Cf^{252}	ν_{sp}	JNE,20,549(66)	Fieldhouse
Cf^{252}	ν_{sp}	65SALZBURG,2,25(65)	Colvin
Cf^{252}	ν_{sp}	NSE,16,124(63)	Asplund-Nilsson
Cf^{252}	ν_{sp}	NP,48,433(63)	Hopkins
Cf^{252}	ν_{sp}	PR,126,197(62)	Meadows
Cf^{252}	ν_{sp}	JNE,15,102(61)	Moat
Cf^{252}	σ_γ	ANL-6252(61)	Vandenbosch
Cf^{252}	ν	58GENEVA,15,212(58)	Bowman
Cf^{252}	ν_{sp}	PR,101,1804(56)	Crane
Cf^{252}	delayed neutrons	PR,112,960(58)	Cox
Cf^{252}	ν_{sp}	PR,101,1012(56)	Diven
Cf^{252}	ν_{sp}	PR,101,1016(56)	Hicks
Cf^{252}	ν_{sp}	PR,97,242(55)	Crane
Cf^{252}	σ_γ	PR,95,581(54)	Harvey
Cf^{252}	σ_γ	PR,96,1576(54)	Magnusson
Cf^{253}	$\sigma_a \sigma_f I_a I_f$	ANS,14,344(71)	Rusche
Cf^{253}	σ_f	JIN,35,1063(73)	Wild
Cf^{253}	σ_a	AE,32,493(72)	Anufriev
Cf^{253}	σ_a	NSE,41,146(70)-	Bigelow
Cf^{253}	$\sigma_\gamma \sigma_f$	NSE,41,146(70)	Bemis
Cf^{253}	σ_a	68WASH,2,1285(68)	Smith
Cf^{254}	ν_{sp}	NSE,43,54(71)	Orth
Cf^{254}	$\sigma_a I_a$	ANS,14,344(71)	Rusche
Cf^{254}	σ_γ	PR,95,581(54)	Harvey

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Cf^{249}	σ_f	0.702-18.87	ORNL-4844,100(73)+	Dabbs
Cf^{249}	σ_f	16.0-69.3	NSE,51,376(73)+	Silbert
Cf^{249}	σ_f	0.72	PRIVATE COMM.(72)	Bemis
Cf^{252}	σ_f	24.55-983.5	PR/C,4,273(71)	Moore
Cf^{252}	σ_f	24.72-243	70HELSINKI,1,527(70)	Moore
Cf^{252}	ν_{sp}		66PARIS,1,307(66)	Colvin

$^{253}_{99}Es$

[20.47 day]

THERMAL CROSS SECTIONS

σ_γ = 155±20 b [39.3 hr $^{254}Es^m$]
σ_γ < 3 b [276 day $^{254}Es^g$]

RESONANCE PROPERTIES

I_γ = 3000±170 b [39.3 hr $^{254}Es^m$]
I_γ = 4300±220 b [276 day $^{254}Es^g$]

$^{254}_{99}Es^m$

[39.3 hr]

THERMAL CROSS SECTIONS

σ_γ ≃ 1.3 b [39.3 hr $^{254}Es^m$]
σ_f = 1840±80 b

$^{254}_{99}Es^g$

[276 day]

THERMAL CROSS SECTIONS

σ_γ < 40 b [39 day ^{255}Es]
σ_f = 2900±110 b

RESONANCE PROPERTIES

I_f = 2190±90 b

$^{255}_{99}Es$

[39 day]

THERMAL CROSS SECTIONS

σ_γ = 43±10 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Es^{253}	$\sigma_\gamma I_\gamma$	JIN,35,1821(73)	Harbour
Es^{253}	$\sigma_a I_a$	68WASH,2,1279(68)	Folger
Es^{253}	σ_γ	NP/A,96,440(67)	Fields
Es^{253}	σ_γ	PR,102,203(56)	Jones
Es^{253}	σ_γ	PR,94,209(54)	Fields
Es^{254M}	σ_γ transmutation	ORNL-4884(73)+	Bigelow
Es^{254}	σ_γ	JIN,6,1(58)	Schuman
Es^{254}	σ_f	JIN,30,2553(68)	Diamond
Es^{254M}	σ_f	JIN,30,2553(68)	Diamond
Es^{254G}	$\sigma_f I_f$	JIN,34,449(72)	MacMurdo
Es^{255}	σ_γ	PR,98,1519(55)	Choppin

$^{254}_{100}Fm$

[3.24 hr]

THERMAL CROSS SECTIONS

$\sigma_\gamma \simeq 76$ b
$\nu_{sp} = 3.96 \pm 0.19$

$^{255}_{100}Fm$

[20.1 hr]

THERMAL CROSS SECTIONS

$\sigma_\gamma = 26 \pm 3$ b
$\sigma_f = 3400 \pm 170$ b

$^{256}_{100}Fm$

[2.63 hr]

THERMAL CROSS SECTIONS

$\sigma_\gamma \simeq 45$ b
$\nu_{sp} = 3.73 \pm 0.18$

$^{257}_{100}Fm$

[100.5 day]

THERMAL CROSS SECTIONS

$\sigma_f = 2950 \pm 160$ b
$\sigma_a = 6100 \pm 600$ b
$\nu_{sp} = 3.77 \pm 0.02$

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Fm^{254}	σ_γ transmutation	ORNL-4884(73)+	Bigelow
Fm^{254}	ν_{sp}	PR,102,766(56)	Choppin
Fm^{255}	σ_f	PRIVATE COMM.(73)	Ragaini
Fm^{255}	σ_γ	PRIVATE COMM.(66)	Hulet
Fm^{255}	σ_γ	PR,98,1519(55)	Choppin
Fm^{256}	ν_{sF}	YF,16,1167(73)	Dakowski
Fm^{256}	σ_γ	ORNL-4884(73)-	Hoffman
Fm^{256}	ν	PR/C,5,1725(72)	Flynn
Fm^{257}	ν_{sp}	LA-UR-1010(73)	Balagna
Fm^{257}	ν	3ROCHESTER(73)	Balagna
Fm^{257}	ν	ANS,16,315(73)	Veeser
Fm^{257}	ν	PRIVATE COMM.(73)	Veeser
Fm^{257}	σ_f	JIN,35,1063(73)	Wild
Fm^{257}	ν_{sp}	PR/C,3,2017(71)	Cheifetz
Fm^{257}	$\sigma_a I_a$	ORNL-4581,43(70)	Bemis

ENERGY ORDERED RESONANCES

E_0 (eV)	Isotope	E_0 (eV)	Isotope	E_0 (eV)	Isotope
0.0268	$_{64}Gd^{155}$	2.047	$_{62}Sm^{151}$	5.48	$_{68}Er^{162}$
0.0314	$_{64}Gd^{157}$	2.09	$_{95}Am^{242}$	5.77	$_{93}Np^{237}$
0.084	$_{54}Xe^{135}$	2.15	$_{66}Dy^{156}$	5.80	$_{66}Dy^{162}$
0.0976	$_{62}Sm^{149}$	2.156	$_{75}Re^{185}$	5.96	$_{96}Cm^{243}$
0.1413	$_{71}Lu^{176}$	2.27	$_{96}Cm^{243}$	5.97	$_{94}Pu^{241}$
0.147	$_{73}Ta^{182}$	2.334	$_{52}Te^{123}$	5.98	$_{92}U^{232}$
0.169	$_{61}Pm^{148}$	2.36	$_{95}Am^{241}$	5.98	$_{68}Er^{167}$
0.173	$_{95}Am^{242}$	2.457	$_{63}Eu^{153}$	5.98	$_{73}Ta^{182}$
0.1776	$_{48}Cd^{113}$	2.568	$_{64}Gd^{155}$	6.16	$_{71}Lu^{176}$
0.257	$_{94}Pu^{241}$	2.583	$_{71}Lu^{175}$	6.24	$_{51}Sb^{121}$
0.296	$_{94}Pu^{239}$	2.60	$_{95}Am^{241}$	6.30	$_{64}Gd^{155}$
0.308	$_{95}Am^{241}$	2.67	$_{94}Pu^{242}$	6.42	$_{92}U^{233}$
0.396	$_{91}Pa^{231}$	2.72	$_{66}Dy^{161}$	6.44	$_{62}Sm^{151}$
0.433	$_{73}Ta^{180}$	2.830	$_{91}Pa^{233}$	6.554	$_{95}Am^{243}$
0.461	$_{63}Eu^{151}$	2.96	$_{46}Pd^{108}$	6.57	$_{61}Pm^{147}$
0.460	$_{68}Er^{167}$	2.99	$_{57}La^{138}$	6.71	$_{76}Os^{189}$
0.539	$_{88}Ra^{226}$	3.18	$_{90}Th^{229}$	6.78	$_{95}Am^{241}$
0.576	$_{95}Am^{241}$	3.25	$_{95}Am^{242}$	6.92	$_{61}Pm^{147}$
0.609	$_{90}Th^{229}$	3.293	$_{63}Eu^{153}$	6.93	$_{94}Pu^{241}$
0.61	$_{95}Am^{242}$	3.31	$_{64}Gd^{152}$	7.181	$_{91}Pa^{233}$
0.6551	$_{77}Ir^{191}$	3.35	$_{65}Tb^{159}$	7.24	$_{75}Re^{185}$
0.872	$_{62}Sm^{149}$	3.366	$_{63}Eu^{151}$	7.29	$_{63}Eu^{151}$
1.02	$_{95}Am^{242}$	3.49	$_{92}U^{233}$	7.55	$_{90}Th^{228}$
1.056	$_{94}Pu^{240}$	3.68	$_{66}Dy^{161}$	7.60	$_{68}Er^{162}$
1.098	$_{72}Hf^{177}$	3.90	$_{69}Tm^{169}$	7.69	$_{96}Cm^{244}$
1.103	$_{62}Sm^{151}$	3.92	$_{67}Ho^{165}$	7.69	$_{96}Cm^{244}$
1.26	$_{90}Th^{229}$	3.942	$_{63}Eu^{153}$	7.78	$_{72}Hf^{178}$
1.257	$_{45}Rh^{103}$	3.99	$_{95}Am^{241}$	7.863	$_{95}Am^{243}$
1.27	$_{95}Am^{241}$	4.10	$_{62}Sm^{151}$	7.91	$_{70}Yb^{171}$
1.303	$_{77}Ir^{193}$	4.28	$_{73}Ta^{181}$	8.00	$_{64}Gd^{152}$
1.341	$_{91}Pa^{233}$	4.28	$_{94}Pu^{241}$	8.047	$_{62}Sm^{152}$
1.356	$_{95}Am^{243}$	4.288	$_{91}Pa^{233}$	8.13	$_{70}Yb^{170}$
1.427	$_{90}Th^{230}$	4.31	$_{96}Cm^{246}$	8.60	$_{94}Pu^{241}$
1.44	$_{90}Th^{229}$	4.34	$_{66}Dy^{161}$	8.73	$_{91}Pa^{231}$
1.457	$_{49}In^{115}$	4.37	$_{71}Lu^{176}$	8.78	$_{92}U^{235}$
1.48	$_{93}Np^{237}$	4.416	$_{75}Re^{187}$	8.86	$_{63}Eu^{153}$
1.55	$_{92}U^{233}$	4.67	$_{96}Cm^{245}$	8.95	$_{62}Sm^{149}$
1.568	$_{71}Lu^{176}$	4.75	$_{71}Lu^{175}$	8.96	$_{76}Os^{189}$
1.644	$_{91}Pa^{233}$	4.75	$_{90}Th^{229}$	8.97	$_{91}Pa^{233}$
1.65	$_{95}Am^{242}$	4.906	$_{79}Au^{197}$	9.07	$_{77}Ir^{191}$
1.711	$_{62}Sm^{151}$	5.03	$_{95}Am^{241}$	9.07	$_{77}Ir^{193}$
1.713	$_{66}Dy^{163}$	5.06	$_{91}Pa^{231}$	9.12	$_{49}In^{115}$
1.72	$_{90}Th^{229}$	5.152	$_{91}Pa^{233}$	9.37	$_{68}Er^{167}$
1.744	$_{95}Am^{243}$	5.19	$_{92}U^{234}$	9.37	$_{91}Pa^{233}$
1.82	$_{73}Ta^{182}$	5.25	$_{71}Lu^{175}$	9.8	$_{71}Lu^{176}$
1.88	$_{66}Dy^{160}$	5.33	$_{62}Sm^{151}$	10.06	$_{94}Pu^{241}$
1.896	$_{90}Th^{228}$	5.36	$_{77}Ir^{191}$	10.30	$_{76}Os^{189}$
1.93	$_{95}Am^{241}$	5.36	$_{61}Pm^{147}$	10.34	$_{73}Ta^{181}$
1.95	$_{96}Cm^{245}$	5.45	$_{92}U^{236}$	10.37	$_{92}U^{233}$
1.96	$_{90}Th^{229}$	5.45	$_{66}Dy^{162}$	10.8	$_{71}Lu^{176}$

E_{Res}

(eV)

E_0 (eV)	Isotope	E_0 (eV)	Isotope	E_0 (eV)	Isotope
10.84	$_{93}Np^{237}$	19.5	$_{61}Pm^{147}$	28.1	$_{98}Cf^{249}$
10.93	$_{94}Pu^{239}$	19.92	$_{64}Gd^{155}$	28.89	$_{94}Pu^{241}$
11.07	$_{96}Cm^{243}$	20.02	$_{63}Eu^{153}$	29.2	$_{61}Pm^{147}$
11.09	$_{93}Np^{237}$	20.3	$_{43}Te^{99}$	29.4	$_{73}Ta^{182}$
11.14	$_{75}Re^{187}$	20.3	$_{68}Er^{162}$	29.62	$_{91}Pa^{231}$
11.20	$_{71}Lu^{175}$	20.50	$_{71}Lu^{175}$	29.65	$_{51}Sb^{121}$
11.62	$_{63}Eu^{153}$	20.54	$_{92}U^{233}$	29.65	$_{92}U^{232}$
11.63	$_{41}Nb^{94}$	20.56	$_{64}Gd^{157}$	29.9	$_{77}Ir^{191}$
11.67	$_{91}Pa^{231}$	20.6	$_{91}Pa^{231}$	30.2	$_{46}Pd^{105}$
11.80	$_{46}Pd^{105}$	20.7	$_{62}Sm^{150}$	30.25	$_{96}Cm^{247}$
12.15	$_{91}Pa^{233}$	20.90	$_{92}U^{238}$	30.42	$_{93}Np^{237}$
12.35	$_{64}Gd^{152}$	21.0	$_{57}La^{138}$	30.5	$_{68}Er^{164}$
12.39	$_{92}U^{235}$	21.00	$_{92}U^{232}$	31.04	$_{71}Lu^{175}$
12.70	$_{92}U^{232}$	21.03	$_{64}Gd^{155}$	31.21	$_{92}U^{234}$
12.75	$_{67}Ho^{165}$	21.07	$_{92}U^{235}$	31.39	$_{70}Yb^{173}$
12.877	$_{95}Am^{243}$	21.2	$_{65}Tb^{159}$	31.71	$_{96}Cm^{245}$
12.93	$_{73}Ta^{182}$	21.2	$_{64}Gd^{152}$	32.06	$_{92}U^{233}$
13.04	$_{70}Yb^{171}$	21.3	$_{98}Cf^{249}$	32.07	$_{92}U^{235}$
13.152	$_{95}Am^{243}$	21.3	$_{75}Re^{185}$	32.1	$_{62}Sm^{147}$
13.2	$_{46}Pd^{105}$	21.5	$_{73}Ta^{182}$	32.24	$_{49}In^{113}$
13.26	$_{91}Pa^{231}$	21.55	$_{49}In^{113}$	32.97	$_{73}Ta^{182}$
13.38	$_{91}Pa^{231}$	21.7	$_{98}Cf^{249}$	32.99	$_{96}Cm^{245}$
14.32	$_{66}Dy^{161}$	22.63	$_{41}Nb^{94}$	33.14	$_{92}U^{233}$
14.6	$_{90}Th^{229}$	23.06	$_{80}Hg^{198}$	33.23	$_{64}Gd^{156}$
14.7	$_{68}Er^{162}$	23.80	$_{92}U^{232}$	33.24	$_{46}Pd^{108}$
14.74	$_{94}Pu^{241}$	23.84	$_{90}Th^{230}$	33.50	$_{80}Hg^{199}$
14.75	$_{95}Am^{241}$	23.9	$_{73}Ta^{181}$	33.53	$_{92}U^{235}$
15.11	$_{61}Pm^{147}$	24.4	$_{56}Ba^{135}$	33.6	$_{71}Lu^{176}$
15.29	$_{96}Cm^{246}$	24.5	$_{66}Dy^{156}$	33.9	$_{65}Tb^{159}$
15.35	$_{71}Lu^{175}$	24.5	$_{65}Tb^{159}$	34.39	$_{92}U^{235}$
15.404	$_{95}Am^{243}$	24.51	$_{77}Ir^{193}$	34.8	$_{69}Tm^{169}$
15.41	$_{51}Sb^{121}$	24.58	$_{63}Eu^{151}$	34.8	$_{68}Er^{162}$
15.9	$_{44}Ru^{101}$	24.7	$_{71}Lu^{176}$	35.31	$_{96}Cm^{245}$
15.96	$_{91}Pa^{233}$	24.97	$_{93}Np^{237}$	36.36	$_{96}Cm^{247}$
16.07	$_{75}Re^{187}$	24.99	$_{49}In^{113}$	36.52	$_{71}Lu^{175}$
16.23	$_{66}Dy^{163}$	25.04	$_{77}Ir^{193}$	36.80	$_{92}U^{238}$
16.29	$_{92}U^{233}$	25.2	$_{77}Ir^{191}$	36.86	$_{64}Gd^{152}$
16.7	$_{98}Cf^{249}$	25.28	$_{92}U^{233}$	37.0	$_{98}Cf^{249}$
16.8	$_{66}Dy^{161}$	25.3	$_{46}Pd^{105}$	37.0	$_{71}Lu^{176}$
17.27	$_{90}Th^{230}$	26.39	$_{94}Pu^{241}$	37.64	$_{66}Dy^{161}$
17.4	$_{66}Dy^{156}$	26.56	$_{93}Np^{237}$	37.76	$_{96}Cm^{247}$
17.56	$_{75}Re^{187}$	26.64	$_{68}Er^{167}$	37.93	$_{81}Tl^{203}$
17.65	$_{72}Hf^{179}$	26.7	$_{73}Ta^{182}$	38.34	$_{94}Pu^{240}$
17.83	$_{94}Pu^{241}$	26.83	$_{96}Cm^{245}$	38.38	$_{66}Dy^{161}$
18.01	$_{63}Eu^{153}$	27.05	$_{74}W^{183}$	38.4	$_{46}Pd^{105}$
18.29	$_{91}Pa^{231}$	27.1	$_{34}Se^{74}$	38.7	$_{76}Os^{188}$
18.30	$_{62}Sm^{147}$	27.4	$_{76}Os^{189}$	38.8	$_{50}Sn^{117}$
18.5	$_{66}Dy^{161}$	27.42	$_{68}Er^{167}$	39.13	$_{73}Ta^{181}$
18.6	$_{94}Pu^{238}$	27.53	$_{48}Cd^{111}$	39.5	$_{75}Re^{187}$
18.84	$_{74}W^{186}$	27.70	$_{92}U^{232}$	39.60	$_{49}In^{115}$
18.98	$_{92}U^{233}$	27.8	$_{46}Pd$	39.6	$_{88}Ra^{226}$
19.30	$_{92}U^{235}$	27.92	$_{71}Lu^{175}$	39.65	$_{67}Ho^{165}$

E_{Res} (eV)

E_0 (eV)	Isotope	E_0 (eV)	Isotope	E_0 (eV)	Isotope
39.7	$_{62}Sm^{147}$	50.58	$_{63}Eu^{151}$	66.62	$_{94}Pu^{240}$
39.8	$_{90}Th^{230}$	50.69	$_{96}Cm^{247}$	66.75	$_{72}Hf^{177}$
39.9	$_{43}Tc^{99}$	51.0	$_{77}Ir^{191}$	67.1	$_{78}Pt^{195}$
39.93	$_{70}Yb^{170}$	51.27	$_{92}U^{235}$	67.91	$_{63}Eu^{151}$
40.3	$_{98}Cf^{249}$	51.38	$_{64}Gd^{155}$	68.37	$_{98}Cf^{252}$
41.3	$_{62}Sm^{149}$	51.4	$_{68}Er^{162}$	68.8	$_{46}Pd^{105}$
41.35	$_{63}Eu^{151}$	51.5	$_{75}Re^{185}$	69.07	$_{90}Th^{232}$
41.6	$_{75}Re^{185}$	51.60	$_{67}Ho^{165}$	69.3	$_{77}Ir^{193}$
41.64	$_{94}Pu^{240}$	51.64	$_{96}Cm^{245}$	69.5	$_{75}Re^{187}$
42.28	$_{44}Ru^{101}$	51.78	$_{96}Cm^{247}$	70.55	$_{66}Dy^{162}$
42.3	$_{55}Cs^{136}$	52.1	$_{98}Cf^{249}$	70.7	$_{62}Sm^{149}$
42.51	$_{60}Nd^{145}$	52.13	$_{64}Gd^{155}$	70.7	$_{75}Re^{185}$
42.7	$_{64}Gd^{152}$	52.3	$_{61}Pm^{147}$	70.9	$_{80}Hg^{201}$
42.8	$_{46}Pd$	52.60	$_{94}Pu^{239}$	70.93	$_{42}Mo^{97}$
43.0	$_{80}Hg^{201}$	53.3	$_{72}Hf^{176}$	71.1	$_{92}U^{236}$
43.02	$_{66}Dy^{161}$	53.46	$_{94}Pu^{242}$	72.10	$_{66}Dy^{162}$
43.2	$_{68}Er^{162}$	53.47	$_{70}Yb^{173}$	72.26	$_{50}Sn^{112}$
43.3	$_{77}Ir^{193}$	53.5	$_{75}Re^{187}$	72.79	$_{52}Te^{122}$
43.7	$_{92}U^{236}$	53.60	$_{68}Er^{167}$	72.80	$_{94}Pu^{240}$
43.7	$_{65}Tb^{159}$	53.63	$_{96}Cm^{245}$	73.0	$_{62}Sm^{149}$
43.92	$_{64}Gd^{155}$	53.74	$_{78}Pt^{192}$	73.8	$_{51}Sb^{121}$
44.22	$_{64}Gd^{157}$	53.9	$_{98}Cf^{249}$	74.0	$_{65}Tb^{159}$
44.3	$_{62}Sm^{149}$	53.9	$_{77}Ir^{193}$	74.7	$_{75}Re^{185}$
44.48	$_{94}Pu^{239}$	54.18	$_{70}Yb^{171}$	74.76	$_{50}Sn^{119}$
44.55	$_{81}Tl^{205}$	54.79	$_{72}Hf^{179}$	74.95	$_{94}Pu^{239}$
44.7	$_{42}Mo^{95}$	55.08	$_{92}U^{235}$	76.7	$_{51}Sb^{123}$
44.85	$_{66}Dy^{161}$	55.20	$_{91}Pa^{231}$	78.8	$_{77}Ir^{191}$
44.87	$_{96}Cm^{247}$	55.7	$_{46}Pd^{105}$	78.9	$_{76}Os^{188}$
45.6	$_{98}Cf^{249}$	55.7	$_{88}Ra^{226}$	81.0	$_{75}Re^{185}$
45.74	$_{96}Cm^{245}$	57.04	$_{71}Lu^{175}$	81.08	$_{63}Eu^{151}$
45.75	$_{50}Sn^{118}$	57.36	$_{63}Eu^{151}$	81.48	$_{64}Gd^{157}$
46.0	$_{68}Er^{162}$	57.4	$_{68}Er^{162}$	81.62	$_{44}Ru^{99}$
46.2	$_{65}Tb^{159}$	57.9	$_{56}Ba^{130}$	82.0	$_{56}Ba^{135}$
46.24	$_{74}W^{183}$	58.54	$_{96}Cm^{245}$	83.1	$_{94}Pu^{238}$
46.3	$_{56}Ba^{130}$	58.97	$_{66}Dy^{163}$	83.3	$_{90}Th^{230}$
46.55	$_{78}Pt^{192}$	59.2	$_{69}Tm^{169}$	84.43	$_{96}Cm^{246}$
46.7	$_{71}Lu^{176}$	59.66	$_{96}Cm^{247}$	84.82	$_{48}Cd^{113}$
47.04	$_{63}Eu^{151}$	60.3	$_{79}Au^{197}$	85.1	$_{75}Re^{187}$
47.07	$_{64}Gd^{154}$	60.92	$_{63}Eu^{153}$	85.1	$_{64}Gd^{152}$
47.5	$_{75}Re^{187}$	61.81	$_{44}Ru^{101}$	85.32	$_{94}Pu^{239}$
47.70	$_{67}Ho^{165}$	62.0	$_{50}Sn^{124}$	85.96	$_{96}Cm^{244}$
47.92	$_{96}Cm^{247}$	62.7	$_{74}W^{180}$	85.96	$_{96}Cm^{244}$
48.1	$_{62}Sm^{150}$	63.45	$_{72}Hf^{177}$	86.2	$_{92}U^{236}$
48.3	$_{72}Hf^{176}$	63.46	$_{46}Pd$	87.4	$_{74}W^{180}$
48.75	$_{92}U^{234}$	64.66	$_{50}Sn^{112}$	87.6	$_{75}Re^{187}$
48.80	$_{72}Hf^{177}$	64.8	$_{62}Sm^{149}$	87.70	$_{62}Sm^{152}$
48.85	$_{96}Cm^{247}$	64.9	$_{65}Tb^{159}$	88.4	$_{88}Ra^{226}$
49.3	$_{74}W^{180}$	65.06	$_{64}Gd^{154}$	89.27	$_{48}Cd^{110}$
49.84	$_{93}Np^{237}$	65.7	$_{98}Cf^{249}$	89.6	$_{51}Sb^{121}$
50.08	$_{96}Cm^{247}$	65.71	$_{94}Pu^{239}$	89.81	$_{80}Hg^{198}$
50.37	$_{93}Np^{237}$	65.9	$_{69}Tm^{169}$	90.42	$_{92}U^{235}$
50.4	$_{75}Re^{185}$	66.15	$_{92}U^{238}$	90.5	$_{62}Sm^{149}$

E_{Res}

(eV)

E_0 (eV)	Isotope	E_0 (eV)	Isotope	E_0 (eV)	Isotope
91.59	$_{49}In^{113}$	115.5	$_{69}Tm^{169}$	158.0	$_{35}Br$
91.6	$_{46}Pd^{108}$	116.1	$_{90}Th^{230}$	158.4	$_{96}Cm^{246}$
91.84	$_{96}Cm^{246}$	118.6	$_{94}Pu^{238}$	158.6	$_{52}Te^{123}$
92.3	$_{54}Xe^{129}$	118.83	$_{94}Pu^{239}$	158.9	$_{60}Nd^{143}$
92.4	$_{64}Gd^{152}$	120.10	$_{48}Cd^{114}$	159.5	$_{42}Mo^{95}$
93.01	$_{62}Sm^{154}$	120.4	$_{50}Sn^{117}$	160.4	$_{70}Yb^{171}$
93.26	$_{63}Eu^{153}$	120.5	$_{78}Pt^{195}$	160.64	$_{95}Am^{243}$
93.5	$_{80}Hg^{196}$	120.5	$_{92}U^{236}$	160.73	$_{68}Er^{164}$
94.75	$_{92}U^{234}$	120.77	$_{90}Th^{232}$	162.81	$_{54}Xe^{129}$
95.07	$_{68}Er^{170}$	121.0	$_{64}Gd^{157}$	163.5	$_{77}Ir^{193}$
95.6	$_{62}Sm^{149}$	122.4	$_{94}Pu^{238}$	164.54	$_{94}Pu^{239}$
95.8	$_{31}Ga^{71}$	122.9	$_{81}Tl^{204}$	164.67	$_{49}In^{115}$
95.82	$_{78}Pt^{198}$	123.37	$_{95}Am^{243}$	165.29	$_{44}Ru^{102}$
97.0	$_{53}I^{129}$	123.9	$_{62}Sm^{147}$	167	$_{23}V^{50}$
97.10	$_{63}Eu^{153}$	124.0	$_{64}Gd^{154}$	167.1	$_{51}Sb^{121}$
97.5	$_{65}Tb^{159}$	125.84	$_{54}Xe^{129}$	168.8	$_{70}Yb^{173}$
97.6	$_{77}Ir^{191}$	126.29	$_{46}Pd^{105}$	170.3	$_{90}Th^{232}$
98.6	$_{75}Re^{185}$	126.9	$_{56}Ba^{137}$	171.1	$_{94}Pu^{238}$
98.8	$_{50}Sn^{112}$	127.4	$_{60}Nd^{143}$	171.4	$_{64}Gd^{157}$
99.32	$_{73}Ta^{181}$	129.7	$_{78}Pt^{192}$	173.2	$_{61}Pm^{147}$
99.41	$_{48}Cd^{111}$	129.7	$_{80}Hg^{199}$	173.5	$_{64}Gd^{155}$
99.5	$_{62}Sm^{147}$	130.8	$_{64}Gd^{155}$	175.1	$_{80}Hg^{199}$
101.0	$_{35}Br^{81}$	130.96	$_{68}Er^{164}$	176.9	$_{72}Hf^{177}$
101.2	$_{72}Hf^{179}$	131.1	$_{61}Pm^{147}$	177.1	$_{78}Pt$
101.8	$_{56}Ba^{134}$	131.4	$_{42}Mo^{96}$	179.5	$_{60}Nd^{143}$
102.0	$_{32}Ge^{73}$	131.9	$_{51}Sb^{121}$	180.3	$_{70}Yb^{172}$
102.47	$_{92}U^{238}$	132.0	$_{27}Co^{59}$	181.0	$_{58}Ce^{136}$
103.08	$_{72}Hf^{177}$	135.7	$_{58}Ce^{136}$	181.0	$_{55}Cs^{136}$
103.1	$_{62}Sm^{147}$	135.7	$_{55}Cs^{136}$	181.8	$_{40}Zr^{91}$
103.6	$_{77}Ir^{191}$	136.1	$_{69}Tm^{169}$	182.7	$_{94}Pu^{238}$
103.7	$_{72}Hf^{179}$	136.2	$_{56}Ba^{130}$	184.2	$_{74}W^{184}$
104.3	$_{56}Ba^{135}$	139.2	$_{64}Gd^{154}$	184.5	$_{56}Ba^{130}$
104.7	$_{50}Sn^{112}$	139.9	$_{62}Sm^{150}$	185.0	$_{62}Sm^{147}$
104.8	$_{77}Ir^{191}$	139.9	$_{70}Yb^{172}$	186	$_{46}Pd^{102}$
105.0	$_{51}Sb^{123}$	140	$_{64}Gd^{152}$	186	$_{46}Pd^{104}$
105.05	$_{94}Pu^{240}$	140.9	$_{50}Sn^{119}$	186.6	$_{60}Nd^{143}$
105.88	$_{66}Dy^{163}$	141.18	$_{46}Pd^{105}$	187.0	$_{58}Ce^{136}$
106.9	$_{50}Sn^{122}$	143.7	$_{64}Gd^{157}$	187	$_{55}Cs^{136}$
107.1	$_{72}Hf^{174}$	144.9	$_{78}Pt^{192}$	186.96	$_{49}In^{115}$
108.59	$_{68}Er^{164}$	145.4	$_{66}Dy^{164}$	188.3	$_{92}U^{234}$
108.8	$_{42}Mo^{94}$	145.7	$_{50}Sn^{119}$	188.5	$_{78}Pt^{195}$
110.5	$_{64}Gd^{157}$	147.9	$_{50}Sn^{116}$	189.70	$_{92}U^{238}$
111.0	$_{31}Ga^{69}$	149.9	$_{51}Sb^{121}$	191.8	$_{51}Sb^{123}$
111.2	$_{50}Sn^{116}$	150.4	$_{78}Pt^{195}$	192.82	$_{48}Cd^{113}$
111.4	$_{62}Sm^{150}$	152.81	$_{92}U^{234}$	193.35	$_{92}U^{236}$
111.49	$_{92}U^{234}$	154.1	$_{62}Sm^{152}$	194.63	$_{68}Er^{164}$
112.51	$_{44}Ru^{101}$	154.3	$_{45}Rh^{103}$	195	$_{90}Th^{230}$
113.19	$_{95}Am^{243}$	154.4	$_{74}W^{183}$	196.57	$_{93}Np^{237}$
113.3	$_{65}Tb^{159}$	154.7	$_{78}Pt^{195}$	198.1	$_{64}Gd^{156}$
113.4	$_{42}Mo^{96}$	155.02	$_{66}Dy^{163}$	200.5	$_{52}Te^{126}$
114.4	$_{74}W^{182}$	155.4	$_{60}Nd^{148}$	201.6	$_{64}Gd^{154}$
114.8	$_{50}Sn^{119}$	157.04	$_{44}Ru^{101}$	202.1	$_{64}Gd^{156}$

E_{Res}
(eV)

E_0 (eV)	Isotope	E_0 (eV)	Isotope	E_0 (eV)	Isotope
202.2	$_{78}Pt$	262.70	$_{44}Ru^{99}$	320	$_{94}Pu^{238}$
203.0	$_{74}W^{183}$	262.8	$_{52}Te^{125}$	323	$_{30}Zn^{66}$
203.10	$_{28}Ni^{59}$	263	$_{56}Ba^{134}$	323.08	$_{66}Dy^{163}$
203.36	$_{49}In^{113}$	267	$_{66}Dy^{162}$	323.7	$_{51}Sb^{123}$
204.8	$_{94}Pu^{242}$	268.1	$_{42}Mo^{97}$	324.4	$_{60}Nd^{143}$
205.60	$_{49}In^{115}$	270.0	$_{70}Yb^{170}$	324.55	$_{66}Dy^{163}$
206.0	$_{62}Sm^{147}$	270.7	$_{80}Hg$	326.7	$_{33}As^{75}$
208.9	$_{64}Gd^{157}$	271.5	$_{34}Se^{74}$	327.2	$_{62}Sm^{152}$
209	$_{90}Th^{230}$	272.2	$_{45}Rh^{103}$	328.9	$_{90}Th^{232}$
210.3	$_{80}Hg^{201}$	275.7	$_{72}Hf^{178}$	329	$_{56}Ba^{134}$
210.4	$_{70}Yb^{171}$	278.3	$_{96}Cm^{246}$	330.0	$_{50}Sn^{119}$
211	$_{72}Hf^{174}$	279.6	$_{74}W^{183}$	332.0	$_{32}Ge^{73}$
211.6	$_{34}Se^{77}$	280.0	$_{78}Pt^{195}$	332.4	$_{94}Pu^{242}$
212.8	$_{70}Yb^{170}$	281.8	$_{30}Zn^{64}$	332.6	$_{52}Te^{122}$
212.99	$_{92}U^{236}$	282.5	$_{68}Er^{167}$	334.0	$_{31}Ga^{69}$
217.5	$_{74}W^{186}$	283	$_{56}Ba^{135}$	336	$_{56}Ba^{130}$
219	$_{56}Ba^{135}$	283.1	$_{50}Sn^{119}$	337	$_{25}Mn^{55}$
221	$_{94}Pu^{238}$	283.49	$_{54}Xe^{131}$	339.6	$_{67}Ho^{165}$
222.6	$_{50}Sn^{119}$	284.0	$_{68}Er^{170}$	342.70	$_{70}Yb^{174}$
223	$_{30}Zn^{67}$	284.9	$_{72}Hf^{177}$	342.7	$_{70}Yb^{174}$
223.4	$_{77}Ir^{193}$	285.9	$_{42}Mo^{97}$	344.0	$_{80}Hg^{198}$
224.03	$_{49}In^{115}$	286.0	$_{72}Hf^{176}$	347.2	$_{72}Hf^{176}$
224.0	$_{64}Gd^{154}$	287.1	$_{94}Pu^{240}$	347.3	$_{74}W^{183}$
224.15	$_{66}Dy^{163}$	287.5	$_{60}Nd^{148}$	348.32	$_{66}Dy^{163}$
224.7	$_{32}Ge^{73}$	287.5	$_{31}Ga^{71}$	353.1	$_{72}Hf^{178}$
224.8	$_{72}Hf^{177}$	288.0	$_{69}Tm^{169}$	353.1	$_{96}Cm^{244}$
225.43	$_{68}Er^{164}$	288.2	$_{96}Cm^{246}$	353.1	$_{96}Cm^{244}$
228.50	$_{49}In^{113}$	289.7	$_{52}Te^{125}$	354.4	$_{70}Yb^{171}$
229.0	$_{77}Ir^{193}$	292.0	$_{40}Zr^{91}$	358.5	$_{42}Mo^{95}$
230.5	$_{44}Ru^{100}$	293	$_{88}Ra^{226}$	358.9	$_{78}Pt$
233.41	$_{48}Cd^{111}$	293.0	$_{79}Au^{197}$	360	$_{50}Sn^{118}$
237.69	$_{54}Xe^{128}$	294	$_{90}Th^{230}$	363.4	$_{52}Te^{123}$
238	$_{88}Ra^{226}$	297.0	$_{67}Ho^{165}$	363.8	$_{42}Mo^{100}$
238.8	$_{81}Tl^{203}$	299.3	$_{51}Sb^{123}$	364.6	$_{38}Sr^{84}$
239.1	$_{61}Pm^{147}$	300	$_{94}Pu^{238}$	357.1	$_{32}Ge^{72}$
240.0	$_{40}Zr^{91}$	301.15	$_{68}Er^{166}$	370.78	$_{54}Xe^{128}$
240.6	$_{51}Sb^{123}$	302.5	$_{80}Hg^{198}$	373.8	$_{60}Nd^{144}$
240.9	$_{64}Gd^{157}$	303.68	$_{92}U^{236}$	374.50	$_{53}I^{127}$
243	$_{56}Ba^{135}$	306.2	$_{60}Nd^{143}$	374.74	$_{54}Xe^{129}$
243.9	$_{50}Sn^{118}$	307.1	$_{70}Yb^{173}$	375.0	$_{52}Te$
244.4	$_{68}Er^{168}$	311.38	$_{48}Cd^{111}$	376.0	$_{31}Ga^{71}$
248.0	$_{74}W^{182}$	312.7	$_{80}Hg^{201}$	376.3	$_{72}Hf^{177}$
248	$_{90}Th^{230}$	313.2	$_{73}Ta^{181}$	377	$_{64}Gd^{156}$
250.7	$_{96}Cm^{246}$	313.4	$_{96}Cm^{246}$	377.0	$_{78}Pt^{194}$
251.1	$_{50}Sn^{112}$	313.61	$_{44}Ru^{101}$	378.0	$_{37}Rb^{87}$
251.6	$_{54}Xe^{124}$	314.5	$_{80}Hg^{199}$	378.3	$_{44}Ru^{101}$
254.5	$_{67}Ho^{165}$	315.97	$_{68}Er^{166}$	380	$_{56}Ba^{130}$
255.5	$_{72}Hf^{178}$	317	$_{68}Er^{164}$	380.42	$_{92}U^{236}$
259.9	$_{50}Sn^{122}$	318.5	$_{35}Br^{79}$	380.4	$_{62}Sm^{147}$
261.03	$_{48}Cd^{113}$	319.5	$_{45}Rh^{103}$	381.1	$_{96}Cm^{246}$
261.6	$_{50}Sn^{119}$	319.6	$_{78}Pt$	381.7	$_{72}Hf^{179}$
262	$_{88}Ra^{226}$	319.9	$_{94}Pu^{242}$	385.83	$_{53}I^{127}$

E_{Res}

(eV)

E_0 (eV)	Isotope	E_0 (eV)	Isotope	E_0 (eV)	Isotope
387.2	$_{70}Yb^{171}$	496.7	$_{68}Er^{170}$	594.84	$_{68}Er^{166}$
388.7	$_{78}Pt^{192}$	503.9	$_{94}Pu^{242}$	596.6	$_{73}Ta^{181}$
390.6	$_{72}Hf^{179}$	505.2	$_{52}Te$	603.3	$_{78}Pt^{194}$
392.24	$_{48}Cd^{114}$	505.4	$_{42}Mo^{97}$	611.57	$_{68}Er^{164}$
398	$_{17}Cl^{35}$	505.4	$_{60}Nd^{145}$	612.4	$_{52}Te^{122}$
401.3	$_{60}Nd^{143}$	513	$_{80}Hg$	612.5	$_{42}Mo^{98}$
401.6	$_{44}Ru^{99}$	514	$_{50}Sn^{112}$	616.8	$_{52}Te^{123}$
405.1	$_{78}Pt$	514	$_{44}Ru$	617.8	$_{62}Sm^{154}$
406	$_{56}Ba^{135}$	514	$_{30}Zn^{68}$	622.63	$_{48}Cd^{111}$
406.1	$_{78}Pt$	515.0	$_{92}U^{234}$	625	$_{66}Dy^{162}$
408.9	$_{69}Tm^{169}$	515.0	$_{64}Gd^{156}$	627.5	$_{72}Hf^{176}$
411.08	$_{66}Dy^{163}$	517	$_{38}Sr^{84}$	630.0	$_{42}Mo^{95}$
414.03	$_{48}Cd^{113}$	525.40	$_{94}Pu^{239}$	632	$_{50}Sn^{116}$
415.2	$_{44}Ru^{102}$	527.4	$_{68}Er^{168}$	634.89	$_{48}Cd^{113}$
417.4	$_{80}Hg^{198}$	529.3	$_{78}Pt^{195}$	635	$_{38}Sr^{84}$
418.2	$_{42}Mo^{95}$	530.0	$_{37}Rb^{85}$	635.8	$_{59}Pr^{141}$
419.0	$_{42}Mo^{96}$	533.4	$_{33}As^{75}$	636.80	$_{54}Xe^{129}$
419.95	$_{68}Er^{164}$	536.6	$_{94}Pu^{242}$	638.7	$_{79}Au^{197}$
420	$_{56}Ba^{137}$	538.9	$_{70}Yb^{171}$	640.60	$_{54}Xe$
420.6	$_{96}Cm^{244}$	540	$_{44}Ru^{101}$	641.9	$_{62}Sm^{152}$
420.6	$_{96}Cm^{244}$	541.9	$_{96}Cm^{248}$	643.3	$_{54}Xe^{132}$
424.0	$_{52}Te^{128}$	546	$_{72}Hf^{179}$	644.2	$_{67}Ho^{165}$
426.84	$_{54}Xe^{131}$	550	$_{32}Ge^{76}$	645.0	$_{74}W^{183}$
426.93	$_{53}I^{127}$	551.59	$_{48}Cd^{113}$	646.2	$_{35}Br$
429.3	$_{42}Mo^{98}$	554.54	$_{54}Xe^{128}$	648.3	$_{38}Sr^{87}$
430.3	$_{67}Ho^{165}$	556	$_{62}Sm^{147}$	650	$_{80}Hg$
431.7	$_{52}Te^{125}$	556	$_{62}Sm^{150}$	657.5	$_{72}Hf^{176}$
432.8	$_{44}Ru^{101}$	557.2	$_{98}Cf^{252}$	660.81	$_{49}In^{113}$
435	$_{45}Rh^{103}$	558.3	$_{42}Mo^{97}$	661.6	$_{42}Mo^{95}$
435.6	$_{72}Hf^{176}$	560.1	$_{78}Pt$	665.1	$_{94}Pu^{240}$
444.8	$_{72}Hf^{176}$	564.0	$_{80}Hg^{201}$	666	$_{50}Sn^{114}$
445.0	$_{80}Hg^{201}$	565.6	$_{78}Pt^{196}$	668.8	$_{35}Br$
446.3	$_{60}Nd^{143}$	565.80	$_{53}I^{127}$	670	$_{44}Ru^{101}$
448	$_{30}Zn^{67}$	568.6	$_{60}Nd^{145}$	670.68	$_{48}Cd^{114}$
448.0	$_{40}Zr^{91}$	576.91	$_{92}U^{236}$	675.2	$_{90}Th^{232}$
449	$_{56}Ba^{136}$	577	$_{50}Sn^{112}$	676.1	$_{42}Mo^{97}$
450.38	$_{54}Xe^{131}$	577	$_{56}Ba^{137}$	676.1	$_{69}Tm^{169}$
456.55	$_{48}Cd$	577.1	$_{72}Hf^{176}$	680.0	$_{40}Zr^{91}$
457.3	$_{62}Sm^{154}$	578	$_{50}Sn^{114}$	680.7	$_{42}Mo^{95}$
459.64	$_{54}Xe^{126}$	578	$_{44}Ru$	683	$_{66}Dy^{162}$
465	$_{94}Pu^{238}$	578.6	$_{35}Br$	685.0	$_{80}Hg^{201}$
467.4	$_{42}Mo^{98}$	579	$_{50}Sn^{124}$	686	$_{80}Hg^{199}$
469.7	$_{42}Mo^{95}$	579.1	$_{79}Au^{197}$	689	$_{72}Hf^{179}$
470.9	$_{96}Cm^{244}$	579.4	$_{52}Te^{125}$	689.0	$_{74}W^{183}$
477.0	$_{79}Au^{197}$	580.1	$_{72}Hf^{178}$	690.0	$_{34}Se^{77}$
486.0	$_{60}Nd^{150}$	580.19	$_{49}In^{115}$	692	$_{31}Ga^{69}$
488	$_{38}Sr^{84}$	580.82	$_{54}Xe^{129}$	692.9	$_{64}Gd^{158}$
488.3	$_{70}Yb^{176}$	580.8	$_{50}Sn^{117}$	698.3	$_{78}Pt^{194}$
490.0	$_{78}Pt^{195}$	583	$_{72}Hf^{179}$	699.0	$_{79}Au^{197}$
490.3	$_{32}Ge^{73}$	585	$_{56}Ba^{130}$	701	$_{45}Rh^{103}$
491.5	$_{80}Hg^{199}$	585.52	$_{55}Cs^{133}$	704.7	$_{62}Sm^{154}$
492.3	$_{78}Pt^{194}$	588.4	$_{38}Sr^{86}$	705	$_{31}Ga^{71}$

E_{Res} (eV)

E_0 (eV)	Isotope	E_0 (eV)	Isotope	E_0 (eV)	Isotope
707	$_{64}Gd^{156}$	785	$_{72}Hf^{178}$	880	$_{55}Cs^{133}$
708.50	$_{53}I^{127}$	786.4	$_{42}Mo^{97}$	880.23	$_{70}Yb^{174}$
709.3	$_{78}Pt^{195}$	792	$_{72}Hf^{180}$	882	$_{56}Ba^{135}$
709.4	$_{70}Yb^{171}$	795.72	$_{55}Cs^{133}$	885	$_{50}Sn^{119}$
711	$_{66}Dy^{162}$	796.2	$_{81}Tl^{204}$	885.2	$_{51}Sb^{123}$
712	$_{38}Sr^{84}$	798.87	$_{54}Xe^{129}$	889	$_{72}Hf^{178}$
714	$_{64}Gd^{156}$	799.3	$_{74}W^{184}$	897.4	$_{64}Gd^{154}$
714.59	$_{49}In^{113}$	799.76	$_{48}Cd^{110}$	900	$_{64}Gd^{156}$
714.9	$_{60}Nd^{148}$	800	$_{83}Bi^{209}$	901.28	$_{48}Cd$
715.1	$_{69}Tm^{169}$	804.1	$_{90}Th^{232}$	904.9	$_{64}Gd^{160}$
716.04	$_{54}Xe^{128}$	808	$_{80}Hg^{199}$	905.0	$_{68}Er^{166}$
716.4	$_{78}Pt$	809	$_{72}Hf^{177}$	912.01	$_{49}In^{113}$
717.94	$_{48}Cd$	814.5	$_{78}Pt$	914	$_{72}Hf^{180}$
720.0	$_{74}W^{186}$	814.5	$_{50}Sn^{117}$	916.9	$_{64}Gd^{154}$
721.0	$_{74}W^{183}$	817.6	$_{92}U^{234}$	918.0	$_{52}Te^{123}$
723	$_{72}Hf^{178}$	818.1	$_{42}Mo^{98}$	922.4	$_{52}Te^{122}$
723.20	$_{54}Xe^{131}$	825.0	$_{79}Au^{197}$	925.8	$_{70}Yb^{173}$
726.0	$_{70}Yb^{176}$	825.2	$_{78}Pt^{195}$	934.7	$_{41}Nb^{93}$
726.1	$_{98}Cf^{252}$	828.7	$_{62}Sm^{154}$	935.6	$_{68}Er^{170}$
732	$_{64}Gd^{156}$	830.4	$_{68}Er^{168}$	947.3	$_{74}W^{182}$
733.3	$_{33}As^{75}$	833.1	$_{98}Cf^{252}$	948	$_{50}Sn^{119}$
736.07	$_{54}Xe^{131}$	836.3	$_{64}Gd^{154}$	950	$_{50}Sn^{124}$
737.28	$_{48}Cd^{112}$	837	$_{56}Ba^{130}$	952.3	$_{62}Sm^{152}$
740.9	$_{90}Th^{232}$	845	$_{64}Gd^{156}$	952.6	$_{70}Yb^{170}$
741.8	$_{38}Sr^{87}$	845	$_{45}Rh^{103}$	956.8	$_{59}Pr^{141}$
744	$_{56}Ba^{130}$	845.2	$_{59}Pr^{141}$	957.3	$_{74}W^{184}$
744.13	$_{53}I^{127}$	845.3	$_{64}Gd^{154}$	963.4	$_{74}W^{186}$
744.6	$_{78}Pt$	847.3	$_{64}Gd^{158}$	971	$_{44}Ru$
750.22	$_{68}Er^{164}$	848.4	$_{60}Nd^{145}$	971	$_{72}Hf^{179}$
752.19	$_{48}Cd^{114}$	849.0	$_{68}Er^{166}$	975.51	$_{48}Cd$
753.9	$_{70}Yb^{172}$	850	$_{56}Ba^{130}$	981	$_{50}Sn^{116}$
762.30	$_{53}I^{127}$	851.43	$_{48}Cd^{113}$	984	$_{50}Sn^{114}$
764	$_{66}Dy^{162}$	852.9	$_{62}Sm^{152}$	991.1	$_{70}Yb^{171}$
768.7	$_{62}Sm^{152}$	861	$_{66}Dy^{162}$	991.8	$_{92}U^{238}$
769.8	$_{42}Mo^{95}$	862	$_{34}Se^{76}$	993.0	$_{50}Sn^{117}$
770.0	$_{92}U^{234}$	864.0	$_{34}Se^{77}$	997.0	$_{34}Se^{77}$
772	$_{50}Sn^{118}$	877	$_{50}Sn^{112}$	997.4	$_{52}Te^{123}$
776.4	$_{68}Er^{167}$	880	$_{80}Hg^{199}$	998.0	$_{70}Yb^{173}$

E_{Res} (keV)

ENERGY ORDERED RESONANCES

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
1.0090	$_{41}Nb^{93}$	1.2773	$_{60}Nd^{144}$	1.5418	$_{42}Mo^{94}$
1.0220	$_{68}Er^{167}$	1.2829	$_{62}Sm^{154}$	1.5465	$_{35}Br$
1.0290	$_{34}Se^{74}$	1.2845	$_{68}Er^{167}$	1.548	$_{30}Zn^{67}$
1.031	$_{56}Ba^{135}$	1.290	$_{58}Ce^{142}$	1.553	$_{50}Sn^{116}$
1.0323	$_{52}Te^{125}$	1.296	$_{44}Ru^{102}$	1.5550	$_{52}Te^{124}$
1.0354	$_{73}Ta^{181}$	1.2962	$_{70}Yb^{170}$	1.5715	$_{70}Yb^{176}$
1.046	$_{56}Ba$	1.3075	$_{51}Sb^{121}$	1.5817	$_{48}Cd^{111}$
1.0483	$_{48}Cd^{116}$	1.321	$_{50}Sn^{112}$	1.582	$_{31}Ga^{69}$
1.0517	$_{42}Mo^{94}$	1.325	$_{80}Hg^{200}$	1.584	$_{50}Sn^{118}$
1.053	$_{56}Ba^{137}$	1.3281	$_{94}Pu^{240}$	1.5866	$_{54}Xe^{131}$
1.0541	$_{60}Nd^{148}$	1.335	$_{38}Sr^{87}$	1.5895	$_{90}Th^{232}$
1.065	$_{56}Ba$	1.338	$_{50}Sn^{116}$	1.5942	$_{55}Cs^{133}$
1.0691	$_{42}Mo^{100}$	1.3467	$_{48}Cd^{110}$	1.600	$_{38}Sr^{84}$
1.0735	$_{52}Te^{123}$	1.350	$_{56}Ba^{137}$	1.6099	$_{54}Xe^{128}$
1.07830	$_{53}I^{127}$	1.3610	$_{50}Sn^{117}$	1.6176	$_{70}Yb^{173}$
1.0860	$_{74}W^{184}$	1.3640	$_{48}Cd^{113}$	1.6193	$_{49}In^{115}$
1.0939	$_{68}Er^{168}$	1.3650	$_{54}Xe^{128}$	1.630	$_{34}Se^{74}$
1.0950	$_{74}W^{182}$	1.3649	$_{51}Sb^{121}$	1.6309	$_{48}Cd^{111}$
1.096	$_{72}Hf^{178}$	1.367	$_{50}Sn^{114}$	1.6309	$_{90}Th^{232}$
1.1154	$_{48}Cd^{112}$	1.3673	$_{68}Er^{166}$	1.638	$_{31}Ga^{69}$
1.115	$_{32}Ge^{70}$	1.386	$_{34}Se^{74}$	1.640	$_{58}Ce^{142}$
1.141	$_{74}W^{183}$	1.3911	$_{68}Er^{170}$	1.6604	$_{42}Mo^{94}$
1.148	$_{94}Pu^{242}$	1.4000	$_{74}W^{184}$	1.6686	$_{70}Yb^{174}$
1.163	$_{72}Hf^{178}$	1.4084	$_{54}Xe^{128}$	1.674	$_{56}Ba$
1.1650	$_{51}Sb^{123}$	1.414	$_{37}Rb^{85}$	1.68	$_{82}Pb^{204}$
1.1680	$_{60}Nd^{146}$	1.416	$_{50}Sn^{112}$	1.6825	$_{55}Cs^{133}$
1.1767	$_{42}Mo^{97}$	1.4190	$_{42}Mo^{95}$	1.6884	$_{49}In^{115}$
1.1779	$_{73}Ta^{181}$	1.42	$_{23}V^{50}$	1.6970	$_{42}Mo^{100}$
1.1798	$_{57}La^{139}$	1.4233	$_{48}Cd^{112}$	1.6988	$_{51}Sb^{123}$
1.1837	$_{68}Er^{166}$	1.4257	$_{48}Cd^{114}$	1.700	$_{56}Ba$
1.1853	$_{70}Yb^{173}$	1.4381	$_{51}Sb$	1.710	$_{50}Sn^{118}$
1.1860	$_{54}Xe^{129}$	1.443	$_{33}As^{75}$	1.710	$_{80}Hg^{202}$
1.1916	$_{73}Ta^{181}$	1.4520	$_{41}Nb^{93}$	1.7271	$_{52}Te^{123}$
1.199	$_{56}Ba^{137}$	1.4588	$_{64}Gd^{158}$	1.737	$_{56}Ba^{137}$
1.2000	$_{35}Br$	1.461	$_{44}Ru$	1.7423	$_{48}Cd^{111}$
1.2085	$_{35}Br$	1.4721	$_{62}Sm^{154}$	1.746	$_{34}Se^{74}$
1.2199	$_{64}Gd^{158}$	1.48	$_{20}Ca^{43}$	1.7480	$_{52}Te^{125}$
1.2258	$_{52}Te^{123}$	1.4840	$_{59}Pr^{141}$	1.751	$_{56}Ba$
1.226	$_{56}Ba^{134}$	1.4841	$_{54}Xe^{130}$	1.756	$_{50}Sn^{122}$
1.2395	$_{62}Sm^{152}$	1.4904	$_{79}Au^{197}$	1.7688	$_{62}Sm^{154}$
1.2409	$_{64}Gd^{160}$	1.4930	$_{50}Sn^{117}$	1.7720	$_{74}W^{182}$
1.2500	$_{42}Mo^{97}$	1.4983	$_{70}Yb^{173}$	1.7790	$_{94}Pu^{240}$
1.2521	$_{48}Cd^{111}$	1.5044	$_{60}Nd^{146}$	1.7826	$_{92}U^{238}$
1.2607	$_{42}Mo^{100}$	1.5140	$_{74}W^{184}$	1.7870	$_{48}Cd^{111}$
1.2630	$_{60}Nd^{143}$	1.5183	$_{70}Yb^{173}$	1.7974	$_{60}Nd^{145}$
1.265	$_{34}Se^{77}$	1.525	$_{31}Ga^{71}$	1.802	$_{50}Sn^{116}$
1.2673	$_{48}Cd^{113}$	1.5265	$_{42}Mo^{98}$	1.8084	$_{64}Gd^{160}$
1.2676	$_{55}Cs^{133}$	1.530	$_{40}Zr^{91}$	1.820	$_{45}Rh^{103}$
1.270	$_{45}Rh^{103}$	1.5335	$_{60}Nd^{148}$	1.8266	$_{70}Yb^{172}$
1.2750	$_{35}Br$	1.5347	$_{42}Mo^{97}$	1.828	$_{35}Br$

E_{Res} (keV)

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
1.832	$_{41}Nb^{93}$	2.310	$_{83}Bi^{209}$	2.6783	$_{48}Cd^{114}$
1.837	$_{52}Te^{128}$	2.321	$_{34}Se^{77}$	2.6827	$_{68}Er^{168}$
1.8407	$_{52}Te$	2.3365	$_{48}Cd^{112}$	2.6848	$_{48}Cd^{112}$
1.866	$_{56}Ba$	2.3615	$_{48}Cd^{116}$	2.686	$_{51}Sb$
1.870	$_{31}Ga^{69}$	2.3632	$_{42}Mo^{96}$	2.710	$_{80}Hg^{200}$
1.8711	$_{54}Xe^{131}$	2.375	$_{25}Mn^{55}$	2.718	$_{40}Zr^{91}$
1.8725	$_{35}Br$	2.3760	$_{55}Cs^{133}$	2.725	$_{40}Zr^{92}$
1.9136	$_{79}Au^{197}$	2.3760	$_{48}Cd^{110}$	2.7302	$_{60}Nd^{150}$
1.9211	$_{48}Cd^{114}$	2.3780	$_{52}Te^{122}$	2.740	$_{58}Ce^{142}$
1.9373	$_{68}Er^{168}$	2.380	$_{50}Sn^{124}$	2.7558	$_{54}Xe^{128}$
1.9372	$_{42}Mo^{100}$	2.3963	$_{64}Gd^{160}$	2.7814	$_{60}Nd^{145}$
1.954	$_{56}Ba$	2.400	$_{31}Ga^{71}$	2.784	$_{31}Ga^{71}$
1.9685	$_{48}Cd^{116}$	2.420	$_{37}Rb^{85}$	2.790	$_{74}W^{182}$
1.9686	$_{92}U^{238}$	2.4200	$_{42}Mo^{100}$	2.794	$_{81}Tl^{205}$
1.970	$_{34}Se^{80}$	2.4315	$_{54}Xe^{130}$	2.8306	$_{68}Er^{170}$
1.9750	$_{60}Nd^{144}$	2.4470	$_{52}Te$	2.8408	$_{60}Nd^{145}$
1.977	$_{56}Ba$	2.4522	$_{62}Sm^{154}$	2.846	$_{32}Ge^{74}$
1.980	$_{50}Sn^{114}$	2.458	$_{31}Ga^{69}$	2.850	$_{11}Na^{23}$
1.980	$_{38}Sr^{84}$	2.48	$_{82}Pb^{204}$	2.850	$_{51}Sb$
1.986	$_{56}Ba$	2.4842	$_{42}Mo^{96}$	2.8688	$_{64}Gd^{158}$
1.9890	$_{52}Te^{124}$	2.5044	$_{52}Te$	2.8930	$_{53}I^{127}$
1.9980	$_{52}Te^{123}$	2.5169	$_{64}Gd^{160}$	2.915	$_{51}Sb$
2.0000	$_{51}Sb^{123}$	2.5210	$_{52}Te^{126}$	2.9291	$_{70}Yb^{176}$
2.0041	$_{49}In^{113}$	2.5285	$_{60}Nd^{142}$	2.9306	$_{60}Nd^{145}$
2.005	$_{40}Zr^{91}$	2.528	$_{29}Cu^{65}$	2.9380	$_{52}Te^{126}$
2.011	$_{32}Ge^{73}$	2.5396	$_{52}Te$	2.971	$_{52}Te^{128}$
2.0130	$_{50}Sn^{117}$	2.540	$_{34}Se^{77}$	2.976	$_{50}Sn^{118}$
2.021	$_{41}Nb^{93}$	2.5473	$_{52}Te$	2.9780	$_{50}Sn^{117}$
2.0320	$_{60}Nd^{146}$	2.5490	$_{42}Mo^{98}$	2.9804	$_{54}Xe^{130}$
2.0355	$_{48}Cd^{112}$	2.5533	$_{54}Xe^{131}$	2.996	$_{51}Sb$
2.038	$_{29}Cu^{63}$	2.5623	$_{60}Nd^{148}$	2.9980	$_{59}Pr^{141}$
2.0450	$_{74}W^{184}$	2.5659	$_{54}Xe^{129}$	2.9975	$_{57}La^{139}$
2.0600	$_{55}Cs^{133}$	2.5737	$_{48}Cd^{112}$	3.000	$_{38}Sr^{84}$
2.0657	$_{48}Cd^{110}$	2.5748	$_{70}Yb^{172}$	3.0032	$_{54}Xe^{130}$
2.0790	$_{52}Te$	2.575	$_{34}Se^{76}$	3.0060	$_{42}Mo^{100}$
2.0920	$_{74}W^{184}$	2.5775	$_{54}Xe^{130}$	3.0307	$_{54}Xe^{132}$
2.0965	$_{59}Pr^{141}$	2.58070	$_{42}Mo$	3.035	$_{32}Ge^{74}$
2.115	$_{51}Sb$	2.5817	$_{52}Te$	3.039	$_{74}W^{186}$
2.1160	$_{57}La^{139}$	2.5870	$_{50}Sn^{117}$	3.042	$_{81}Tl^{205}$
2.1215	$_{62}Sm^{152}$	2.5965	$_{92}U^{238}$	3.0422	$_{48}Cd^{110}$
2.1291	$_{60}Nd^{143}$	2.5990	$_{60}Nd^{146}$	3.0650	$_{42}Mo^{100}$
2.1312	$_{54}Xe$	2.6020	$_{52}Te^{124}$	3.074	$_{22}Ti^{47}$
2.1494	$_{54}Xe^{131}$	2.6080	$_{39}Y^{89}$	3.144	$_{33}As^{75}$
2.1777	$_{60}Nd^{148}$	2.6149	$_{54}Xe^{130}$	3.158	$_{40}Zr^{91}$
2.1784	$_{42}Mo^{94}$	2.6298	$_{52}Te^{125}$	3.1690	$_{42}Mo^{92}$
2.1860	$_{92}U^{238}$	2.6305	$_{42}Mo^{100}$	3.1780	$_{48}Cd^{114}$
2.222	$_{51}Sb$	2.637	$_{30}Zn^{64}$	3.1900	$_{55}Cs^{133}$
2.246	$_{30}Zn^{67}$	2.6402	$_{64}Gd^{160}$	3.197	$_{34}Se^{77}$
2.2493	$_{68}Er^{170}$	2.6456	$_{54}Xe^{130}$	3.227	$_{34}Se^{78}$
2.250	$_{38}Sr^{84}$	2.6516	$_{48}Cd^{116}$	3.247	$_{38}Sr^{86}$
2.255	$_{51}Sb$	2.6564	$_{68}Er^{166}$	3.2573	$_{54}Xe^{130}$
2.303	$_{34}Se^{74}$	2.659	$_{74}W^{186}$	3.2615	$_{42}Mo^{100}$

E_{Res}

(keV)

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
3.2823	$_{42}Mo^{96}$	3.9810	$_{60}Nd^{145}$	4.9300	$_{42}Mo$
3.2820	$_{42}Mo$	3.9827	$_{64}Gd^{158}$	4.949	$_{32}Ge^{72}$
3.293	$_{42}Mo^{98}$	3.991	$_{40}Zr^{91}$	4.9690	$_{52}Te^{125}$
3.3041	$_{68}Er^{168}$	4.000	$_{60}Nd^{146}$	4.977	$_{38}Sr^{87}$
3.311	$_{31}Ga^{71}$	4.0030	$_{53}I^{127}$	4.990	$_{32}Ge^{74}$
3.350	$_{38}Sr^{84}$	4.037	$_{38}Sr^{87}$	5.0074	$_{52}Te^{122}$
3.3574	$_{54}Xe$	4.040	$_{32}Ge^{73}$	5.015	$_{27}Co^{59}$
3.363	$_{34}Se^{76}$	4.060	$_{37}Rb^{85}$	5.054	$_{31}Ga^{71}$
3.380	$_{50}Sn^{116}$	4.0770	$_{60}Nd^{148}$	5.060	$_{80}Hg^{200}$
3.390	$_{50}Sn^{124}$	4.105	$_{80}Hg^{202}$	5.0725	$_{48}Cd^{116}$
3.4413	$_{54}Xe^{128}$	4.120	$_{40}Zr^{96}$	5.0750	$_{62}Sm^{154}$
3.450	$_{50}Sn^{122}$	4.1403	$_{45}Rh^{103}$	5.100	$_{34}Se^{80}$
3.460	$_{50}Sn^{116}$	4.1546	$_{68}Er^{168}$	5.120	$_{37}Rb^{87}$
3.460	$_{50}Sn^{118}$	4.163	$_{23}V^{51}$	5.1440	$_{52}Te^{124}$
3.4793	$_{64}Gd^{158}$	4.170	$_{32}Ge^{74}$	5.1500	$_{41}Nb^{93}$
3.4800	$_{55}Cs^{133}$	4.18	$_{30}Zn^{64}$	5.199	$_{74}W^{182}$
3.4818	$_{57}La^{139}$	4.185	$_{24}Cr^{53}$	5.23	$_{20}Ca^{43}$
3.497	$_{31}Ga^{69}$	4.250	$_{37}Rb^{85}$	5.2735	$_{70}Yb^{172}$
3.505	$_{33}As^{75}$	4.2580	$_{48}Cd^{114}$	5.3005	$_{48}Cd^{116}$
3.5095	$_{54}Xe$	4.270	$_{34}Se^{80}$	5.357	$_{32}Ge^{73}$
3.5381	$_{60}Nd^{144}$	4.313	$_{34}Se^{76}$	5.360	$_{50}Sn^{124}$
3.554	$_{34}Se^{77}$	4.3198	$_{42}Mo^{96}$	5.3830	$_{42}Mo^{94}$
3.5639	$_{54}Xe^{130}$	4.322	$_{27}Co^{59}$	5.387	$_{34}Se^{76}$
3.5722	$_{42}Mo^{96}$	4.3568	$_{57}La^{139}$	5.387	$_{29}Cu^{63}$
3.5990	$_{42}Mo^{94}$	4.36	$_{20}Ca^{43}$	5.400	$_{50}Sn^{122}$
3.6025	$_{59}Pr^{141}$	4.361	$_{31}Ga^{69}$	5.435	$_{74}W^{182}$
3.6526	$_{48}Cd^{116}$	4.3627	$_{42}Mo^{94}$	5.4495	$_{68}Er^{170}$
3.656	$_{60}Nd^{146}$	4.5178	$_{64}Gd^{160}$	5.4748	$_{52}Te^{126}$
3.6904	$_{54}Xe$	4.532	$_{60}Nd^{142}$	5.4775	$_{52}Te^{122}$
3.721	$_{94}Pu^{242}$	4.54	$_{28}Ni^{62}$	5.500	$_{40}Zr^{96}$
3.7260	$_{42}Mo$	4.5570	$_{52}Te^{126}$	5.536	$_{19}K^{41}$
3.7495	$_{57}La^{139}$	4.5583	$_{48}Cd^{112}$	5.570	$_{32}Ge^{70}$
3.7577	$_{42}Mo^{96}$	4.5585	$_{42}Mo^{96}$	5.573	$_{33}As^{75}$
3.7681	$_{64}Gd^{158}$	4.560	$_{32}Ge^{72}$	5.5880	$_{52}Te^{124}$
3.7800	$_{59}Pr^{141}$	4.574	$_{42}Mo^{98}$	5.5960	$_{59}Pr^{141}$
3.8185	$_{54}Xe^{129}$	4.5950	$_{41}Nb^{93}$	5.6112	$_{64}Gd^{158}$
3.8200	$_{60}Nd^{150}$	4.6164	$_{42}Mo^{94}$	5.64	$_{24}Cr^{50}$
3.835	$_{22}Ti^{49}$	4.640	$_{50}Sn^{116}$	5.6532	$_{70}Yb^{174}$
3.836	$_{94}Pu^{242}$	4.6460	$_{57}La^{139}$	5.6547	$_{70}Yb^{172}$
3.840	$_{37}Rb^{87}$	4.725	$_{50}Sn^{118}$	5.656	$_{74}W^{182}$
3.846	$_{74}W^{182}$	4.760	$_{40}Zr^{92}$	5.660	$_{34}Se^{80}$
3.848	$_{40}Zr^{90}$	4.760	$_{32}Ge^{76}$	5.67	$_{24}Cr^{53}$
3.8500	$_{52}Te^{124}$	4.766	$_{38}Sr^{87}$	5.6870	$_{41}Nb^{93}$
3.8539	$_{54}Xe^{132}$	4.805	$_{74}W^{186}$	5.709	$_{33}As^{75}$
3.8730	$_{60}Nd^{145}$	4.810	$_{31}Ga^{69}$	5.7163	$_{70}Yb^{176}$
3.8920	$_{60}Nd^{148}$	4.810	$_{31}Ga^{71}$	5.777	$_{38}Sr^{87}$
3.9060	$_{90}Th^{232}$	4.843	$_{42}Mo^{98}$	5.800	$_{40}Zr^{94}$
3.913	$_{29}Cu^{65}$	4.8738	$_{48}Cd^{115}$	5.856	$_{60}Nd^{150}$
3.919	$_{34}Se^{77}$	4.8776	$_{70}Yb^{172}$	5.903	$_{13}Al^{27}$
3.9453	$_{54}Xe^{131}$	4.9167	$_{42}Mo^{94}$	5.9464	$_{68}Er^{170}$
3.9535	$_{48}Cd^{110}$	4.929	$_{60}Nd^{144}$	5.9611	$_{52}Te^{126}$
3.960	$_{50}Sn^{118}$	4.930	$_{37}Rb^{85}$	5.9837	$_{48}Cd^{110}$

E_{Res} (keV)

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
5.998	$_{33}As^{75}$	7.930	$_{29}Cu^{63}$	10.345	$_{38}Sr^{86}$
5.9990	$_{41}Nb^{93}$	8.0	$_{21}Sc^{45}$	10.389	$_{60}Nd^{150}$
6.060	$_{38}Sr^{87}$	8.047	$_{52}Te^{130}$	10.43	$_{30}Zn^{66}$
6.123	$_{60}Nd^{150}$	8.18	$_{24}Cr^{53}$	10.450	$_{52}Te^{124}$
6.127	$_{74}W^{184}$	8.25	$_{23}V^{50}$	10.656	$_{52}Te^{128}$
6.150	$_{38}Sr^{87}$	8.34	$_{22}Ti^{47}$	10.712	$_{60}Nd^{144}$
6.171	$_{34}Se^{78}$	8.35	$_{82}Pb^{204}$	10.757	$_{60}Nd^{146}$
6.1880	$_{52}Te^{125}$	8.370	$_{37}Rb^{87}$	10.790	$_{30}Zn^{64}$
6.2	$_{23}V^{50}$	8.4051	$_{68}Er^{170}$	10.830	$_{52}Te^{128}$
6.21	$_{26}Fe^{57}$	8.430	$_{37}Rb^{85}$	10.840	$_{29}Cu^{63}$
6.2493	$_{68}Er^{168}$	8.4581	$_{68}Er^{166}$	10.850	$_{74}W^{186}$
6.4060	$_{41}Nb^{93}$	8.5143	$_{57}La^{139}$	10.869	$_{38}Sr^{86}$
6.437	$_{34}Se^{76}$	8.530	$_{32}Ge^{73}$	10.961	$_{60}Nd^{142}$
6.448	$_{29}Cu^{65}$	8.635	$_{32}Ge^{70}$	11.0	$_{22}Ti^{46}$
6.4555	$_{57}La^{139}$	8.646	$_{60}Nd^{148}$	11.060	$_{34}Se^{78}$
6.5042	$_{64}Gd^{160}$	8.70	$_{20}Ca^{43}$	11.160	$_{37}Rb^{87}$
6.5770	$_{48}Cd^{112}$	8.790	$_{37}Rb^{87}$	11.170	$_{32}Ge^{72}$
6.580	$_{34}Se^{82}$	8.8222	$_{48}Cd^{110}$	11.475	$_{38}Sr^{86}$
6.631	$_{60}Nd^{146}$	8.8222	$_{48}Cd^{116}$	11.494	$_{42}Mo^{92}$
6.74	$_{24}Cr^{53}$	8.8350	$_{68}Er^{166}$	11.570	$_{39}Y^{89}$
6.788	$_{60}Nd^{144}$	8.87	$_{25}Mn^{55}$	11.62	$_{23}V^{51}$
6.7921	$_{64}Gd^{160}$	8.9036	$_{57}La^{139}$	11.7	$_{21}Sc^{45}$
6.797	$_{23}V^{51}$	8.943	$_{50}Sn^{120}$	11.751	$_{52}Te^{126}$
6.815	$_{38}Sr^{87}$	8.953	$_{60}Nd^{150}$	11.8	$_{23}V^{50}$
6.865	$_{50}Sn^{122}$	8.980	$_{32}Ge^{72}$	12.030	$_{32}Ge^{74}$
6.890	$_{40}Zr^{92}$	9.030	$_{33}As^{75}$	12.070	$_{32}Ge^{72}$
6.9755	$_{48}Cd^{112}$	9.052	$_{42}Mo^{98}$	12.14	$_{83}Bi^{209}$
7.015	$_{52}Te^{130}$	9.2	$_{21}Sc^{45}$	12.479	$_{52}Te^{126}$
7.027	$_{52}Te^{122}$	9.2231	$_{70}Yb^{172}$	12.5	$_{28}Ni^{60}$
7.065	$_{40}Zr^{94}$	9.250	$_{34}Se^{78}$	12.632	$_{34}Se^{80}$
7.1020	$_{52}Te^{125}$	9.2624	$_{48}Cd^{114}$	12.64	$_{28}Ni^{61}$
7.148	$_{34}Se^{76}$	9.310	$_{37}Rb^{85}$	12.761	$_{70}Yb^{176}$
7.15	$_{28}Ni^{61}$	9.372	$_{60}Nd^{144}$	12.880	$_{37}Rb^{85}$
7.17	$_{25}Mn^{55}$	9.410	$_{39}Y^{89}$	12.893	$_{52}Te^{128}$
7.216	$_{34}Se^{74}$	9.4957	$_{70}Yb^{176}$	12.90	$_{82}Pb^{204}$
7.2671	$_{70}Yb^{172}$	9.587	$_{74}W^{186}$	12.990	$_{39}Y^{89}$
7.3	$_{23}V^{50}$	9.621	$_{59}Pr^{141}$	13.040	$_{30}Zn^{64}$
7.310	$_{56}Ba^{136}$	9.64	$_{82}Pb^{204}$	13.170	$_{29}Cu^{63}$
7.3471	$_{48}Cd^{116}$	9.640	$_{32}Ge^{72}$	13.192	$_{29}Cu^{65}$
7.3794	$_{64}Gd^{160}$	9.735	$_{60}Nd^{144}$	13.200	$_{74}W^{184}$
7.533	$_{60}Nd^{150}$	9.797	$_{52}Te^{122}$	13.200	$_{32}Ge^{70}$
7.55	$_{28}Ni^{61}$	9.868	$_{60}Nd^{146}$	13.242	$_{60}Nd^{144}$
7.580	$_{37}Rb^{87}$	9.885	$_{60}Nd^{142}$	13.281	$_{34}Se^{76}$
7.589	$_{60}Nd^{150}$	9.890	$_{32}Ge^{70}$	13.310	$_{40}Zr^{90}$
7.604	$_{29}Cu^{65}$	9.8960	$_{48}Cd^{110}$	13.378	$_{60}Nd^{150}$
7.6763	$_{64}Gd^{158}$	9.930	$_{29}Cu^{63}$	13.408	$_{70}Yb^{176}$
7.7266	$_{70}Yb^{174}$	9.970	$_{50}Sn^{124}$	13.450	$_{70}Yb^{174}$
7.76	$_{26}Fe^{54}$	10.020	$_{52}Te^{130}$	13.458	$_{52}Te^{126}$
7.770	$_{32}Ge^{73}$	10.161	$_{38}Sr^{86}$	13.567	$_{60}Nd^{146}$
7.800	$_{80}Hg^{200}$	10.210	$_{34}Se^{76}$	13.601	$_{70}Yb^{176}$
7.870	$_{52}Te^{122}$	10.304	$_{70}Yb^{174}$	13.663	$_{60}Nd^{142}$
7.879	$_{29}Cu^{65}$	10.310	$_{32}Ge^{70}$	13.700	$_{42}Mo^{92}$

E_{Res}

(keV)

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
13.732	$_{70}Yb^{176}$	19.965	$_{52}Te^{124}$	25.880	$_{32}Ge^{70}$
13.800	$_{34}Se^{82}$	19.98	$_{12}Mg^{25}$	25.905	$_{60}Nd^{142}$
13.80	$_{20}Ca^{43}$	20.200	$_{40}Zr^{94}$	26.200	$_{42}Mo^{92}$
13.940	$_{32}Ge^{76}$	20.270	$_{39}Y^{89}$	26.475	$_{52}Te^{124}$
13.963	$_{68}Er^{168}$	20.300	$_{34}Se^{80}$	26.550	$_{34}Se^{82}$
14.230	$_{29}Cu^{65}$	20.5	$_{23}V^{50}$	26.50	$_{17}Cl^{35}$
14.25	$_{82}Pb^{206}$	20.95	$_{21}Sc^{45}$	26.900	$_{34}Se^{78}$
14.3	$_{28}Ni^{64}$	21.00	$_{25}Mn^{55}$	26.9	$_{82}Pb^{204}$
14.406	$_{70}Yb^{174}$	21.040	$_{32}Ge^{76}$	26.9	$_{20}Ca^{43}$
14.500	$_{40}Zr^{92}$	21.100	$_{42}Mo^{92}$	27.00	$_{24}Cr^{53}$
14.600	$_{52}Te^{128}$	21.250	$_{60}Nd^{142}$	27.0	$_{25}Mn^{55}$
14.788	$_{17}Cl^{35}$	21.32	$_{30}Zn^{66}$	27.02	$_{9}F^{19}$
14.980	$_{37}Rb^{87}$	21.359	$_{38}Sr^{86}$	27.17	$_{22}Ti^{47}$
14.980	$_{38}Sr^{86}$	21.5	$_{82}Pb^{204}$	27.600	$_{32}Ge^{70}$
15.030	$_{37}Rb^{85}$	21.540	$_{52}Te^{130}$	27.7	$_{26}Fe^{56}$
15.050	$_{32}Ge^{76}$	21.70	$_{23}V^{51}$	27.760	$_{52}Te^{130}$
15.3	$_{30}Zn^{66}$	21.910	$_{32}Ge^{74}$	28.426	$_{24}Cr^{50}$
15.399	$_{38}Sr^{86}$	21.94	$_{27}Co^{59}$	28.60	$_{28}Ni^{60}$
15.50	$_{28}Ni^{58}$	21.94	$_{82}Pb^{206}$	28.700	$_{42}Mo^{92}$
15.51	$_{83}Bi^{209}$	22	$_{20}Ca^{44}$	29.0	$_{26}Fe^{57}$
15.650	$_{74}W^{186}$	22.460	$_{32}Ge^{76}$	29.11	$_{28}Ni^{61}$
15.707	$_{70}Yb^{174}$	22.5	$_{20}Ca^{43}$	29.2	$_{20}Ca^{43}$
16.140	$_{50}Sn^{120}$	22.51	$_{27}Co^{59}$	29.260	$_{39}Y^{89}$
16.258	$_{60}Nd^{142}$	22.6	$_{23}V^{50}$	29.359	$_{29}Cu^{63}$
16.36	$_{22}Ti^{47}$	22.700	$_{34}Se^{82}$	29.400	$_{34}Se^{78}$
16.45	$_{81}Tl^{205}$	22.7	$_{30}Zn^{66}$	29.400	$_{40}Zr^{96}$
16.500	$_{42}Mo^{92}$	22.77	$_{22}Ti^{49}$	29.400	$_{32}Ge^{72}$
16.70	$_{28}Ni^{61}$	23.000	$_{39}Y^{89}$	29.600	$_{34}Se^{80}$
16.710	$_{19}K^{41}$	23.030	$_{50}Sn^{120}$	29.600	$_{32}Ge^{76}$
16.80	$_{82}Pb^{207}$	23.1	$_{24}Cr^{54}$	29.760	$_{52}Te^{130}$
17.010	$_{52}Te^{128}$	23.100	$_{40}Zr^{92}$	29.800	$_{42}Mo^{92}$
17.080	$_{52}Te^{126}$	23.122	$_{34}Se^{80}$	30.050	$_{39}Y^{89}$
17.170	$_{50}Sn^{120}$	23.350	$_{52}Te^{130}$	30.11	$_{27}Co^{59}$
17.200	$_{40}Zr^{92}$	23.470	$_{37}Rb^{87}$	30.170	$_{52}Te^{130}$
17.230	$_{40}Zr^{90}$	23.5	$_{82}Pb^{204}$	30.200	$_{40}Zr^{94}$
17.520	$_{52}Te^{128}$	23.790	$_{52}Te^{124}$	30.35	$_{16}S^{32}$
17.6	$_{22}Ti^{48}$	23.8	$_{22}Ti^{48}$	30.570	$_{60}Nd^{142}$
17.83	$_{28}Ni^{61}$	24.120	$_{39}Y^{89}$	30.8	$_{30}Zn^{66}$
18.300	$_{34}Se^{80}$	24.133	$_{29}Cu^{65}$	31.100	$_{42}Mo^{92}$
18.374	$_{38}Sr^{86}$	24.200	$_{34}Se^{76}$	31.13	$_{28}Ni^{61}$
18.764	$_{52}Te^{130}$	24.220	$_{52}Te^{130}$	31.200	$_{34}Se^{78}$
18.82	$_{30}Zn^{68}$	24.3	$_{30}Zn^{66}$	31.20	$_{81}Tl^{205}$
18.9	$_{20}Ca^{43}$	24.46	$_{27}Co^{59}$	31.800	$_{40}Zr^{94}$
19.080	$_{32}Ge^{72}$	24.560	$_{39}Y^{89}$	31.9	$_{22}Ti^{49}$
19.100	$_{34}Se^{78}$	24.820	$_{50}Sn^{120}$	32.33	$_{22}Ti^{47}$
19.365	$_{60}Nd^{142}$	24.926	$_{19}K^{41}$	32.40	$_{21}Sc^{45}$
19.420	$_{52}Te^{128}$	25.100	$_{32}Ge^{74}$	32.500	$_{56}Ba^{138}$
19.450	$_{32}Ge^{74}$	25.100	$_{40}Zr^{94}$	32.70	$_{28}Ni^{61}$
19.56	$_{30}Zn^{66}$	25.48	$_{82}Pb^{206}$	32.960	$_{50}Sn^{120}$
19.750	$_{40}Zr^{94}$	25.519	$_{19}K^{39}$	33.000	$_{34}Se^{78}$
19.80	$_{82}Pb^{206}$	25.618	$_{29}Cu^{63}$	33.200	$_{32}Ge^{72}$
19.895	$_{29}Cu^{65}$	25.800	$_{42}Mo^{92}$	33.28	$_{83}Bi^{209}$

E_{Res} (keV)

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
33.400	$_{29}Cu^{63}$	48.7	$_{22}Ti^{46}$	80	$_{12}Mg^{25}$
33.800	$_{40}Zr^{94}$	48.700	$_{32}Ge^{76}$	81.000	$_{56}Ba^{138}$
33.81	$_{28}Ni^{64}$	49.10	$_{9}F^{19}$	82	$_{20}Ca^{44}$
34.1	$_{23}V^{50}$	50.19	$_{24}Cr^{52}$	83.0	$_{12}Mg^{24}$
34.300	$_{40}Zr^{92}$	51.16	$_{21}Sc^{45}$	83.329	$_{19}K^{41}$
34.500	$_{40}Zr^{96}$	51.27	$_{20}Ca^{44}$	83.6	$_{26}Fe^{56}$
34.700	$_{40}Zr^{90}$	51.8	$_{22}Ti^{48}$	83.8	$_{82}Pb^{206}$
34.70	$_{13}Al^{27}$	52.1	$_{26}Fe^{54}$	84.4	$_{25}Mn^{55}$
36.100	$_{32}Ge^{70}$	53.15	$_{11}Na^{23}$	87.2	$_{24}Cr^{53}$
36.100	$_{40}Zr^{96}$	53.4	$_{82}Pb^{204}$	87.3	$_{23}V^{51}$
36.200	$_{29}Cu^{63}$	53.500	$_{56}Ba^{138}$	87.568	$_{19}K^{39}$
36.40	$_{82}Pb^{206}$	54.200	$_{40}Zr^{96}$	88.35	$_{27}Co^{59}$
36.5	$_{20}Ca^{43}$	54.220	$_{50}Sn^{120}$	88.5	$_{13}Al^{27}$
36.500	$_{56}Ba^{138}$	54.410	$_{50}Sn^{120}$	90.35	$_{82}Pb^{207}$
36.8	$_{22}Ti^{48}$	54.7	$_{17}Cl^{37}$	90.40	$_{19}K$
37.0	$_{23}V^{50}$	55.15	$_{17}Cl^{37}$	92.78	$_{27}Co^{59}$
37.3	$_{24}Cr^{50}$	55.5	$_{22}Ti^{50}$	93.00	$_{17}Cl^{37}$
38.4	$_{22}Ti^{49}$	55.6	$_{14}Si^{28}$	93.15	$_{82}Pb^{207}$
38.4	$_{82}Pb^{204}$	55.81	$_{26}Fe^{57}$	93.7	$_{26}Fe^{57}$
38.400	$_{32}Ge^{70}$	57.56	$_{22}Ti^{47}$	94.7	$_{28}Ni^{62}$
38.570	$_{50}Sn^{120}$	57.868	$_{19}K^{39}$	94.75	$_{24}Cr^{50}$
38.587	$_{19}K^{41}$	58.300	$_{40}Zr^{96}$	95.50	$_{83}Bi^{209}$
38.900	$_{40}Zr^{96}$	58.4	$_{82}Pb^{206}$	96.23	$_{24}Cr^{52}$
39.0	$_{22}Ti^{46}$	59.000	$_{40}Zr^{90}$	96.582	$_{19}K^{39}$
39.200	$_{40}Zr^{92}$	61.0	$_{26}Fe^{57}$	96.6	$_{22}Ti^{49}$
39.500	$_{32}Ge^{72}$	61.04	$_{32}Ge^{74}$	97.0	$_{9}F^{19}$
39.900	$_{34}Se^{80}$	63.0	$_{28}Ni^{58}$	97.5	$_{28}Ni^{60}$
40.000	$_{40}Zr^{94}$	63.5	$_{22}Ti^{46}$	98.30	$_{27}Co^{59}$
40.0	$_{20}Ca^{42}$	63.5	$_{23}V^{51}$	98.75	$_{82}Pb^{207}$
40.100	$_{40}Zr^{90}$	64.1	$_{25}Mn^{55}$	99.096	$_{19}K$
40.37	$_{22}Ti^{47}$	65.7	$_{24}Cr^{53}$	99.80	$_{21}Sc^{45}$
40.500	$_{34}Se^{78}$	65.87	$_{28}Ni^{61}$	100.0	$_{22}Ti^{46}$
40.700	$_{40}Zr^{96}$	65.94	$_{21}Sc^{45}$	100.827	$_{19}K^{41}$
41.0	$_{26}Fe^{57}$	66.20	$_{82}Pb^{206}$	101.2	$_{20}Ca^{44}$
41.600	$_{40}Zr^{94}$	66.358	$_{17}Cl$	102.25	$_{82}Pb^{207}$
41.600	$_{40}Zr^{90}$	68.000	$_{38}Sr^{88}$	102.7	$_{83}Bi^{209}$
41.64	$_{82}Pb^{207}$	68.000	$_{40}Zr^{90}$	102.9	$_{16}S^{32}$
42.08	$_{22}Ti^{47}$	68.6	$_{23}V^{51}$	103.33	$_{17}Cl^{35}$
42.23	$_{22}Ti^{47}$	68.77	$_{28}Ni^{61}$	104.242	$_{19}K$
42.400	$_{40}Zr^{90}$	68.818	$_{19}K^{39}$	105	$_{12}Mg^{25}$
42.565	$_{19}K^{39}$	68.84	$_{83}Bi^{209}$	105.65	$_{28}Ni^{62}$
42.800	$_{32}Ge^{74}$	70.000	$_{56}Ba^{138}$	106.4	$_{22}Ti^{49}$
43.10	$_{29}Cu^{65}$	70.11	$_{21}Sc^{45}$	108.615	$_{19}K^{39}$
44.100	$_{40}Zr^{90}$	71.8	$_{26}Fe^{54}$	109.6	$_{26}Fe^{57}$
44.580	$_{50}Sn^{120}$	74.0	$_{26}Fe^{56}$	110.9	$_{25}Mn^{55}$
44.700	$_{40}Zr^{92}$	75.384	$_{19}K^{41}$	112.30	$_{82}Pb^{207}$
45.32	$_{83}Bi^{209}$	76.500	$_{56}Ba^{138}$	113.30	$_{17}Cl^{35}$
45.800	$_{40}Zr^{96}$	77.2	$_{26}Fe^{57}$	114.00	$_{56}Ba^{138}$
46.40	$_{22}Ti^{47}$	77.30	$_{18}Ar^{40}$	115.50	$_{82}Pb^{207}$
46.61	$_{17}Cl^{37}$	78.540	$_{19}K$	115.70	$_{18}Ar^{40}$
47.000	$_{40}Zr^{92}$	79.759	$_{19}K^{41}$	116.0	$_{23}V^{51}$
47.6	$_{82}Pb^{206}$	79.80	$_{21}Sc^{45}$		

E_{Res}

(keV)

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
116.031	$_{19}K^{41}$	172.8	$_{18}Ar^{40}$	270	$_{9}F^{19}$
117.5	$_{23}V^{51}$	173.0	$_{26}Fe^{54}$	270	$_{22}Ti^{48}$
118.6	$_{22}Ti^{48}$	173.5	$_{9}F^{19}$	270.0	$_{28}Ni^{58}$
119.8	$_{13}Al^{27}$	175.0	$_{20}Ca^{42}$	272.5	$_{16}S^{32}$
120.1	$_{24}Cr^{54}$	175.0	$_{20}Ca^{44}$	273.0	$_{26}Fe^{56}$
120.944	$_{19}K^{41}$	177.791	$_{19}K^{39}$	278.5	$_{20}Ca^{42}$
121.00	$_{56}Ba^{138}$	179.0	$_{22}Ti^{46}$	279.5	$_{24}Cr^{54}$
121.38	$_{24}Cr^{52}$	179	$_{17}Cl$	280.5	$_{28}Ni^{62}$
123.6	$_{24}Cr^{53}$	179.1	$_{24}Cr^{54}$	282.5	$_{24}Cr^{54}$
124.2	$_{20}Ca^{42}$	180	$_{17}Cl^{37}$	288.7	$_{16}S^{32}$
126.00	$_{56}Ba^{138}$	182.82	$_{17}Cl^{35}$	291.5	$_{22}Ti^{48}$
127.0	$_{25}Mn^{55}$	185.0	$_{22}Ti^{46}$	295.00	$_{38}Sr^{88}$
127.66	$_{17}Cl^{37}$	185.21	$_{24}Cr^{50}$	300	$_{12}Mg^{26}$
128.2	$_{82}Pb^{207}$	185.6	$_{22}Ti^{50}$	305.5	$_{22}Ti^{46}$
128.5	$_{20}Ca^{42}$	186.6	$_{28}Ni^{60}$	305.5	$_{26}Fe^{54}$
129.32	$_{28}Ni^{64}$	187.7	$_{22}Ti^{49}$	307.0	$_{22}Ti^{50}$
129.5	$_{26}Fe^{57}$	188.0	$_{26}Fe^{56}$	315.0	$_{26}Fe^{56}$
131.87	$_{20}Ca^{40}$	188.0	$_{14}Si^{28}$	317.0	$_{26}Fe^{54}$
133.74	$_{17}Cl$	188.07	$_{17}Cl^{35}$	317.6	$_{16}S^{34}$
134.5	$_{23}V^{51}$	188.5	$_{26}Fe^{54}$	319	$_{10}Ne^{22}$
134.5	$_{26}Fe^{57}$	190.0	$_{22}Ti^{48}$	321.5	$_{20}Ca^{44}$
134.95	$_{17}Cl$	190.32	$_{17}Cl^{35}$	325.0	$_{24}Cr^{54}$
135.0	$_{24}Cr^{53}$	193.0	$_{28}Ni^{58}$	326.3	$_{28}Ni^{60}$
135.50	$_{56}Ba^{138}$	193	$_{17}Cl^{37}$	327.0	$_{28}Ni^{62}$
136.22	$_{17}Cl^{37}$	198.0	$_{28}Ni^{60}$	327.5	$_{20}Ca^{40}$
136.20	$_{83}Bi^{209}$	198.780	$_{19}K$	328.00	$_{38}Sr^{88}$
139.71	$_{24}Cr^{52}$	199.0	$_{82}Pb^{206}$	328.6	$_{24}Cr^{50}$
139.9	$_{26}Fe^{56}$	200	$_{17}Cl^{35}$	330	$_{24}Cr^{54}$
140.5	$_{28}Ni^{58}$	202	$_{17}Cl^{37}$	331.1	$_{24}Cr^{52}$
140.55	$_{17}Cl$	202.2	$_{16}S^{32}$	339.5	$_{28}Ni^{60}$
141.3	$_{24}Cr^{52}$	204.8	$_{13}Al^{27}$	340.00	$_{38}Sr^{88}$
142.89	$_{17}Cl^{35}$	207.0	$_{28}Ni^{58}$	340.5	$_{22}Ti^{46}$
145	$_{17}Cl^{37}$	208.1	$_{13}Al^{27}$	341	$_{22}Ti^{48}$
145.0	$_{13}Al^{27}$	213.2	$_{20}Ca^{42}$	344.2	$_{28}Ni^{62}$
146.200	$_{19}K$	217.5	$_{20}Ca^{40}$	352	$_{82}Pb^{208}$
147.743	$_{19}K$	220.0	$_{18}Ar^{40}$	357.2	$_{16}S^{34}$
148.995	$_{19}K$	221.0	$_{26}Fe^{56}$	360.5	$_{26}Fe^{56}$
149.63	$_{17}Cl$	221.6	$_{24}Cr^{53}$	363.5	$_{24}Cr^{52}$
151.2	$_{22}Ti^{49}$	229.5	$_{28}Ni^{62}$	370.0	$_{24}Cr^{50}$
152.2	$_{22}Ti^{49}$	231.0	$_{28}Ni^{58}$	370.0	$_{20}Ca^{44}$
154.165	$_{19}K^{39}$	231.95	$_{26}Ni^{64}$	370	$_{5}B^{10}$
154.5	$_{22}Ti^{48}$	238.5	$_{20}Ca^{42}$	371.3	$_{18}Ar^{40}$
155.0	$_{28}Ni^{64}$	244.5	$_{20}Ca^{40}$	375.5	$_{28}Ni^{60}$
158	$_{15}P^{31}$	247.0	$_{20}Ca^{44}$	380.3	$_{16}S^{32}$
159.0	$_{13}Al^{27}$	247.5	$_{24}Cr^{54}$	382.0	$_{26}Fe^{56}$
159.5	$_{28}Ni^{58}$	249.0	$_{22}Ti^{48}$	387	$_{9}F^{19}$
162.440	$_{19}K^{39}$	252	$_{3}Li^{6}$	387.00	$_{38}Sr^{88}$
165.35	$_{17}Cl$	255.1	$_{18}Ar^{40}$	388.5	$_{28}Ni^{62}$
169.38	$_{20}Ca^{40}$	257.1	$_{82}Pb^{207}$	389.0	$_{28}Ni^{64}$
169.8	$_{24}Cr^{54}$	257.8	$_{28}Ni^{60}$	393.5	$_{24}Cr^{54}$
170.3	$_{5}B^{10}$	263	$_{12}Mg^{24}$	393.8	$_{11}Na^{23}$
172.3	$_{22}Ti^{49}$	269.7	$_{28}Ni^{64}$	396.6	$_{16}S^{34}$

E_{Res} (keV)

E_0 (keV)	Isotope	E_0 (keV)	Isotope	E_0 (keV)	Isotope
401.0	$_{24}Cr^{52}$	525	$_{82}Pb^{208}$	878.7	$_{20}Ca^{40}$
403.00	$_{38}Sr^{88}$	530	$_{5}B^{10}$	911.2	$_{11}Na^{23}$
416	$_{26}Fe^{54}$	530.0	$_{24}Cr^{52}$	920.5	$_{16}S^{32}$
416.5	$_{24}Cr^{50}$	532.0	$_{20}Ca^{42}$	985.1	$_{11}Na^{23}$
420.8	$_{28}Ni^{64}$	536.5	$_{28}Ni^{64}$	997	$_{7}N^{14}$
426.5	$_{28}Ni^{58}$	536.50	$_{38}Sr^{88}$	1116	$_{7}N^{14}$
430	$_{12}Mg^{24}$	536.6	$_{11}Na^{23}$	1163.9	$_{14}Si^{28}$
431.0	$_{26}Fe^{54}$	569.3	$_{18}Ar^{40}$	1186.0	$_{14}Si^{28}$
433.0	$_{28}Ni^{62}$	569.50	$_{38}Sr^{88}$	1211	$_{7}N^{14}$
433.5	$_{24}Cr^{50}$	570.5	$_{20}Ca^{42}$	1252.0	$_{14}Si^{28}$
435.7	$_{16}S^{34}$	571.0	$_{28}Ni^{58}$	1351	$_{7}N^{14}$
443	$_{20}Ca^{40}$	583.5	$_{28}Ni^{62}$	1405	$_{7}N^{14}$
460.5	$_{24}Cr^{52}$	587.3	$_{16}S^{32}$	1598	$_{7}N^{14}$
467.5	$_{24}Cr^{50}$	589.50	$_{38}Sr^{88}$	1783	$_{7}N^{14}$
469.3	$_{18}Ar^{40}$	590.0	$_{20}Ca^{40}$	1830	$_{5}B^{10}$
470.8	$_{16}S^{34}$	596	$_{18}Ar^{40}$	1880	$_{5}B^{10}$
473	$_{10}Ne^{20}$	597.8	$_{11}Na^{23}$	2220	$_{7}N^{14}$
483.0	$_{28}Ni^{64}$	628	$_{18}Ar^{40}$	2351	$_{8}O^{16}$
483.0	$_{20}Ca^{44}$	644	$_{7}N^{14}$	2820	$_{5}B^{10}$
489.0	$_{26}Fe^{54}$	665	$_{12}Mg^{24}$	3500	$_{3}Li^{6}$
498.0	$_{28}Ni^{60}$	697.2	$_{11}Na^{23}$	3800	$_{7}N^{14}$
505	$_{12}Mg^{26}$	700.5	$_{16}S^{32}$	4040	$_{5}B^{10}$
506.0	$_{20}Ca^{44}$	726.6	$_{11}Na^{23}$	4047	$_{8}O^{16}$
513.5	$_{20}Ca^{42}$	771.5	$_{20}Ca^{40}$	4469	$_{8}O^{16}$
515	$_{82}Pb^{208}$	780.5	$_{11}Na^{23}$	4600	$_{3}Li^{6}$
521.50	$_{38}Sr^{88}$	850	$_{12}Mg^{24}$		
522	$_{10}Ne^{22}$	861.8	$_{20}Ca^{40}$		

The preceding table is a listing of strong resonances ordered by increasing energy. The ten strongest resonances, if they exist, were included for each isotope. The criterion chosen for defining these resonances is related to peak cross section (Γ_n divided by the resonance energy, E_0).

ADDITIONS AND CORRECTIONS

The relevant references can be found in the section on Recent References.

Page No.	Isotope	Comments
A/16	^{12}C	Second line of "note" should read . . . 13.28-14.46 MeV (neutron energies 13.28-14.46 MeV).
B/36	^{59}Co	Parameters of bound level should read $E_0 = -0.558$ keV, $J=3$, and $2g\Gamma_n^0 = 2.18$ eV for an assumed $\Gamma_\gamma = 0.48$ eV. $a_{coh} = 2.35 \pm 0.05$ fm
B/44	^{58}Ni	Delete the 600 keV resonance
B/51	^{64}Ni	Neutron separation energy should read $S_n = 6097.6 \pm 0.6$ keV.
B/62	Zn	$a_{coh} = 5.70 \pm 0.02$ fm
B/74	^{73}Ge	Comment of "spin is 4" should apply to the 0.102 and 0.224 keV resonances.
B/89	Br	$a_{coh} = 6.77 \pm 0.02$ fm
B/94	Kr	$a_{coh} = 7.96 \pm 0.15$ fm
B/102	Sr	$a_{coh} = 7.05 \pm 0.07$ fm
C/30	Ru	$a_{coh} = 7.21 \pm 0.07$ fm Unassigned resonance at 65.66 eV possibly belongs to ^{104}Ru.
C/31	^{99}Ru	The $2g\Gamma_n$ values of the 25.2 and 342.2 eV resonances should read 11.7 ± 1.0 and 37 ± 2 meV respectively.
C/32	^{101}Ru	Spin of the 52.13 eV resonance is $J=3$. $2g\Gamma_n$ value of the 66.82 eV resonance should read 36 ± 4 meV. Values under the $2g\Gamma_n$ and $2g\Gamma_n^0$ columns for resonances from 141.1 to 485.2 eV correspond to Γ_n and Γ_n^0 respectively.
C/33	^{102}Ru	$S_n = 6232.2 \pm 0.3$ keV
C/33	^{104}Rh	$S_n = 5910.1 \pm 0.7$ keV
C/35	^{103}Rh	$a_{coh} = 5.88 \pm 0.03$ fm
C/49	^{108}Pd	For the 2.96 eV resonance the values under the Γ_n and Γ_n^0 columns correspond to $g\Gamma_n$ and $g\Gamma_n^0$ respectively.

Page No.	Isotope	Comments
C/67	^{111}Cd	Spin of the 233.4 eV resonance should read $J=1$. Additional spin assignments are: $J=1$ for 102.93, 225.05, 275.56, 331.97, 355.99, 575.92, 790.43 eV resonances, and $J=0$ for 86.11, 311.38, and 389.02 eV resonances. For the 311.38 eV resonance, $\Gamma_\gamma=30\pm10$ meV.
C/80	^{115}In	Additional spin assignments are: $J=5$ for 22.73, 39.60, 48.14, 83.28, 94.34, 132.81, 150.29, 168.08, 205.60, 224.03, 266.96, 354.13, 370.94, 402.35, 423.00 eV resonances and $J=4$ for the 12.1, 46.36, 63.00, 80.87, 125.89, 164.67, 177.92, 186.96, 288.88, 294.33, 319.49, 362.10, 411.56 eV resonances.
C/119	^{128}Te	For recent, more accurate radiative widths of ^{128}Te, see Browne and Berman.
C/123	^{153}I	$a_{coh}=5.26\pm0.02$ fm
C/128	^{130}Te	For recent, more accurate radiative widths of ^{130}Te, see Browne and Berman.
C/132	Xe	$a_{coh}=4.76\pm0.07$ fm
C/135	^{129}Xe	$S_0=1.0\pm0.2$
C/140	^{135}Xe	$I^\pi=3/2^-$
C/141	Xe	Add to thermal cross section references Crouch et al., *Phys. Rev.* **102**, 1321 (56).
C/142	^{131}Cs	Add $\sigma_\gamma(^{131}\text{Cs})=250\pm40$ b
C/142	^{133}Cs	$a_{coh}=5.42\pm0.02$ fm
C/148	Ba	$a_{coh}=5.28\pm0.03$ fm Delete $\sigma_p=4.3+1.0$ b
C/164	^{141}Pr	Delete $\sigma_p=3.0\pm0.6$ b
C/180	^{146}Nd	$\sigma_\gamma=1.3\pm0.1$ b $I_\gamma=2.59\pm0.20$ b
C/181	^{148}Nd	$\sigma_\gamma=2.48\pm0.14$ b $I_\gamma=13.8\pm1.0$ b For 155.4 eV resonance $\Gamma_n=1850\pm200$ meV and $\Gamma_n^0=166.4\pm16.0$ meV respectively. To achieve consistency between measured and calculated resonance integrals, Γ_γ of the 155.4 eV resonance should be reduced.

Page No.	Isotope	Comments
D/1	^{147}Pm	$a_{coh} = 12.6 \pm 0.4$ fm
D/4	^{147}Sm	Additional spin assignments are: J = 3 for resonances at 151.7, 180.0, 191.3, (198.3), 221.8, 226.0, (229.0), 264.3, 271.8, 275.1 eV; and J = 4 for resonances at 49.3, 99.5, 107.2, 140.5, 143.6, 161.0, 193.5, 206.0, 240.9, 248.3, (257.5), (264.3), 284.1 eV.
D/8	^{149}Sm	Additional spin assignments are: J = 3 for resonances at 87.7, 92.1, 96.3, 101.6, 107.0, 111.2, 117.0, 119.4, 157.5, (158.7), 168.3, 173.5, 179.9, 185.4, 197.4, 203.7 eV; and J = 4 for resonances at (24.6), 76.9, 83.8, 90.5, 95.6, 98.1, 99.5, 115.3, (121.7), 125.4, 129.9, 134.3, 144.2, 146.9, (149.5), 154.7, 177.8, (188.0), 192.9 eV.
D/25	^{154}Gd	Chemical symbol at top right-hand side should read $^{154}_{64}$Gd instead of $^{152}_{64}$Gd.
D/30	^{157}Gd	Additional spin assignments are: J = 1 for resonances at 16.24, 23.33, 40.17, (138.7), 191.4 eV; and J = 2 for resonances at 21.65, 82.30, 107.7, 110.5, 115.4, 156.8, 195.6 eV.
D/38	^{159}Tb	For the 77.5 eV resonance $2g\Gamma_n^0$ value should read 0.83 $\pm$0.08 mV.
D/68	^{168}Er	Delete $a_{coh} = 10.9 \pm 0.5$ fm
D/74	^{170}Er	In note, 0.79 eV should read 0.079 eV. To achieve consistency with the measured absorption resonance integral the average radiative width of ^{170}Er should be about half of 0.079 eV.
D/77	^{169}Tm	$R' = 8.5 \pm 0.5$ fm. For additional resonance parameters in energy range 3.9 - 1941 eV, see Tellier '72.
D/148		Half-life of ^{191}Os^{m} should read 13.0 hr.
D/163	^{198}Au	$\sigma_\gamma = 25100 \pm 370$ b
E/95	^{244}Pu	(D) should read 24 $\pm$ 5 eV.

Recent References

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
F^{19}	diffraction	JCP,59,453(73)	Peterson
Na^{22}	activation	NYO-3417-19,2(72)	Fischman
Mn^{54}	activation	NYO-3417-19,3(72)	Fischman
Co^{57}	activation	NYO-3417-19,2(72)	Fischman
Co^{59}	Christiansen filter	PRIVATE COMM.(73)	Koester
Zn	diffraction	ACR/A,29,49(73)	Cooper
Ge	Pendellosung	ZN/A,28,657(73)	Shull
Br	Christiansen filter	ZN/A,27,901(72)	Koester
Sr	Christiansen filter	PRIVATE COMM.(73)	Koester
Ru	Christiansen filter	PRIVATE COMM.(73)	Koester
Rh^{103}	Christiansen filter	PRIVATE COMM.(73)	Koester
Cd^{116}	isomeric ratio	JIN-35,371(73)	Tang
Sb	activation	DA,32B,3245(71)	Elgart
Te^{127M}	activation	NYO-3417-19,2(72)	Fischman
I	Christiansen filter	ZN/A,27,901(72)	Koester
Xe	diffraction	JCP,59,453(73)	Peterson
Xe^{135}	depletion	JNE,27,409(73)	Santry
Ba	Christiansen filter	PRIVATE COMM.(73)	Koester
Nd^{146}	activation	PRIVATE COMM.(68)	Mowatt
$Nd^{146,148,150}$	activation	RCA-17,191(72)	Kim
Pm^{147}	diffraction	PRIVATE COMM.(72)	Koehler
Eu,$Eu^{151,153}$	σ_t	71KIEV,2,239(71)	Vertebny
Dy	Christiansen filter	PRIVATE COMM.(73)	Koester
Ho^{165}	diffraction	JPR,34,423(73)	Herpin
Hf^{180}	σ_a	NP/A,205,614(73)	Alam
Cs	Christiansen filter	ZN/A,27,901(72)	Koester
Cs^{131}	activation	RAK,14,866(72)	Malinin
Cs^{133}	isomeric ratio	TID-22165(65)	Simons
Au^{198}	activation	NAP,9,662(70)	Serment
Au^{198}	activation	JIN-31,1229(69)	Cabell
Tl	Christiansen filter	ZN/A,27,901(72)	Koester
Tl^{203}	σ_a	NP/A,205,614(73)	Alam
Pb^{208}	σ_a	NP/A,205,614(73)	Alam
Bi^{209}	σ_a	NP/A,205,614(73)	Alam

Recent References

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Fe^{54}	σ_t	7813-98820	ORNL-4844(4%73)	Good
Fe^{54}	σ_t	7.67-245.7	KFK-1516(72)	Beer
Fe^{57}	σ_t	1628-118832	ORNL-4844,47(73)	Good
Nb^{93}	σ_γ (spectra)	35.8-94.3	PR/C,8,336(73)	Chrien
Mo^{92}	σ_γ (spectra)	300-23900	PR/C,8,297(73)	Wasson
Ru, Ru^{99}	σ_t	10.0-1453	AKE,19,111(72)	Priesmeyer
Ru^{100}		228.5	AKE,19,111(72)	Priesmeyer
Ru^{101}		15.7-666	AKE,19,111(72)	Priesmeyer
Ru^{102}		165-1291	AKE,19,111(72)	Priesmeyer
Ru^{104}		224.6-1050	AKE,19,111(72)	Priesmeyer
Cd^{111}	multiplicity	27.5-390.1	JINR-P3-6948(73)	Karzhavina
Cd^{113}	multiplicity	18.3-430.8	JINR-P3-6948(73)	Karzhavina
Cd^{157}	multiplicity	16.17-339	JINR-P3-6948(73)	Karzhavina
In^{115}	σ_γ (spectra)	1.45-422.9	72BUDAPEST,74(72)	Stefanon
Te^{128}	σ_γ	350-7071	UCRL-74840(73)	Browne
Te^{130}	σ_γ	1143-7016	UCRL-74840(73)	Browne
Sm^{147}	multiplicity	3.4-283.3	72BUDAPEST,20(72)	Karzhavina
Sm^{149}	multiplicity	4.98-203.7	72BUDAPEST,20(72)	Karzhavina
Dy^{161}	multiplicity	7.72-65.9	JINR-P3-6948(73)	Karzhavina
Dy^{163}	multiplicity	16.2-65.9	JINR-P3-6948(73)	Karzhavina
Tm^{169}	σ_t	3.92-1941	CEA-N-1563(72)	Tellier
Yb^{168}	σ_t	0.66-289	71KIEV,1,181(71)	Vertebny
Os^{186}	σ_t	22.37-274	71KIEV,1,181(71)	Vertebny
Os^{187}	σ_t	9.46-386	71KIEV,1,181(71)	Vertebny
Os^{188}	σ_t	38.4-332	71KIEV,1,181(71)	Vertebny
Os^{189}	σ_t	6.75-103	71KIEV,1,181(71)	Vertebny
Os^{190}	σ_t	11.14-563	71KIEV,1,181(71)	Vertebny
Os^{192}	σ_t	20.33-717	71KIEV,1,181(71)	Vertebny
Tl^{203}	σ_t	37.9	NP/A,193,643(72)	Thomas
Tl^{205}	σ_t	44.6	NP/A,193,643(72)	Thomas

REFERENCE CODE MNEMONICS

+ following a reference indicates the reference has been supplemented by private communication.
- indicates quoted reference cited other authors.

AAEC/E-	Australian AEC Report Series
AAEC/TM-	Australian AEC Technical Memos
AC	(Anal.Chem.) Analytical Chemistry
ACJ	(Acta Chem.Scand.) Acta Chemica Scandinavica
ACR	(Acta Crystallogr.) Acta Crystallographica Continued 1970 In Parts A and B
ACR/A	(Acta Crystallogr.,Part A) Acta Crystallographica, Part A, Started With Vol.26 In 1970
ACR/B	(Acta Crystallogr.,Part B) Acta Crystallographica,
ACRH	Argonne Cancer Research Hospital,Argonne Ill.
ACS	(J.Amer.Chem.Soc.) Journal of the American Chemical Society
ACT.EL	(Actinide Elements) the Actinide Elements. National Nuclear Energy Series, Div IV, Vol 1 Mcgraw 1954. Editors G.T. Seaborg and J.J. Katz
AD-	Dept.of Defence Reports
ADP	(Ann.Phys) Annalen Der Physik
AE	(Atomnaja Energija) Translations in English see SJA, in French see EAF, Selected Articles and Abstracts From Vol.1 (1956) To Vol.20 (1966) translated Into English See JNE Vol.3 (1956) To Vol.21 (1967).
AE-	Aktiebolaget Atomenergi Repts.Stockholm/Studsvil
AEC-TR-	Div.of Tech.Inf.USAEC Translations
AECD-	DTIE Rept.Series. Succeeded MDDC-, Extinct 1960
AECL-	Atomic Energy of Canada Ltd. Reports
AECU-	USAEC Reports, Div.Tech.Inf., Extinct
AEEW-R-	AEEW-Winfrith Reports
AERE-M-	AERE-Harwell Reports
AERE-N/R-	AERE-Harwell Reports
AERE-NP/M-	AERE-Harwell Reports
AERE-NP/R-	AERE-Harwell Reports
AERE-PR/NP-	AERE-Harwell Reports
AERE-R-	AERE-Harwell Reports
AERE-R/M-	AERE-Harwell Reports
AERE-R/R-	AERE-Harwell Reports
AERE-RP/R-	AERE-Harwell Reports
CRGP-	AECL-Reports. Use AECL- Numbers, Extinct 1970 Replaced By Physica Scripta
AFSWC-TDR-	Air Force Spec.Weap.Centre Kirtland Reports
AKE	(Atomkernenergie)
AMA	Archiv Mat. Astron. Fysik
ANCR-	Aerojet Nucl.Corp. Reports
ANL-	Argonne National Laboratory Report Series
ANS	(Trans.Amer.Nucl.Soc.) Transactions of the American Nuclear Society
AP	(Ann.Phys.(N. York)) Annals of Physics (New York)
APA	(Acta Phys.Austr.) Acta Physica Austriaca
APP	(Acta Phys.Pol.) Acta Physica Polonica Until Vol.36 (1969).
ARI	(Int.J.Appl.Radiat.Isotop.) International Journal of Applied Radiation and Isotopes
ARN	(Annu.Rev.Nucl.Sci.) Annual Review of Nuclear Science
AUJ	(Aust.J.Phys.) Australian Journal of Physics
BAP	(Bull.Amer.Phys.Soc.) Bulletin of the American Physical Society
BAS	(Bull.Acad.Sci.USSR,Phys.Ser.) Bulletin of the Academy of Sciences of the USSR,Physical Series, English translation of IZV.
BIS	(Bull.Inform.Scient.Tech.) Bulletin D Informations Scientifiques Et Techniques Commissariat A L Energie Atomique

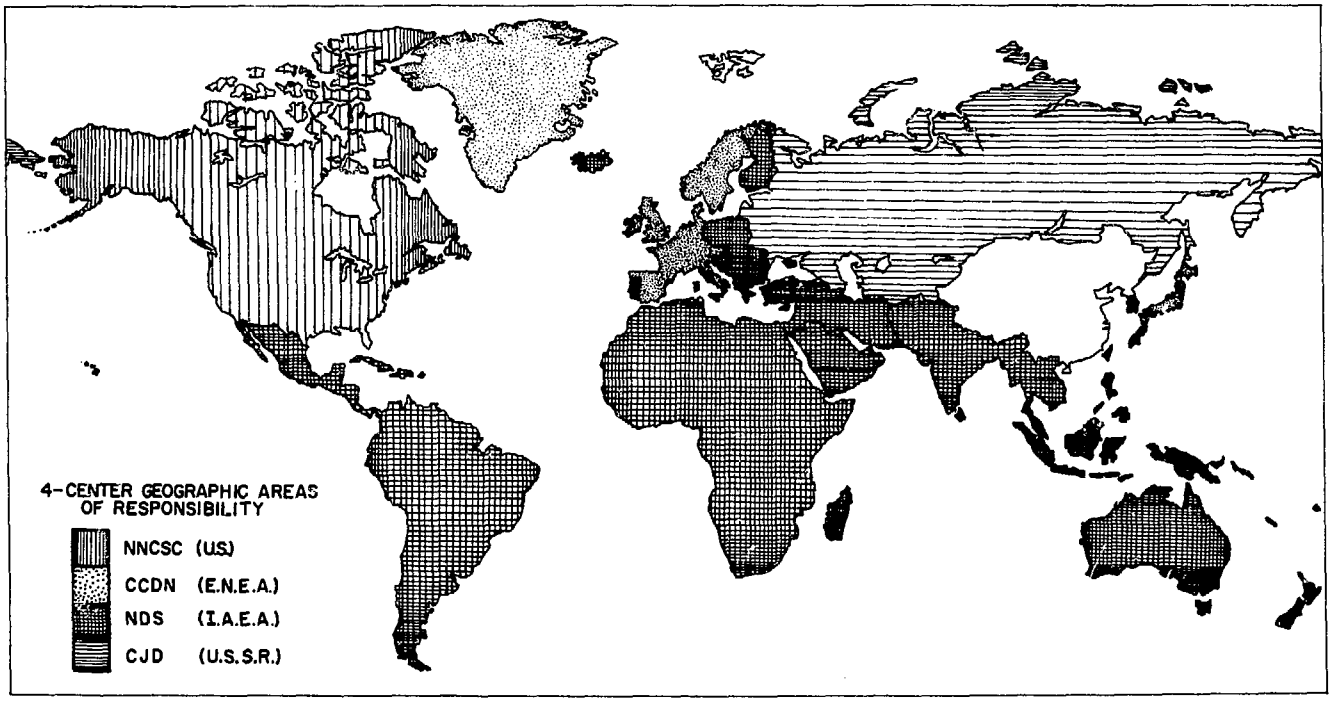
BMI-	Battelle Memorial Inst. Reports
BNL-	Brookhaven National Laboratory Report Series
BOS	(Trans.Bose Res.Inst.,Calcutta) Transactions of The
BTI	Bulletin of Tokyo Institute of Technology,Japan
	Bose Research Institute,Calcutta
CC-	Chicago University Metallurgical Labs
CEA-	Centre D Etudes Nucleaires Report Series
CEA-N-	Centre D Etudes Nucleaires, Saclay, Note
	Internal Report With Limited Distribution
CEA-R-	Centre D Etudes Nucleaires,Saclay,Reports
CF-	Chicago University Metallurgical Labs
CHP	(Chin.J.Phys.(Taipei)) Chinese Journal of Physics,
	Taipei.
CJC	(Can.J.Chem.) Canadian Journal of Chemistry
CJP	(Can.J.Phys.) Canadian Journal of Physics
	Formerly, Can.J.Res.,Sect.A.
CJR/A	(Can.J.Res.) Canadian Journal of Research (Part A)
CL-RWS-	Clinton Laboratory Report,Tennessee
CNAEM-	Cekmece Nucl Res and Training Centre Reports
CNI	Centro Nazionale Per Le Richerche Nucleari Di Ispra,Ita
COO-	Chicago Operations Office,AEC,Contract Reports
CP-	Chicago University Metallurgical Labs
	Some Reports From Argonne National Lab
CR	(C.R.H.Acad.Sci.) Comptes Rendus Hebdomadaires Des
	Seances De L Academie Des Sciences.
CRB	(C.R.Acad.Bulg.Sci.) Comptes Rendus De L Academie
	Bulgare Des Sciences.
CRC-	National Research Council Reports, Extinct
CRRP-	Chalk River Reports
CS-	Chicago University Metallurgical Labs
CU-PNPL-	Columbia University Reports-Pegram Nuc.Phys.Lab.
CU-	Columbia University Reports
CUD-	Columbia University, New York
CZJ/A	(Cesk.Cas.Fys.= Czech.J.Phys.,Part A)Ceskoslovensky
	Casopys Pro Fysiku,(In Czeck)
CZJ/B	(Czech.J.Phys.,Part B) International Issue.
	Note=part B is not a translation of Part A, but
	has different articles.
DA/B	(Diss.Abstr.B) Dissertation Abstracts B (Sciences)
	From No.27 1966/67. From Vol.30(July 1969) the
	Journal Is Called Dissertation Abstracts
	International.B
DOK	(Dokl.Akad.Nauk SSSR) Doklady Akademii Nauk SSSR
	See SPD For English Translation.
DP-	Du Pont,Savannah River Reports
EIR-	Eidg.Inst.Reaktorforsch.Wuerenlingen Reports
EN	(Energ.Nucl.(Milan)) Energia Nucleare (Milan)
EON	(Euronuclear) Euronuclear (Extinct May 1966
EUR-	Euratom Reports
GA-	General Atomic Div.Reports
HPA	(Helv.Phys.Acta) Helvetica Physica Acta
HW-	Hanford Reports, Now BNWL- Extinct 1965
ICD-	Bull.Centr Po Jadernym Dannym, Obninsk
	Last Issue ICD-6 (1970) Continued as YK-7 (1971)
IDO-	Philips Petrolium Co.,Idaho Falls,Idaho.Reports
IJP	(Indian J.Phys.) Indian Journal of Physics
IN-	Idaho Nuclear Corp.,Reports.
IZV	(Izv.Akad.Nauk SSSR,Ser.Fiz.) Izvestiya Akademii
	Nauk Sssr,Seriya Fizicheskaya
	See Bas For English Translation
JAERI-	Atomic Energy Res.Inst.Tokyo, Reports
JAP	(J.Appl.Phys.) Journal of Applied Physics
JCP	(J.Chem.Phys.) Journal of Chemical Physics
JEA	Eltro Chemical,U.S.

JET	(Sov.Phys.JETP) Soviet Physics-JETP English translation of ZET USSR
JIN	(J.Inorg.Nucl.Chem.) Journal of Inorganic and Nuclear Chemistry
JINR-	Joint Inst.For Nucl.Res.,Dubna,Reports Note= the 4-Digits Report-Number Is Unique, the Symbols Between JINR and Number Can Be Omitted They Mean P=Russian, E=English,D=Engl+Russian.
JINR-P-	Joint Inst.For Nucl.Res.,Dubna,Report-Series P
JINP-P15-	Joint Inst.For Nucl.Res.,Dubna,Report-Series P15
JINR-P3-	Joint Inst.For Nucl.Res.,Dubna,Report-Series P3
JMS	Journal of Mass Spectroscopy and Ion Physics,U.S.
JNE	(J.Nucl.Energy) Journal of Nuclear Energy. Until Vol.9(59) and From Vol.21(67) Note= JNE Part C Started With Vol.(59) Under the Name Plasma Physics Which,From Vol.9(67) Became An Independant Journal.
JNE/A	(Reactor Science = J.Nucl.Energy,Part A) From Vol.10(1959) To Vol.13(1961)
JP/C	(J.of Physics,Pt.C= Solid State Physics)
JPJ	(J.Phys.Soc.Jap.) Journal of the Physical Society of Japan
JPR	(J.Phys.(Paris)) Journal De Physique (Paris) Formerly J.Phys.Rad (Vol 1-23)
KAPL-	Knolls Atomic Power Lab.Report Series
KE	(Kernenergie) Kernenergie
KFI	(KFKI(Kozp.Fiz.Kut.Intez.)Kozlem.) KFKI(Kozponti Fizikai Kutato Intezet) Kozlemenyek
KFK-	Kernforschungszentrum Karlsruhe Report Series
KRI	(Kristallografiya) Kristallografiya (For English Translation See SPC)
LA-	Los Alamos Scientific Lab.Report Series
LAMS-	Los Alamos Reports, Extinct Sept. 1954
MC-	Nat L Res.Council of Canada, Montreal Labs
MET	(Metrologia) Metrologia
MLM-	Mound Lab. Miamisburg, Reports
MON-P-	Monsanto Report,U.S.
NAP	(Nucl.Appl.) Nuclear Applications
NAT	(Nature(London)) Nature
NB	Noble Gas Compounds
NC	(Nuovo Cimento) Nuovo Cimento Until Vol.39 No.4 Oct(1965)
NCS	(Nuovo Cimento Suppl.) Nuovo Cimento,Supplemento
NCSAC-	Usaec Nucl.Cross-Sections Advisory Committee
NEUTOF METH	Neutron Time-Of-Flight Method,Euratom Brussels
NEU DIFF	Neutron Diffraction,U.K.
NII	Proceeding National Institute of Science,India
NIM	(Nucl.Instrum.Methods) Nuclear Instruments and Methods (Formerly Nucl.Inst.)
NKA	(Nukleonika) Nukleonika
NP	(Nucl.Phys.) Nuclear Physics.Until Vol.89,Dec(66).
NP/A	(Nucl.Phys.A) Nuclear Physics,Section A. From Vol.90,Jan(67).
NRDC-	AERE-Harwell Report Series
NS	I.E.E.E. Translation-Nuclear Science,U.S.
NSA	(Nucl.Sci.Abstr.) Nuclear Science Abstract
NSE	(Nucl.Sci.Eng.) Nuclear Science and Engineering
NST	(Nucl.Sci.Technol.)Journal of Nuclear Science and Technology
NUC	(Nucleonics) Nucleonics
NUK	(Nukleonik) Nukleonik
NWS	(Naturwissenschaften) Naturwissenschaften
NYO-72-	New York Operations Office Reports. Series 72
NYO-GEN72-	New York Operations Office Reports

ORNL-	Oak Ridge National Lab.Report Series
ORNL-CF-	Oak Ridge National Lab.,Central File Memos
ORNL-TM-	Oak Ridge National Lab, Technical Memos
PCH	Journal of Physical Chemistry,U.S.
PHY	(Physica(Utrecht)) Physica
PL	(Phys.Lett.) Physics Letters.Until Vol.23,Dec(66).
PL/A	(Phys.Lett.A) Physics Letters,Section A. From Vol.24,Jan(67).
PL/B	(Phys.Lett.B) Physics Letters,Section B. From Vol.24,Jan(67)
PM	(Phil.Mag.) Philosophical Magazine
PR.NUC.EN.	(Progress In Nucl.Energy) Progress In Nuclear Energy, Series 1,Physics and Maths Hughes,Sanders and Horowitz, 1958
PPS	(Proc.Phys.Soc.(London)) Proceedings of the Physical Society,London
PPS/A	(Proc.Phys.Soc.(London)) Proceedings of the Physical Society,London (Part A)
PR	(Phys.Rev.)Physical Review. Until Vol.132(63) and From Vol.141(66)
PR/CE	(Phys.Rev.)Physical Review.
PR/CM	(Phys.Rev.)Physical Review.
PR-CMA	(Phys.Rev.)Physical Review.
PR-P-	AECL-Reports. Use AECL- Numbers, Extinct
PR/A	(Phys.Rev.,Part A) Physical Review,Part A Existing Vol.133 Jan.1964 - Vol.140 Dec.1965
PR/B	(Phys.Rev.,Part B) Physical Review,Part B Existing Vol.133 Jan.1964 - Vol.140 Dec.1965
PR/C	(Phys.Rev.,Part C) Physical Review,Part C,Nuclear Physics. - Started With Vol.1(1970)
PRL	(Phys.Rev.Lett.) Physical Review Letters
PRS	(Proc.Roy.Soc.,London) Proceedings of the Royal Society,London
PRS/A	(Proc.Roy.Soc.,London) Proceedings of the Royal Society,London (Part A)
PS	(Physica Scripta) Started 1970
RANCHM.ST	Radiochemical Studies_ The Fission Products, McGraw-Hill, 1951
RCA	(Radiochim.Acta) Radiochimica Acta
RCN	Reactor Cent.Nederland,Petten,Report Series,Netherlands
RMP	(Rev.Mod.Phys.) Review of Modern Physics.
RPI-	Rensselaer Polytechnic Inst.Reports
RRP	(Rev.Roum.Phys.) Vol.1(1956) - Vol.8(1963)= Revue De Physique Vol.9(1964) Onwards = Revue Roumaine De Physique Vol.6(1961)Supplement is coded 61BUCHAR
RSI	(Rev.Sci.Instrum.) Review of Scientific Instruments
SCI	(Science) Science
SCP	(Sci.Pap.Inst.Phys.Chem.Res.,Tokyo) Scientific Papers of the Institute of Physical and Chemical Research.
SNP	(Sov.J.Nucl.Phys.) Soviet Journal of Nuclear Physics (English Translation of YF)
SPD	(Sov.Phys.-Dokl.) Soviet Physics-Doklady (English Translation of Dok)
TID-	Div.of Techn.Inf.,USAEC Reports
TNCC(UK)-	Tripartite Nucl.Cross-Sectns.Comm.Repts. Extinct
TRANS'.EL.	(Transuranium Elements) the Transuranium Elements National Nuclear Energy Series,Div.IV,Vol.14B 19
UCRL-	Lawrence Rad.Lab.(Both Berkeley and Livermore)
UFZ	(Ukr.Fiz.Zh.) Ukrains Kii Fizichnii Zhurnal (See UPJ for English Translation)
UJV-	Ustav Jad.Vyzkumu(Inst Nucl Res), Reports
WAPD-TM-	Westinghouse Atomic Power Div.(Bettis) Reports
YF	(Yad.Fiz.) Yadernaya Fizika(See SNP for Eng.Trans.)

ZAP	(Z.Angew.Phys.) Zeitschrift Fuer Angewandte Physik
ZET	(Zh.Eksp.Teor.Fiz.) Zhurnal Eksperimental Noi I Teoreticheskoi Fiziki (For Eng.Trans.see JET)
ZFK-	Zentral Inst.Kernphysik Rossendorf, Reports
ZFK-RN-	Zentral Inst.Kernphysik Rossendorf, Reports
ZK	(Z.Kristallogr,Kristallgeometrie,Kristallphys. Kristallchem.) Zeitschrift Fuer Kristallographie, Kristallgeometrie,Kristallphysik,Kristallchemie.
ZMP	(Z.Angew.Math.Phys.) Zeitschrift Fuer Angewandte Mathematik Und Physik
ZN	(Z.Naturforsch.) Zeitschrift Fuer Naturforschung Vol.1 (1946)
ZN/A	(Z.Naturforsch. A) Zeitschrift Fuer Naturforschung, Section A From Vol.2 (1947)
ZP	(Z.Phys.) Zeitschrift Fuer Physik
55GENEVA	(First Internat. At.En. Conf., Geneva 1955) First UN Conference on the Peaceful Uses of Atomic Energy. Geneva 8-20 Aug.1955.
55MOSCOW	(Peaceful Uses of At.En. Conf., Moscow 1955) Conference of the USSR Academy of Sciences On the Peaceful Uses of Atomic Energy. Moscow, USSR, July
57COLUMBIA	(Columbia Conference, New York, 1957)
58GENEVA	(Second Internat. At.En. Conf., Geneva 1958) Second UN Conference on the Peaceful Uses of Atomic Energy. Geneva, 1-13 Sep.1958.
60KINGSTON	(Nuclear Structure Conf., Kingston 1960) United Nations Conference On Nuclear Structure. Kingston, Canada, 29 Aug - 3 Sep 1960.
60VIENNA	(Pile Neutron Research Symp., Vienna 1960) IAEA Symposium On Pile Neutron Research In Physics IAEA, Vienna, 17-21 Oct 1960
61BUCHAR	(Research Reactors Conf., Bucuresti,1961) International Conference On Physics and Technique of Research Reactors Bucuresti, Romania, 10-17 Nov. 1961 Proceedings Published As Supplement To Revue De Physique Vol.6 (1961)
61DUBNA	(Slow Neutron Physics Conf., Dubna 1961) Conference On Slow Neutron Physics. Dubna, USSR, 7-12 Dec 1961.
61SACLAY	(Time of Flight Methods Conf., Saclay 1961) EANDC Conference On Time of Flight Methods. Saclay, France, 24-27 Jul 1961.
62WIEN	(Light Water Lattices Panel, Vienna 1962) Panel On Light Water Lattices. Vienna, Austria. May-June 1962. Published by IAEA in Vienna Nov 1962.
63ANL	(Nucl.Physics With Reactor Neutrons Conf.,Argonne 1963) International Conference On Nuclear Physics With Reactor Neutrons. Argonne, 15-17 Oct 1963. Published as ANL-6797.
63MANCHST	(Nuclear Physics Conference, Manchester 1963) Conference On Low and Medium Energy Nuclear Physics Manchester,U.K., September 1963.
64GENEVA	(Third Internat. At.En. Conf., Geneva 1964) Third UN Conference on The Peaceful Uses of Atomic Energy. Geneva, 31 Aug - 9 Sep 1964.
64PARIS	(Nuclear Physics Congress, Paris 1964) Congres International De Physique Nucleaire. Paris, 2-8 Jul 1964.
65ANTWERP	(Nuclear Structure Conf., Antwerp 1965) International Conference On the Study of Nuclear Structure. Antwerp, Belgium, 19-23 Jul 1965. Proceedings Give For Some Papers Abstract Only. For full papers see EANDC-50. For technical minutes see EANDC-44.

65KRLSRH (Pulsed Neutron Symp., Karlsruhe 1965) 1\ 14 May 1965.
IAEA Symposium on Pulsed Neutron Research, Karlsruhe.
Proceedings publ.by IAEA, Vienna, Aug.1965.
65SALZBURG (Physics and Chemistry of Fission Conf., Salzburg 1965)
IAEA Conference on The Physics and Chemistry of Fission
Salzburg, Austria, 22-26 Mar 1965.
Proceedings publ. by IAEA, Vienna July 1965.
66BERKELEY (Radiation Measurements Conf., Berkeley 1966)
CEGB Conference On Radiation Measurements In Nuclear
Power. Berkeley, UK, 12-16 Sept 1966.
66PARIS (Nuclear Data For Reactors Conf., Paris 1966)
IAEA Conference On Nuclear Data For Reactors.
Paris, France, 17 - 21 Oct 1966.
Published by IAEA in Vienna 1967.
66WASH (Neutron Cross-Section Techn. Conf., Washington
Conference On Neutron Cross-Section and Technology.
Washington D.C., 22-24 March 1966.
Published as AEC Report Conf-660303.
67JUELICH (Neutron Physics At Reactors Conf., Juelich 1967)
Neutron Physics At Research Reactors.
Juelich, Germany, 25-28 April 1967.
68WASH (Nuclear Cross-Sections Techn. Conf., Washington 1968)
2nd Conference On Nuclear Cross-Sections and Technology
Washington D.C., 4-7 March 1968.
Published as NBS Special Publication 299
69MONTRL (Nucl.Structure Conf, Montreal 1969)
International Conference On Nuclear Structure
Montreal, Canada, 1969
69STUDSVIK (Neutron Capture Gamma-Ray Spectroscopy,Studsvik,1969)
International Symposium On Neutron Capture Gamma-Ray
Spectroscopy,Studsvik, Sweden, 11-15 Aug 1969.
Published by IAEA.
69VIENNA (Physics and Chemistry of Fission Symp., Vienna
Second IAEA Symposium On the Physics and Chemistry of
Fission, Vienna, 28 July - 1 Aug 1969
Proceedings published by IAEA.
70ANL (Neutron Standards Symp., Argonne 1970)
EANDC Symposium on Neutron Standards and Flux
Normalization, Argonne Nat'l Lab. 21-23 Oct 1970
Published by USAEC-DTIE in August 1971 as
AEC Symposium Series 23 (Conf-701002).
70HELSINKI (Nuclear Data For Reactors Conf., Helsinki 1970)
Second IAEA Conference on Nuclear Data For Reactors,
Helsinki, Finland, 15-19 June 1970.
71ALBANY (Radiation Voids Conf, Albany 1971)
International Conference On Radiation Induced Voids In
Metals. Albany, New York, USA, 9-11 June 1971.
Proceedings Published by USAEC in April 1972 as
AEC Symposium Series 26 (Conf-710601)
71CANT (Chemical Nucl.Data Conf.Canterbury 1971)
Conference on Chemical Nuclear Data.
Univ.of.Kent at Canterbury,UK,20 Sept. 1971
71KIEV (Neutron Physics Conf.,Kiev 1971)
Conference on neutron-physics,Kiev,USSR,21 May 1971
71KNOX (3rd Conf.Neutron Cross-Sections+tech.,Knoxville 1971)
3rd Conference On Neutron Cross-Sections and Technology
University of Tennessee, Knoxville, 15-17 March
72BUD (Nucl.Structure Conf.,Budapest 1972)
Conference On Nuclear Structure and Study With Neutrons
Budapest, Hungary, 31 July - 5 August 1972
73ASILOMAR International Conf. On Photonuclear Reactions
and Applications,26-30 March 1973.
Asilomar Conf. Grounds, Pacific Grove, Calif. USA
73ROCH (3.Physics +Chemistry of fission symp.,Rochester 1973)
3.IAEA symposium on the physics and chemistry of
fission, Rochester,NY,USA, 13 August 1973



Neutron Cross Section Data is collected, stored, and disseminated according to an International agreement involving 4 centers. Requests for Neutron Data should be directed to the center responsible for your geographical area.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
C	σ_c (130 ev)	ZN/A,26,442(71)	Dilg
C	σ_t	PR/C,3,1886(71)	Houk
C	gravity ref.	PRL,27,956(71)	Koester
C	diffraction	ACR/A,26,543(70)	Pryor
C	$\bar{\sigma}_s$	70HELSINKI,1,651(70)	Vertebnyi
C	σ_t	BAP,12,989(67)	Houk
C	refractometry	ZP,198,187(67)	Koester
C	σ_t (1.44 ev)	NP,61,381(65)	Rayburn
C^{12}	σ_γ(spectra)	ANL-6797,236(63)	Jurney
C^{13}	σ_γ(spectra)	PRIVATE COMM.(63)	Motz
C	pulsed n	JNE,17,347(63)	Sagot
C	neutron lifetime	BNL-719,3,1034(62)	Starr
C^{13}	σ_γ(spectra)	ARN,11,259(61)	Bartholomew
C	reactivity	NSE,7,395(60)	Nichols
C	diffusion length	58GENEVA,12,695(58)	Hendrie
C	review	58GENEVA,16,8(58)	Hughes
C	pile osci.	AERE-R/R-2516(58)	Jowitt
C	pile osci.	PRIVATE COMM.(58)	Muehlhause
C	neutron lifetime	PRIVATE COMM.(58)	Wirtz
C^{13}	σ_γ(spectra)	PR-P-36,37(57)	Bartholomew
$C^{12,13}$	mass spectrometry	BNL-489,19(57)	Hennig
C	pile osci.	BNL-489,97(57)	Koechlin
C^{13}	mass spectrometry	PR,95,92(54)	Hennig
C,C^{13}	diffraction	PR,91,597(53)	Koehler
C	diffraction	PR,81,527(51)	Shull
$C^{12,13}$		ANL-4410(50)	Hennig
C^{14}	activation	PR,79,893(50)	Yaffe
C,C^{14}	compilation	AECD-2274(48)	Way
C	reflection	PR,71,666(47)	Fermi
C	σ_t	PR,70,815(46)	Anderson
C	σ_t	PR,59,489(41)	Hanstein
C	σ_t	PR,60,155(41)	Whitaker
C	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
C	σ_t	PR,49,453(36)	Mitchell
C	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
C^{12}	(d,p)	6293-7758	PR/C,7,663(73)	Goss
C^{13}	σ_t	153	BAP,18,96(73)+	Schrack
C^{12}	polarization	1860-4200	PRIVATE COMM.(72)	Firk
C^{13}	σ_γ	152	PR/C,3,1737(71)	Allen
$C^{12,13}$	compilation		NP/A,152,1(70)	Ajzenberg-Selove
C,C^{12}	σ_t	2091-3035	NIM,78,300(70)	Knowlen
C,C^{12}	σ_t	2820	BAP,15,567(70)	Schwartz
C^{12}	σ_t	100-1500	NSE,41,351(70)	Meadows
C^{12}	$\bar{\sigma}_s$	2000-6000	KFK-1189(70)	Nebe
C^{12}	σ_t	0.07-1500	70HELSINKI,1,191(70)	Uttley
C	σ_t	4935-7759	NP/A,134,361(69)	Davis
C^{12}	σ_t	2000-12000	68WASH,2,743(68)+	Cierjacks
C^{12}	σ_t	700-4000	68WASH,2,771(68)	Schwartz
C^{12}	$\bar{\sigma}_s$	3600-4250	PR,143,745(66)	Lister
C^{13}	$\sigma(\alpha,n)$	4070-5100	PR/B,140,616(65)	Barnes
C^{12}	analysis	2084	NCS,1,386(63)	Pisent
C^{12}	$\bar{\sigma}_s$	2080	NC,28,600(63)	Pisent
C^{12}	σ_t	3-660	NP,47,137(63)	Seth
C^{13}	σ_t	153-2454	PR,122,534(61)	Cohn
C^{12}	σ_t	3500-12100	PR,123,209(61)	Fossan
C^{12}	$\bar{\sigma}_s$	2080	AP,12,135(61)	Lane
C^{13}	diffraction	9800	ARN,11,303(61)	Wilkinson
C^{12}	inelastic sc	5000-10000	NP,14,295(60)	Hall
Be^9	$\sigma(\alpha,n)$	8120-12040	PR,114,571(59)	Gibbons
C^{13}	σ_t	1750-2450	BAP,3,18(58)	Willard
C^{12}	σ_t	2080-3670	PR,109,891(58)	Wills
C^{12}	σ_t	0.014-10	PR,104,1054(56)	Brugger
C^{13}	$\sigma(\alpha,n)$	3200-5110	PR,107,1065(57)	Walton
C,C^{12}	$\bar{\sigma}_s$	2080-3600	HPA,27,512(54)	Huber
C^{12}	$\bar{\sigma}_s$	2400-3650	HPA,27,577(54)	Meier
C^{12}	$\bar{\sigma}_s$	2080	NC,10,1607(53)	Ricamo
C^{12}	σ_t	2080-2950	PR,84,69(51)	Bockelman

$_{7}N$

THERMAL CROSS SECTIONS

σ_a = 1.85±0.05 b
$\bar{\sigma}_s$ = 10.6±0.5 b
σ_t = 12.5±0.5 b
a_{coh} = 9.38±0.03 fm

RESONANCE PROPERTIES

I_a = 0.90±0.05 b

$^{14}_{7}N$

THERMAL CROSS SECTIONS

σ_γ = 0.0750±0.0075 b
$\bar{\sigma}_s$ = 10.6±0.5 b
σ_p = 1.81±0.05 b
a_{coh} = 9.38±0.03 fm

RESONANCE PROPERTIES

I_γ^c = 0.90±0.05 b

RESONANCE PARAMETERS

$1^n = 1^\circ$ %Abn = 99.635 S_n = 10833.7±0.4 keV

E_0 (keV)	Γ (keV)	Γ_n (keV)	J	ℓ	Γ_p (keV)	Γ_α (keV)
-144 ± 1			3/2	0		
432 ± 5	3.5± 0.4		1/2	>0		
492.7± 0.7	7.8± 0.5	<3	1/2	1	6 ±2	
644 ± 3	43 ± 5	34 ± 4	1/2	0	9 ±3	
997 ± 3	46 ± 5	45 ± 5	3/2	0	.8 ± .3	
1116 ± 3	19 ± 3	19 ± 3	3/2	1	.20± .12	
1184 ± 2	<2	<2	1/2		<.1	
1211 ± 3	14 ± 2	14 ± 2	1/2	1	.[illegible] ± .2	.26
1351 ± 3	20 ± 4	19 ± 4	5/2	2	.8 ± .2	.4 ± .1
1405 ± 3	55 ± 8	42 ± 4	3/2	1	11 ±4	1.8 ± .6
1598 ± 3	22 ± 3	22 ± 3	5/2	1	.3 ± .1	<.1
1783 ± 4	40 ± 4	32 ± 5	5/2	2	.5 ± .2	7 ±2
2230 ± 4	65 ± 5	39 ±10	3/2	1	8 ±2	18 ±6
2470 ± 4	<3					
2523 ± 4	7 ± 2					
2710 ± 6	30 ±10		3/2	1		
2749 ± 8	80 ±20		5/2	2		
2958 ± 4	15 ± 4	11 ± 4	5/2	2	1.1 ± .4	3 ±1
3095 ± 5	50 ±10					
3213 ± 5	60 ± 5		3/2	*		
3510 ± 7	100					
3575 ± 7	30 ± 5		3/2	*		
3800	~2000	~1000			200	1000
4080 ±10	40 ±10					

E_0 (keV)	Γ (keV)	Γ_n (keV)	J	ℓ	Γ_p (keV)	Γ_α (keV)
4100 ±10	~300					
4380	40					
4600						
5030						
*5060						
5600	100					
5940						
*5950						
6160	75					
6260	110					
6550	170					
6940						
7160						
7340	120					
7480	180					
7920	170					
8000	120					

* Complex.

• Even parity.

THERMAL CROSS SECTIONS

σ_γ = 0.024±0.008 mb
a_{coh} = 6.5±0.2 fm

RESONANCE PARAMETERS

I^π = 1/2⁻ %Abn = 0.365 S_n = 2490.0±2.2 keV

E_0 (keV)	Γ (keV)	J	ℓ	E_0 (keV)	Γ (keV)	J	ℓ
921 ± 2	20 ± 5	1	1	4126	804 ± 20	3	2
1095 ± 2	3 ± 2	1	1	4270 ± 10	110 ± 20	[2]	
1583 ± 2	<2	1	[2]	4640 ± 10	>150	>1	
1944 ± 4	22 ± 7	1	1	4800 ± 10	30 ± 5	1	
2038 ± 6	60 ± 10	1	0	5055 ± 8	25 ± 5	3	
2370 ± 7	350 ± 50	1	2	5430 ± 8	25 ± 5	>3	
2399 ± 5	100 ± 10	2	1	5534 ± 10	<7	>0	
2650 ±100	1100 ±200	1	2	*5730 ± 10	160 ± 20	4	
2730 ± 5	40 ± 10	1	2	5910 ± 10	70 ± 20	>1	
2830 ± 7	12	3		6280 ± 10	20	>0	
2840 ± 70	714 ±100	2	2	6420 ± 15	<53	>0	
2915 ± 10	<4			6550	45	>0	
2930 ± 10	260 ± 30	1	3	6760			
3225 ± 10	<7			7100	110	>1	
3454 ± 10	24 ± 12	1	1	7310			
3750 ± 10	290 ± 30	1		7440	105	>1	
3987	88	[1]		7710	150	>1	

$^{15}_{7}N$

E_0 (keV)	Γ (keV)	J	ℓ	E_0 (keV)	Γ (keV)	J	ℓ
8070	30	>2		10250			
8300	175	>1		10640			
8770	130	>1		11090			
9610		>2		11410			
9770		>2		12100			

Note-Inelastic channel opens.

* Wigner limit for the width of 5730 keV level implies spin less than 5.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
N	refractrometer	PRIVATE COMM.(73)	Koester
N^{15}	diffraction	ACR/A,28,655(72)	Kuznietz
N	reflection	BAP,8,477(63)+	Bartolini
N	pile osci.	KE,6,335(63)	Huttel
N^{14}	σ_γ(spectra)	ANL-6797,236(63)	Jurney
N^{14}	σ_p	CJP,39,1784(61)	Hanna
N^{14}	σ_γ(spectra)	CJP,35,1347(57)	Bartholomew
N^{15}	activation	PR,87,215(52)	Ferguson
N	diffraction	PR,87,462(52)	Peterson
N^{14}	σ_p	JPR,12,65(51)	Cuer
N	diffraction	PR,83,88(51)	Goldschmidt
N^{14}	σ_γ(spectra)	CJP,29,1(51)	Kinsey
N	reflection	PR,84,969(51)	McReynolds
N	pile osci.	PR,83,641(51)	Pomerance
N	diffraction	PR,81,527(51)	Shull
N	pile osci.	PPS/A,63,1175(50)	Colmer
N^{14}	σ_p	AERE-N/R-370(49)	Batchelor
N^{14}	σ_p	PR,75,1358(49)	Coon
N	σ_c	PR,76,1750(49)	Melkonian
N	compilation	AECD-2274(48)	Way
N	σ_c	PR,60,702(41)	Carroll
N	water bath	PR,58,554(40)	Lapointe
N	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
N	σ_c	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
N^{15}	(d,p)	2400-2910	PL/B,39,323(72)	Lipperheide
N^{15}	σ_t	921-12100	NP/A,166,461(71)	Dover
N^{15}	$\bar{\sigma}_s$	800-3100	NP/A,166,461(71)	Dover
N^{15}	(d,p)	2400-2930	PL/B,37,285(71)	Fuchs
N^{15}	σ_t	921-12100	NP/A,166,443(71)	Zeitnitz
N^{15}	$\bar{\sigma}_s$	800-3100	NP/A,156,443(71)	Zeitnitz
N^{14}	compilation		NP/A,152,1(70)	Ajzenberg-Selove
N^{14}	σ_t	500-9000	NSE,42,28(70)+	Carlson
N^{14}	σ_t	2230-3570	68WASH,2,851(68)	Johnson
N^{15}	σ_t	3480-6250	PR,152,980(66)	Fossan
N^{14}	$\bar{\sigma}_s$	1662-3207	66WASH,2,653(66)	Fowler
N^{15}	(d,p)		NP,88,561(66)	Hewka
N^{14}	σ_t	2230-3570	BAP,11,808(66)+	Martin
N^{14}	σ_a	4000-6400	ZP,197,124(66)	Scobel
N^{15}	$\bar{\sigma}_s$	940	NP,54,49(64)	Donoghue
N^{15}	σ_t	930-2020	PR/B,135,1347(64)	Fossan
N^{14}	σ_p	493	PR,129,324(63)	Engelke
N^{15}	$\sigma_t\bar{\sigma}_s$	1960-3010	NP,32,470(62)	Sikkema
C^{13}	(p,n)	4740-11350	PR,119,1948(60)	Bair
N^{14}	$\bar{\sigma}_s$		NP,14,295(60)	Hall
N^{14}	inelastic	6260-8000	NP,14,295(60)	Hall
N^{15}	σ_t	1960-2950	PHY,26,379(60)	Sikkema
N^{14}	$\sigma_a\sigma_p$	1350-4610	NP,14,277(59)	Gabbard
N^{15}	σ_t	2960	HPA,32,357(59)	Schellenberg
B^{11}	$\sigma(\alpha,n)$	1784-4097	PR,102,1348(56)	Bonner
C^{14}	(p,n)	489-2250	PR,104,1434(56)	Sanders
N^{14}	$\bar{\sigma}_s$	1120-2250	PR,98,728(55)	Fowler
N,N^{14}	$\bar{\sigma}_s$	1110-2250	ORNL-1798,3(54)	Johnson
N^{14}	σ_t	1930-2700	HPA,26,451(53)	Meier
N^{14}	σ_t	430-1595	PR,86,483(52)	Hinchey
N,N^{14}	σ_t	433-1450	PR,84,775(51)	Johnson
C^{14}	(p,n)	434-1780	PR,83,1133(51)	Roseborough
N^{14}	σ_a	499-1415	PR,80,818(50)	Johnson
N^{14}	σ_p	1415-1800	PR,80,818(50)	Johnson

$_{8}O$

THERMAL CROSS SECTIONS

σ_γ = 0.270±0.025 mb
$\bar{\sigma}_s$ = 3.76±0.02 b
a_{coh} = 5.804±0.007 fm

RESONANCE PROPERTIES

I_γ^c = 0.31±0.04 mb

$^{16}_{8}O$

THERMAL CROSS SECTIONS

σ_γ = 0.178±0.025 mb

RESONANCE PROPERTIES

I_γ^c = 0.27±0.03 mb
S_1 0.9±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 99.756 S_n = 4142.4±0.9 keV

E_0 (keV)	Γ (keV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)	Γ_α (keV)
440 ± 4	45 ± 5	3/2	1	2.7±0.5		335	
1000 ± 5	96 ±10	3/2	2				
1312 ± 3	41.5± 3.0	3/2	1			110	
1651 ± 2	3.4± 0.3	7/2	3				
1689 ± 2	<1						
1833 ± 2	6.6± .7	3/2	2				
1907 ± 2	31.5± 2.0	1/2	1			31	
*2351 ± 5	130 ± 5	1/2	0		8.74± .33		
2888 ± 2	<1						
3006 ± 2	<1						
3211.1± 1.5	1.5± 0.2	5/2	3				.0027
3350 ±15	450 ±50	3/2	2				
3439.0± 1.5	.6± 0.2	5/2	2				.0032
3442.1± 1.5	0.9± 0.2	5/2	3				
3630 ±20	470 ±70	3/2	1			580	.08
3768 ± 3	18 ± 3	7/2	3				.01
4047 ± 8	81 ± 5	1/2	0		42.2 ±2.5		6.7
4090	264 ±30	1/2	1			151	14
4183 ± 5	73 ± 7	3/2	2				15
4289 ± 5	68	1/2	1			37	0.8
4319 ± 5	65 ± 5	3/2	1			71	4
4469 ± 3	13 ± 2	1/2	0		7.1 ±1.0		2.2
4530 ± 3	5.7± 0.7	5/2	2				.54
4600 ± 3	8 ± 3	7/2	4				7.6
4636 ± 3	5.3± 1.0	5/2	3				1.9
4835 ± 5	47 ± 4	3/2	1			48	1.8
5052 ± 5	90 ±10	3/2	2				9.7

$^{16}_{8}O$

E_0 (keV)	Γ (keV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)	Γ_α (keV)
5128 ± 4	25 ± 3	7/2	3				2.3
5314 ± 4	9 ± 2						
5371 ± 4	8 ± 2						
5630 ± 4	130 ±15	3/2	1			61	
5681 ± 4	16 ± 2	5/2	3				
5923 ± 5	25 ± 5						
5990 ±10	40 ± 5						
6076 ± 5	15 ± 2						
6090 ±15	5 ± 3						
6196 ±20	85 ±20						
6280 ±20	120 ±40						
6410 ± 5	45 ± 5						
6578 ±15	150						
6680 ±10	20 ± 4						
6807 ± 7	48 ± 6						
7200 ± 8	60 ±20						

Note-All widths are expressed in the center of mass system.

* The minimum for this s-wave resonance is 0.13 b.

$^{17}_{8}O$

THERMAL CROSS SECTIONS

σ_α = 0.235±0.010 b
a_{coh} = 5.78±0.15 fm

RESONANCE PROPERTIES

I_a^c = 0.105±0.010 b

RESONANCE PARAMETERS

$I^\pi = 5/2^+$ %Abn = 0.039 S_n = 8046.8±0.9 keV

E_0 (keV)	Γ (keV)	J	ℓ
176 ±4	1.0±0.8	2	0
250 ±4	8 ±1	3	1

$^{18}_{8}O$

THERMAL CROSS SECTIONS

σ_γ = 0.16±0.01 mb [27 sec [S09]]
a_{coh} = 6.00±0.13 fm

RESONANCE PROPERTIES

I_γ = 0.81±0.04 mb

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.205 S_n = 3956.9±2.5 keV

E_0 (keV)	Γ (keV)	J	ℓ	$g\Gamma_n^1$ (eV)	E_0 (keV)	Γ (keV)	J	ℓ	$g\Gamma_n^1$ (eV)
663 ± 5	55 ± 3	3/2	1	260	2375 ±10	130 ±20	1/2	1	106
1200 ± 8	50 ± 5	1/2	1	83	2445 ±10	20.3± 2.5	7/2	3	
1256 ±10	3.6± 1.0	3/2			3050	100	3/2	2	
1450 ±10	350	3/2	2		3200	250	1/2	1	166
1565 ±10	300 ±30	5/2	2		3500	100	1/2	1	63
1840 ±10	8.2± 1.5	3/2	1	17	4000	65	1/2	1	38
2300 ±10	200 ±40	3/2	2						

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
O^{18}	activation	JIN,33,1221(71)	Blaser
O	σ_t reflection (130 ev)	PL/B,36,208(71)	Dilg
O	reflection	PRIVATE COMM.(69)	Koester
O^{16}	σ_t	KFK-1000(68)+	Cierjacks
O^{16}	σ_t	68WASH,2,851(68)	Johnson
O^{17}	diffraction	AERE-R-5770(68)	Valentine
O^{18}	diffraction	HERE-R-5275(66)	O'Conner
O	σ_t	JNE,20,479(66)	Vertebnyi
O	reflection	PR/B,138,1116(65)	Donaldson
O	σ_t (1.44 ev)	NP,61,381(65)	Rayburn
O	reflection	BAP,8,477(63)+	Bartolini
O^{16}	σ_γ(spectra)	63ANL-6797,236(63)	Jurney
O	diffraction	ACR,15,351(62)	Roof
O^{17}	σ_α	CJP,39,1784(61)	Hanna
O^{17}	σ_α	PRIVATE COMM.(56)	Seppi
O	reflection	PR,90,497(53)	Hughes
O	diffraction	PR,81,527(51)	Shull
O	σ_t	PR,76,1750(49)	Melkonian
O^{17}	activation	CJR/A,25,77(47)	May
O^{20}	diffusion	CJR/A,25,134(47)	Sargent
O^{18}	activation	PR,72,888(47)	Seren
O	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
C^{13}	$\sigma(\alpha,n)$	3211-6680	PR/C,7,1356(73)	Bair
O^{18}	σ_t	1450-2375	PR/C,7,1270(73)	Donoghue
O^{16}	analysis	442-5610	PR/C,7,561(73)	Johnson
O^{18}	(d,p)	1560	PR/C,7,1267(73)	Wiza
O^{17}	compilation		NP/A,190,1(72)	Ajzenberg-Selove
O^{16}	σ_t	1651	ORNL-4743,39(72)	Collaway
O^{16}	σ_γ	426	PR/C,3,1737(71)	Allen
O^{16}	σ_t	650-4340	71KNOX,1179(71)	Fowler
O^{16}	$\bar{\sigma}_s$	1833-3441	PR/C,2,124(70)	Fowler
O^{16}	σ_t	3765-7200	NP/A,134,361(69)	Davis
O^{16}	σ_t	1651-3444	68WASH,2,851(68)	Johnson
O^{16}	$\bar{\sigma}_s$	3846-4320	PR,162,890(67)	Johnson
O^{16}	$\bar{\sigma}_s$	3769-4180	PR,162,890(67)	Johnson
O^{16}	σ_t	3769	PR,162,890(67)	Johnson
C^{13}	$\sigma(\alpha,n)$	4050-6290	PR,156,1187(67)	Sekharan
O^{16}	$\bar{\sigma}_s$	3290-4175	PR,143,745(66)	Lister
O^{18}	σ_t	2500-3470	NP,64,343(65)	Salisbury
O^{18}	σ_t	661-2445	NP,64,336(65)	Vaughn
O^{18}	$\bar{\sigma}_s$	666-2445	NP,54,33(64)	Donoghue
O^{18}	σ_γ	660	BAP,9,20(64)	Vaughn
O^{16}	analysis	442-1318	NCS,1,386(63)	Pisent
O^{16}	$\bar{\sigma}_s$	442-1318	NC,28,600(63)	Pisent
O^{16}	σ_t	3440-11500	PR,123,209(61)	Fossan
O^{16}	$\bar{\sigma}_s$	442-1660	AP,12,135(61)	Lane
O^{16}	inelastic sc	6830-9340	NP,14,295(60)	Hall
O^{16}	σ_α	5060-8610	BAP,5,109(60)	Worley
O^{18}	σ_t	3050-4000	HPA,32,357(59)	Schellenberg
O^{16}	$\bar{\sigma}_s$	1000	PR,109,89(58)	Fowler
O^{16}	σ_t	442-1312	NP,6,188(58)	Striebel
O^{16}	σ_t	3200-5110	PR,107,1065(57)	Walton
O^{16}	(d,p)	437-1910	PR,108,1007(57)	Browne
C^{13}	$\sigma(\alpha,n)$	3210-4290	PPS/A,69,830(56)	Rusbridge
O^{16}	$\sigma_t \bar{\sigma}_s$	442	PR,99,55(55)	Okazaki
O^{16}	$\bar{\sigma}_s$	435-1311	PR,92,1491(53)	Adair
O^{16}	$\bar{\sigma}_s$	1900-4400	HPA,25,142(52)	Baldinger
O^{16}	$\bar{\sigma}_s$	1900-4400	PR,84,1058(51)	Baldinger
O^{16}	σ_t	440-2370	PR,84,69(51)	Bockelman
O^{16}	σ_t	440-1300	PR,80,1011(50)	Bockelman
O^{16}	σ_t	440	PR,75,1124(49)	Adair

THERMAL CROSS SECTIONS

σ_γ = 9.5±0.7 mb
$\bar{\sigma}_s$ = 4.0±0.1 b
σ_t = 4.0±0.1 b
a_{coh} = 5.64±0.04 fm

RESONANCE PROPERTIES

I_γ^c = 17.6±3.0 mb
R' = 6.0±0.2 fm

RESONANCE PARAMETERS

I^π = 1/2+ %Abn = 100 S_n = 6601.1±0.3 keV

E_0 (keV)	Γ (keV)	$2g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
27.02± 0.07	0.37± 0.04	.925± .100	2	1	1.3±0.2		157
49.10± 0.17	1.4 ± 0.2	2.100± .300	1	1	1.6±0.2		150
97.0 ± 0.5	13 ± 3	19.500± 4.500	1	1	4.2±1.8		512
[b]173.5 ± 1.0		0.70 ± 0.20					
269 ± 1	10 ± 2		(2)	(1)	3.5± .8		
[a]270 ± 1	25 ±10	37.5 ±15.0	1	0	4.2±1.0	72.2±20.9	
311 ± 1			[0]		2.6±1.3		
349							
357							
368							
387 ± 1	7 ± 2	16.5 ± 3.0	(1)		2.4±0.8		
423 ± 2	25 ±15		0		2.4±0.8		
491 ± 2	25 ±15		[1]		3.3±1.0		
595 ± 2	11 ± 2		2		6.3±1.2		
747 ± 3	35 ± 7		1		2.4±0.8		
794	20 ± 4		1				
852 ± 4	15 ± 5		[2]		1.5±0.5		
932 ± 5	50 ±15		(1)		1.7±0.5		
1107 ± 6	60 ±20		2		2.2±0.7		
1295 ±12	70 ±20		(1)		8.6		
1640 ±15	190 ±20		1		11 ±3		
[a]1645	15						
[a]1916	28						
[a]2240	45						
[a]2465	75						
[a]3075	120						

E_0 (keV)	Γ (keV)	$2g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
[a]3215	80						
[a]3400	35						
[a]3475	<30						
[a]3620	120						
[a]4240	90						
[a]4620	200						
[a]4900	<50						

Note-There is no recent evidence for the previously reported peak at 15.3 keV.

Note-The resonance at 270 keV accounts for the thermal absorption cross section.

[a] Possibly doublet.

[a] Prominent inelastic peaks.

[b] Inelastic channel opens at 110 keV.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
F^{19}	reflection	PRIVATE COMM.(71)	Koester
F^{19}	reflection	PR,174,313(68)	Bartolini
F^{19}	reflection	BAP,8,477(63)+	Bartolini
F^{19}	activation	PR,129,1281(63)	Glickstein
F^{19}	activation	PR,130,2599(63)	Glickstein
F^{19}	diffraction	PR,81,527(51)	Shull
F^{19}	σ_t (100,300 ev)	PR,76,100(49)	Hibdon
F^{19}	activation	PR,72,888(47)	Seren
F^{19}	activation	PR,59,102(41)	O'Neal
F^{19}	water bath	PR,58,554(40)	Lapointe
F^{19}	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
F^{19}	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
F^{19}	σ_γ	27.07-4900	PR/C,7,1766(73)+	Macklin
F^{19}	σ_γ	23-1460	BAP,17,900(72)	Macklin
F^{19}	σ_γ	27-48	PS,4,95(71)	Nystroem
F^{19}	σ_t	27-97	71ALBANY,81(71)	Singh
F^{19}	Inelast. Sc	140-3140	70HELSINKI,2,295(70)	Broder
F^{19}	σ_γ	26.5-92	BAP,12,512(67)+	Block
F^{19}	σ_γ(spectra)	27-50	PR,158,1049(67)	Bergqvist
F^{19}	σ_t	497-1107	CEA-R-3279(67)	Cabe
F^{19}	polarization	thermal	YF,6,657(67)	Gul'ko
F^{19}	σ_γ(spectra)	27-49	PR/B,138,20(65)	Bird
F^{19}	σ_t	27.03-528.0	65ANTWERP,74(65)	Garg
F^{19}	σ_t	15-268	PR/B,133,353(64)	Hibdon
F^{19}	σ_γ	15-40	NP,43,353(63)	Macklin
F^{19}	σ_α	3850-7800	NP,27,448(61)	Davis
F^{19}	σ_t	27.5-425	AP,14,365(61)	Newson
F^{19}	σ_α	3750-5900	PR,117,514(60)	Smith
F^{19}	σ_γ	27-1635	PR,114,201(59)	Gabbard
F^{19}	σ_t	27-49	AP,8,194(59)	Merzbacher
F^{19}	$\bar{\sigma}_s$	27-99	PR,109,1620(58)	Block
F^{19}	σ_t	510-3610	PR,109,891(58)+	Wills
F^{19}	(d,p)	30-630	PPS/A,69,221(56)	El Bedewi
F^{19}	Inelast. Sc	100-1000	PR,99,1446(55)	Freeman
F^{19}	σ_α	3400-5900	PR,100,69(55)	Marion
F^{19}	σ_t	10-700	PR,80,1011(50)	Bockelman

$_{10}$Ne

THERMAL CROSS SECTIONS

σ_γ = 0.038±0.006 b
$\bar{\sigma}_s$ = 2.42±0.01 b
a_{coh} = 4.5±0.1 fm

$^{20}_{10}$Ne

THERMAL CROSS SECTIONS

σ_γ = 37±4 mb

RESONANCE PROPERTIES

<D> = 100±15 keV
S_1 = 0.7±0.4

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 90.5 S_n = 6761.2±1.0 keV

E_0 (keV)	Γ (keV)	J	ℓ	Γ_n^0 (eV)	$g\Gamma_n^1$ (eV)
473 ± 3	107 ± 6	1/2	0	156 ±9	
910 ±10	14 ± 4	3/2	1		68
1280 ±10	6 ± 2	3/2	1		20
1310 ±10	32 ± 6	1/2	1		53
1370 ±10	8 ± 3	3/2	2		
1620 ±10	27 ± 5	3/2	1		74
1680 ±10	10 ± 3	3/2	2		
1849 ± 2	6				
1930 ±10	38 ± 7	3/2	2		
2009 ±10	54 ± 6	3/2	1		120
2121 ± 5	50 ± 6	3/2	1		106
*2139 ± 5	<5				
*2189 ± 5	10				
*2206 ± 5	7				
*2274 ± 5	5				
*2338 ± 5	2.5				
2455 ±10	100				
2570 ± 5	10				
*2631 ± 5	15				
*2665 ± 5	10				
2737 ± 5	30				
*2831 ±10	35				
2885 ± 5	45 ± 5				
*2893 ± 5	20				
*3030 ±10	30				
*3057 ±20	~5				
*3082 ±10	10				
*3111 ±10	10				
3187 ± 3	10				
*3227 ±10	50				
3290 ±10	48 ± 6				

$^{20}_{10}Ne$

E_0 (keV)	Γ (keV)	J	ℓ	Γ^0_n (eV)	$g\Gamma^1_n$ (eV)
*3329 ±10	15				
*3481 ±10	<5				
3518 ±10	40 ± 5				
3598 ±10	20 ±10				
3710 ±10	73 ±10				
*3762 ±20	~5				
3804 ±10	45				
3870 ±10	55				
*4051 ±10	65				
4155 ±10	40 ±10				
*4287 ±10	20				
4322 ±10	30 ±10				
*4377 ±10	35				
*4513 ±10	~5				
*4537 ±10	<5				
*4543 ±20	(100)				
4628 ±10	30 ± 5				
*4671 ±15	25				
*4757 ±10	30				
*4867 ±10	55				
*4970 ±20	15				
*5002 ±15	55				
*5095 ±15	30				

* Data from charged particle reactions.

THERMAL CROSS SECTIONS

σ_γ = 0.092±0.114 b
σ_s = 5.1±0.3 b
σ_a < 1.5 b

RESONANCE PARAMETERS

I^π = 3/2^+ X(Ne) = 0.27 S_n = 10365.6±1.0 keV

E_0 (keV)	Γ (keV)	J	Γ_n (eV)	E_0 (keV)	Γ (keV)	J	Γ_n (eV)
*261 ±3	6			*1630	30 ±15	(1)	710
*402 ±3	6			*1755	70	(1)	5000
*511 ±3	6			*1770	10	(1)	500
*580 ±3	24			*2010	80	(1)	8700
*866 ±3	7			*2110	80	(1)	8900
*942 ±5	12			*2205	15	(1)	~440
*1119 ±8	40			*2310	~20	(1)	~1700
*1150 ±3	<3			*2350	30	(1)	3700
*1269 ±5	18			*2560	45	(1)	5800
*1382 ±5	9	(1)	540	*2625	45	(1)	~6000
*1459	14	(1)	2200	*2780	50	(1)	10000
*1592	13	(1)	2400				

* Data from charged particle reactions.

$^{22}_{10}Ne$

THERMAL CROSS SECTIONS

σ_γ = 0.048±0.005 b
σ_s = 1.705±0.009 b

RESONANCE PARAMETERS

I^π = 0⁺ | Z/Abn = 9.2 | S_n = 5200.2±2.0 keV

E_0 (keV)	Γ (keV)	J	ℓ	Γ_n^0 (eV)	E_0 (keV)	Γ (keV)	J	ℓ	Γ_n^0 (eV)
319	50	1/2	0	88.5	2190				
522	125	1/2	0	172	2320	160	3/2	1	
685					2320	160	3/2	2	
1195					2530	<30			
1310					2720	90			
1715					2870				
1855					3100				
2010	<20				3200				
2140					3443				

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Ne^{20,21,22}$	σ_γ(spectra)	AKE,17,145(71)	Bellman
$Ne^{20,22}$	σ_γ(spectra)	PS,2,169(70)	Selin
Ne	σ_t	NP/A,133,410(69)	Rorer
$Ne^{20,22}$	σ_γ(spectra) ratio	NF,35,423(68)	Jonsson
Ne^{21}	σ_a	ANL-7310,19(67)	Bennett
Ne,$Ne^{21,22}$	$\bar{\sigma}_a$	PR,148,1303(66)	Krohn
Ne	σ_t	JPR,24,21(63)	Genin
Ne^{20}	σ_γ(spectra)	PRIVATE COMM.(63)	Motz
Ne^{20}	σ_γ(spectra)	BAP,8,335(63)+	Motz
Ne	σ_t	GOVIENNA,219(62)	Genin
Ne^{21}	σ_a	ZET,41,1023(61)	Abramov
Ne	pile osci.	CR,252,3973(61)	Carre
Ne	pile osci.	CR,251,691(60)	Genin
Ne	σ_t	ZN/A,15,828(60)	Springer
Ne	σ_t diffraction	PR,111,1470(58)	Henshaw
Ne^{22}	activation	PR,87,215(52)	Ferguson
Ne	$\bar{\sigma}_s$	PR,80,20(50)	Harris
Ne	compilation	AECD-2274(48)	Way

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
O^{17}	σ_a	1849-5095	PR/C,7,1356(73)	Bair
O^{18}	σ_a	261-1382	PR/C,7,1356(73)	Bair
Ne^{22}	σ_t	319-522	PRIVATE COMM.(72)	Fossan
Ne,Ne^{20}	σ_t	3184-6552	NP/A,134,361(69)	Davis
Ne^{22}	σ_t	200-2100	BAP,11,28(66)	Salisbury
O^{18}	σ_a	1383-3629	PR,128,299(62)	Bair
Ne	σ_a	6310-10700	NP,31,166(62)	Shamu
Ne,Ne^{20}	σ_t	500-675	PR,118,683(60)	Vaughn
Ne,Ne^{20}	σ_a	2890-6930	NP,14,270(59)	Bell
Ne,Ne^{20}	$\sigma_t\bar{\sigma}_a$	910-2000	PR,114,194(59)	Cohn
Ne,Ne^{20}	$\sigma_t\bar{\sigma}_s$	910-1850	ORNL-2501,20(58)	Cohn
Ne^{22}	σ_t	2010-3430	NP,5,351(58)	Sikkema
Ne,Ne^{20}	σ_t	1940-3370	NP,3,375(57)	Sikkema

$^{22}_{11}Na$

[2.601 yr]

THERMAL CROSS SECTIONS

σ_γ =(2.9±0.1)×10^{9} b

RESONANCE PROPERTIES

I_γ =(16.0±2.1)×10^{9} b

THERMAL CROSS SECTIONS

σ_γ = 400±30 mb (20 ms $^{24}Na^m$)
σ_γ = 530±5 mb
σ_s = 3.2±0.2 b
σ_c = 3.7±0.2 b
a_{coh} = 3.63±0.02 fm

RESONANCE PROPERTIES

I_γ = 311±10 mb
R' = 5.7±0.2 fm
<D> = 30±6 keV

RESONANCE PARAMETERS

I^π = 3/2⁺ | Z/Abn = 100 | S_n = 6959.3±0.4 keV

E_0 (keV)	Γ (keV)	$2g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
2.850±0.015	0.411±0.013	0.308 ± 0.010	1	0	0.38 ±0.04	5.77 ± .19	
7.53 ±0.020					*.0098± .0002		
35.4 ±0.1		0.00096± .00020	3	1	*.788 ±0.096	.0051±0.0010	0.05
53.15 ±0.03	1.200±0.065	1.500 ± 0.080	2	1	1.58 ±0.31	6.51 ±0.35	45.0
114.7 ±0.4					*3.0 ±0.7		
125.5 ±0.5					*0.58 ±0.14		
139.1 ±0.5					*1.42 ±0.36		
199.0 ±1.0	4.5 ±0.5	3.4 ± 0.4	1	0		7.7 ±0.9	
212.5 ±1.3	15.0 ±3.1	3.8 ± 0.8	0	1		8.2 ±0.2	17.3
238.0 ±1.5	3.9 ±0.7	2.9 ± 0.5	1	0		6.0 ±1.0	
298.5 ±1.0	1.9 ±0.4	2.4 ± 0.5	2	0		4.4 ±0.9	
303.8 ±1.0	25.8 ±2.6	19.1 ± 2.0	1	1		30.4 ±3.2	41.6
431.2 ±1.0	7.8 ±0.7	1.9 ± 0.2	0	1		2.9 ±0.3	3.8
448.4	5.7 ±1.1	7.1 ± 1.4	2	2			
536.6 ±1.5	35.3 ±4.0	26.5 ± 3.0	1	0		36.2 ±4.1	
597.8 ±1.5	25.8 ±2.6	19.4 ± 2.0	1	[1]		25.1 ±2.6	26.9
697.2	60 ±6	135 ±14	[4]	[2]			
726.6	45 ±5	79 ± 8	[3]	[1]		92.7 ±9.4	90.0
780.5 ±2.0	43.6 ±4.4	98.1 ± 9.8	[4]	[2]			
911.2 ±2.0	40.1 ±4.0	70.2 ± 7.0	[3]	[2]			
985.1 ±2.0	27.2 ±3.0	20.4 ± 2.2	[2]	[2]			

Note-Previously reported resonances in the energy region 74.2-87.8 keV are due to impurities, probably Fe-56.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Na^{22}	activation	NYO-3417-19,2(72)	Fishman
Na^{23}	Christiansen filter	ZN/A,27,901(72)	Koester
Na^{22}	activation	JNE,26,403(72)	Werner
Na^{23}	activation	JNE,24,35(70)	Ryves
Na^{23}	activation	JNE,24,419(70)	Ryves
Na^{22}	depletion (0.5ev)	JIN,29,593(67)	Sims
Na^{23}	activation	DA/B,27,919(66)	Kappe
Na^{23}	activation	NUK,8,437(63)	Jozefowicz
Na^{23}	activation	ADP,12,225(63)	Alexander
Na^{23}	activation	ZN/A,18,1339(63)-	Brezhneva
Na^{22}	depletion	PHY,29,1196(63)	Farinelli
Na^{23}	activation	ZN/A,18,1339(63)	Koehler
Na^{23}	pulsed n	NSE,9,132(61)	Meadows
Na^{23}	activation	NUK,2,255(61)	Wolf
Na^{23}	activation	NSE,8,378(60)-	Brooksbank
Na^{23}	pile osci.	PNE,3,342(59)	Rose
Na^{23}	pile osci.	BMI-1262(58)	Anno
Na^{23}	pile osci.	AERE-R/R-2516(58)	Jowitt
Na^{23}	activation	AE,3,334(57)	Sakharov
Na^{23}	activation	JNE,3,70(56)	Cocking
Na^{23}	activation	AERE-NP/R-1894(56)	Cocking
Na^{23}	activation	JNE,1,231(55)	Grimeland
Na^{23}	activation	55GENEVA,2,39(55)	Groshev
Na^{23}	σ_t	PR,99,610(55)	Joki
Na^{23}	activation	CJC,31,204(53)	Bartholomew
Na^{23}	pile osci.	ANL-5031,68(53)	Harris
Na^{23}	pile osci.	AERE-R/R-961(52)	Littler
Na^{23}	local osci.	PR,83,641(51)	Pomerance
Na^{23}	diffraction	PR,81,527(51)	Shull
Na^{23}	pile osci.	PPS/A,63,1175(50)	Colmer
Na^{23}	pile osci.	PR,80,342(50)	Harris
Na^{23}	$\bar{\sigma}_s$	PR,71,666(47)	Fermi
Na^{23}	activation	PR,72,888(47)	Seren
Na^{23}	water bath	PR,58,554(40)	Lapointe
Na^{23}	$\bar{\sigma}_s$	SCP,36,153(39)	Kimura
Na^{23}	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Na^{23}	σ_t	2.85-298.1	PRIVATE COMM.(73)	Rahn
Na^{23}	σ_t	53.15-298.5	NSE,51,119(73)	Wynchank
Na^{23}	σ_γ	thermal	RCN-175(72)	Kopecky
Na^{23}	σ_γ(spectra)	THERM.-2.85	BAP,16,15(71)	Chrien
Na^{23}	σ_γ	2.85	NSE,41.445(70)	Yamamuro
Na^{23}	σ_t	298.4-985.1	70HELSINKI,2,745(70)	Nebe
Na^{23}	σ_t	299.5-778.0	PL/B,29,417(69)	Cierjacks
Na^{23}	σ_γ	2.85-139.1	PR,178,1746(69)	Hockenbury
Na^{23}	σ_γ	2.85	68WASH,2,695(68)	Friesenhahn
Na^{23}	σ_γ(spectra)	thermal	68WASH,2,675(68)	Wasson
Na^{23}	σ_γ(spectra)	35-55	PR,158,1049(67)	Bergqvist
Na^{23}	$\sigma_t\sigma_\gamma$	2.86-54	66PARIS,1,129(66)	Moxon
Na^{23}	σ_t	35-117	66PARIS,1,119(66)	Ribon
Na^{23}	σ_γ	35-55	JNE,20,67(66)	Rigoleur
Na^{23}	σ_t	2.85-450	65ANTWERP,74(65)	Garg
Na^{23}	σ_t	629.8-857.5	PR,124,500(61)	Hibdon
Na^{23}	σ_t	350-630	PR,122,1235(61)	Hibdon
Na^{23}	σ_t	2.95-346	PR,118,514(60)	Hibdon
Na^{23}	σ_t	53	AP,8,194(59)	Merzbacher
Na^{23}	$\bar{\sigma}_s$	2.80	PR,109,1217(58)	Block
Na^{23}	$\bar{\sigma}_s$	53	PR,109,1620(58)	Block
Na^{23}	σ_t	2.80	PR,109,926(58)	Good
Na^{23}	σ_t	2.85	NP,5,603(58)	Lynn
Na^{23}	σ_t	2.80-55	PR,85,595(52)	Hibdon
Na^{23}	σ_t	3.5	PPS/A,65,992(52)	Hodgson
Na^{23}	σ_t	120-1000	PR,88,1354(52)	Stelson
Na^{23}	σ_t	3.0	PR,27,730(50)	Hibdon
Na^{23}	σ_t	60-920	PR,75,1124(49)	Adair

$_{12}$Mg

THERMAL CROSS SECTIONS

σ_γ = 0.063±0.003 b
$\bar{\sigma}_s$ = 3.416±0.006 b
σ_t = 3.40±0.03 b
a_{coh} = 5.33±0.02 fm

RESONANCE PROPERTIES

I_γ = 0.038±0.004 b
R' = 5.4±0.3 fm

$^{24}_{12}$Mg

THERMAL CROSS SECTIONS

σ_γ = 0.052±0.007 b
$\bar{\sigma}_s{}^c$ = 3.8±0.4 b
$\sigma_t{}^c$ = 3.8±0.4 b
a_{coh} = 5.49±0.18 fm

RESONANCE PROPERTIES

$I_\gamma{}^c$ = 0.030±0.004 b
R' = 5.5±0.2 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 78.99 S_n = 7332.8±0.4 keV

E_0 (keV)	$g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^!$ (eV)
47 ± 1			2	*0.93±0.13	
83.0± 0.4	15.000±1.000	3/2	1	5.0 ±1.0	860
263 ± 2	78.000±5.000	1/2	1		870
430 ± 4	40.000±5.000	[1/2]	1		240
[a]471 ± 2		5/2	[2]		
665	26	1/2	0		
850	16	3/2	2		

* $g\Gamma_n\Gamma_\gamma/\Gamma$

[a] Resonance with isotopic spin = 3/2 observed in photoneutron and (d,p) reactions. e.g. Dehnhard and Yntema, Phys. Rev. 160,964,67.

$^{25}_{12}Mg$

THERMAL CROSS SECTIONS

σ_γ = 0.180±0.032 b
a_{coh} = 3.62±0.14 fm

RESONANCE PROPERTIES

I_γ^c = 0.111±0.020 b
R' = 5.2±0.3 fm

RESONANCE PARAMETERS

I^π = 5/2⁺ %Abn = 10.00 S_n = 11096.0±0.5 keV

E_0 (keV)	$2g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
19.98±0.05	1.925± .200	3	0	*2.1±0.4	13.6±1.4
80 ±1	10.000±2.500	2	0		35.3±8.8
105 ±2	8.335±1.670	2	0		25.7±5.1

* Calculated.

$^{26}_{12}Mg$

THERMAL CROSS SECTIONS

σ_γ = 0.0382±0.0008 b
$\bar{\sigma}_a^c$ = 3.0±0.3 b
σ_t^c = 3.0±0.3 b
a_{coh} = 4.85±0.15 fm

RESONANCE PROPERTIES

I_γ = 0.025±0.001 b
R' = 5.0±0.2 fm

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 11.01 S_n = 6446.3±0.9 keV

E_0 (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^1$ (eV)
300 ±4	>75.000	1/2	1	>510
505 ±5	68.000		1	170

$^{27}_{12}Mg$

[9.45 min]

THERMAL CROSS SECTIONS

σ_γ < 0.04 b [21.3 hr ^{28}Mg]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Mg	refractrometer	PRIVATE COMM.(73)	Koester
Mg	σ_t (1.25,5.2 ev)	PRIVATE COMM.(73)	Koester
$Mg^{24,25,26}$	diffraction	ACR/A,28,473(72)	Abul Khail
Mg^{26}	activation	JNE,24,35(70)	Ryves
$Mg^{24,25}$	σ_γ(spectra)	NP/A,150,305(70)	Selin
$Mg^{24,25,26}$	σ_γ(spectra)	NP/A,102,209(67)	Spilling
Mg	pile osci.	66PARIS,1,479(66)	Carre
Mg	pile osci.	CEA-R-2485(64)	Carre
Mg	pile osci.	KE,6,336(63)	Huttel
Mg	diffraction	63ANL-6797,393(63)	Mueller
Mg	diffraction	ACR,16,834(63)	Sabine
Mg	pile osci.	61BUCHAR,553(61)	Stefanescu
Mg	pile osci.	JNE,12,32(60)	Tattersall
Mg	pile osci.	58GENEVA,16,34(58)	Rose
Mg^{27}	double capture	PRIVATE COMM.(58)	Schuman
Mg	$\bar{\sigma}_s$	AERE-N/R-1165(57)	Egelstaff
Mg^{27}	double capture	CJC,35,176(57)	Roy
Mg^{26}	activation	PR,101,1524(56)	Lyon
Mg	diffraction	ACR,5,684(52)	Bacon
$Mg^{24,25,26}$	pile osci.	PR,88,412(52)	Pomerance
Mg	σ_t	PRS,212,192(52)	Squires
Mg	mirror reflections	CU-97,11(51)	Heindl
Mg	pile osci.	PR,83,641(51)	Pomerance
Mg	diffraction	PR,81,527(51)	Shull
Mg	pile osci.	PPS/A,63,1175(50)	Colmer
Mg^{26}	activation	PR,72,888(47)	Seren
Mg^{26}	activation	PR,59,102(41)	O'Neal
Mg	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Mg	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Mg^{24}	$\sigma_t \bar{\sigma}_s$	665-880	PRIVATE COMM.(73)	Cox
Mg^{24}	analysis	85	73ASILOMAR,2E6(73)	Mughabghab
Mg^{25}	$\sigma(\gamma,n)$	471	PR/C,6,2295(72)	Berman
$Mg^{24,25,26}$	$\sigma(\gamma,n)$	489-2168	PR/C,3,672(71)	Baglan
Mg,Mg^{24}	σ_γ	20-84	PS,4,95(71)	Nystroem
$Mg,Mg^{24,25,26}$	σ_t	19-505	PRIVATE COMM.(71)	Singh
Mg	σ_γ	47	69STUDSVIK,667(69)	Lundberg
Mg	σ_γ	46-82	BAP,12,512(67)+	Block
Mg	σ_γ(spectra)	50-84	PR,158,1049(67)	Bergqvist
Mg	σ_γ	20-450	PRIVATE COMM.(67)	Block
Mg	$\sigma_t \bar{\sigma}_s$	665-850	BAP,12,1186(67)	Cox
Mg	$\bar{\sigma}_s$	665-850	ANL-7210,5(66)	Cox
Mg,Mg^{24}	σ_p(spectra)	84	PL,18,323(65)	Bergquist
Mg	σ_t	20-505	65ANTWERP,74(65)	Garg
Mg^{24}	(d,p)	40-85	NP,34,404(62)	Middleton
Mg^{24}	σ_t	83-260	NP,8,211(59)	Newson
Mg^{25}	σ_t	21-105	NP,8,211(59)	Newson
Mg^{26}	σ_t	300	NP,8,211(59)	Newson
Mg	$\bar{\sigma}_s$	85	PR,109,1620(58)	Block
Mg,Mg^{24}	σ_t	85-430	PR,83,479(51)	Fields

THERMAL CROSS SECTIONS

σ_γ = 230±3 mb
σ_s = 1.49±0.03 b
σ_a = 1.72±0.03 b
r_{coh} = 3.449±0.009 fm

RESONANCE PROPERTIES

I_γ = 0.17±0.01 b
R' = 4.0±0.4 fm
$\langle D \rangle$ = 24±3 keV

RESONANCE PARAMETERS

I^π = 5/2⁺ $\qquad$ X_{Mn} = 100 $\qquad$ S_n = 7725.4±0.5 keV

E_0 (keV)	Γ (keV)	$2g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$2g\Gamma_n^1$ (eV)
Bound level				0			
5.903± 0.008		.005± .001	1	1	0.85±0.15		13
34.70 ± 0.10	3.24±0.32	2.70 ±0.27	2	0	2.0 ±0.3	14.5±1.5	
96.5 ± 0.4	11.3 ±1.1	13.2 ±1.3	3	1			640
119.8 ± 0.6	3.49±0.35	2.91 ±0.29	2	1			32
143.0 ± 0.8	15.14±1.51	17.66 ±1.76	3	1			430
159.0 ± 0.9	2.04±0.43	4.26 ±0.65	4	1			80
204.8 ± 1.3	4.26±0.65	3.55 ±0.54	2	1			53
208.1 ± 1.4	4.35±0.65	3.62 ±0.54	2	1			53
222.9 ± 0.4							
240.5 ± 1.6							
257.5 ± 1.8							
282.4 ± 2.1							
289 ± 2							
317 ± 2							
339 ± 3							
360 ± 3							
387 ± 3							
*432 ± 5							
500 ± 5							
*528.9 ± .8	9.5						
*537.1 ± .8							
*572.2 ± .8	14.5						
*589.1 ± .8	5.5						
*593.1 ± .8	1.1						

E_0 (keV)	Γ (keV)	$2g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$2g\Gamma_n^1$ (eV)
*603.1 ± .8							
*608.1 ± .8							
*625.0							
*649.3							
*652.7							
*707.5 ± .9	3.4						
*717.6 ± .9							
*727.5 ± .9							
*760.4 ± 0.9	8						
*767.8 ± .9							
*777.0 ± .9	5						
*787.7 ± 1.0							
*799.6 ± 1.0							
*829.0 ± 1.0							
*851.2 ± 1.2	5.5						
*859.2 ± 1.2	5.5						
*865.1							
*877.3	6.8						
*919.7	5.5						
*930.5	5.5						
*947.2							
*970.9							
*979.2							

* Doublet.

* Widths are estimates.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Al^{27}	σ_t	ZP,250,166(72)	Steyerl
Al^{27}	Moxon Rae	NP/A,169,95(71)	Cranston
Al^{27}	Christiansen filters	ZN/A,26,391(71)	Koester
Al^{27}	Moxon Rae	NIM,86,83(70)	Malik
Al^{27}	activation	JNE,24,35(70)	Ryves
Al^{27}	activation	JNE,24,419(70)	Ryves
Al^{27}	reactivity	AECL-3073(68)	Okazaki
Al^{27}	σ_t	NP,61,381(65)	Rayburn
Al^{27}	pile osci.	CEA-R-2485(64)	Carre
Al^{27}	pile osci.	PRIVATE COMM.(63)	Tattersall
Al^{27}	activation	PRIVATE COMM.(62)	Sher
Al^{27}	absorption	NUK,2,139(60)	Brose
Al^{27}	pile osci.	JAERI-1009(60)	Fukata
Al^{27}	pile osci.	SBGENEVA,16,34(58)	Rose
Al^{27}	pile osci.	PRIVATE COMM.(56)	Grimeland
Al^{27}	pile osci.	JPR,12,584(51)	Benoist
Al^{27}	pile osci.	PR,83,641(51)	Pomerance
Al^{27}	diffraction	PR,81,527(51)	Shull
Al^{27}	pile osci.	PPS/A,63,1175(50)	Colmer
Al^{27}	pile osci.	PR,80,342(50)	Harris
Al^{27}	$\bar{\sigma}_s$	PR,71,915(47)	Fermi
Al^{27}	activation	PR,72,888(47)	Seren
Al^{27}	activation	PR,59,102(41)	O'Neal

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Al^{27}	σ_t	5.907-646.9	NSE,51,119(73)	Wynchank
Al^{27}	σ_γ	35	PS,4,95(71)	Nystroem
Al^{27}	σ_t	5.9-208	71ALBANY,81(71)	Singh
Al^{27}	σ_γ	5.88-35.0	PR,178,1746(69)	Hockenbury
Al^{27}	σ_γ(spectra)	35-120	PR,158,1049(67)	Bergqvist
Al^{27}	σ_t	660-1174	CEA-R-3279(67)	Cabe
Al^{27}	σ_t	300-1500	NSE,26,500(66)	Chien
Al^{27}	σ_γ(spectra)	35	PL,18,323(65)	Bergqvist
Al^{27}	σ_t	5.9-387	CR-1860(64)	Garg
Al^{27}	σ_t	5.91-387	PRIVATE COMM.(64)	Garg
Al^{27}	σ_t	5.6-445	PR,114,179(59)	Hibdon
Al^{27}	σ_t	36	AP,8,194(59)	Merzbacher
Al^{27}	$\bar{\sigma}_s$	88	PR,109,1620(58)	Block
Al^{27}	σ_t	5.6	PR,109,926(58)	Good
Al^{27}	σ_t	35-90	PR,99,1625(55)	Toller
Al^{27}	σ_γ	6.4	PR,95,302(54)	Rohrer
Al^{27}	σ_γ	40-500	PR,80,145(50)	Henkel
Al^{27}	σ_t	295-795	PR,72,439(47)	Seagondollar

THERMAL CROSS SECTIONS

σ_γ = 0.16±0.02 b
σ_s = 2.2±0.1 b
σ_t = 2.4±0.1 b
a_{coh} = 4.1491±0.0010 fm

THERMAL CROSS SECTIONS

σ_γ = 0.17±0.03 b

RESONANCE PROPERTIES

1_γ^c = 0.078±0.005 b
R'^c = 4.2±0.2 fm
S_1 = 1.6±0.4

RESONANCE PARAMETERS

$I^\pi = 0^+$ ΣAbn = 92.2 S_n = 8474.2±0.5 keV

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
Bound level			1/2	0			
*4.980					*.006		
15.14					*.004		
15.29					*.052		
38.82					*.23		
*55.6 ± 0.2		1.5±0.3	1/2	0	.45	.64± .04	
*67.73				1	*1.64		
70.84					*.03		
*86.98					*.30		
*188.0 ± 2.0		56 ±7	1/2	0	13.8	12.9 ±1.6	
*298.7					*1.2		
*354.6					*1.04		
*400 ± 1			3/2	1	.45		
*533.2 ± .5	.53± .12		5/2	2	.8		
*566.2 ± .5	10.4 ± .7		3/2	1	4.0		86.1
*587.0 ± .5	.8 ± 0.3		1/2	1	3.3		3.2
*592.7 ± .5	0.4 ± 0.2		1/2	1			1.6
601.7					*4.1		
711.0					*1.39		
772.2					*4.0		
804.5					*8.9		
816.2 ± .5	27 ± 2		3/2	1	20.8		150.0
844.2 ± .5	2.5 ± 0.8		(5/2)	(2)	*7		
871.4 ± 1.0	<3.8				*17		
910.5 ± .5	3.0 ± .5		3/2	1	2.3 ± .5		15.1
966.7 ± 1.0	90 ±10		1/2	1	4.8 ±1.0		207.7
983 ± 2			3/2	1			
1016.0 ± .5	~1.0						

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
1041.7 ± .5	1.4 ± .4		(1/2)	1			3.0
1163.9 ± .8	3.3 ± .4		1/2	0		3.1 ± .4	
1186.0	1.8		1/2	0		1.6	
1203.7 ± .6	12 ± 3		3/2	1			49.3
1227 ± 5	<5.7						
1252.0 ± 2.0	7.0 ± 1.0		1/2	0		6.3 ± .9	
1264.0 ± .7	6 ± 4		(1/2)	1			10.5
1408.3 ± .8	8 ± 2		3/2	1			25.2
[b]1477.7 ± .9	5.5 ± .5						
[a]1510.4 ± 2.0							
[b]1527.5 ± 1.0	3.5 ± 0.7						
[b]1578.9 ± 1.0	2 ± 1						
1595.4 ± 1.0	17 ± 2		3/2	2			
1628.0 ± 4.0	20 ± 5		1/2	1			27.5
1636.0 ± 1.0	3.5 ± 1.5		5/2	2			
1650.0 ± 1.1	15 ± 2		5/2	2			
[a]1782.6 ± 2.4							
1803.5 ± 1.2	2.2 ± 1.0						
1850 ± 4	45 ±10		3/2	1			110
1858 ± 4	16 ± 5		5/2	(2)			
1926.4 ± 1.3							
1972.0 ± 1.4							

[a] $g\Gamma_n\Gamma_\gamma/\Gamma$

[a] Levels also observed in (d,p) reaction.

[b] P or D resonance.

$^{29}_{14}Si$

THERMAL CROSS SECTIONS

σ_γ = 0.28±0.09 b

RESONANCE PARAMETERS

I^π = 1/2⁺	%Abn = 4.7	S_n = 10609.7±0.6 keV
	E_0 (keV)	
	*15.29	
	*38.79	
	*159.6	
	*184.5	
	*336.7	
	*385.4	
	*553.2	
	*650.3	

* Preliminary data.

$^{30}_{14}Si$

THERMAL CROSS SECTIONS

σ_γ = 0.107±0.002 b

RESONANCE PROPERTIES

I_γ = 0.106±0.012 b

RESONANCE PARAMETERS

I^π = 0⁺	%Abn = 3.1	S_n = 6589.1±0.7 keV
	E_0 (keV)	
	*2.235	
	*4.98	
	*63.43	
	*185.8	
	*235.1	
	*302.7	
	*413.5	
	*644.4	
	*747.6	
	*849.9	

* Preliminary data.

$^{31}_{14}Si$

[2.62 hr]

THERMAL CROSS SECTIONS

σ_γ = 0.48±0.09 b [286 yr ^{32}Si]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Si	pendellosung	PRL,29,871(72)	Shull
Si	σ_t (130 ev)	ZN/A,26,442(71)	Dilg
Si	Christiansen filters	ZN/A,26,391(71)	Koester
Si^{30}	activation	JNE,24,35(70)	Ryves
Si^{32}	half-life	KE,10,89(67)	Jantsch
Si^{30}	activation	ZN/A,21,829(66)	Koehler
Si	σ_t (1.44 ev)	NP,61,381(65)	Rayburn
Si^{30}	activation	PRIVATE COMM.(62)	Sjoesstrand
Si^{30}	activation	JEA,108,171(61)	Tannenbaum
Si^{31}	2N capture	CJC,35,176(57)	Roy
Si^{30}	activation	PR,93,501(54)	Lyon
Si^{31}	2N capture	PR,94,364(54)	Turkevich
$Si^{28,29,30}$	pile osci.	PR,88,412(52)	Pomerance
Si	local osci.	PR,83,641(51)	Pomerance
Si	$\bar{\sigma}_s$	PR,83,379(51)	Weiss
Si	pile osci.	PPS/A,63,1175(50)	Colmer
Si	pile osci.	PR,80,1014(50)	Harris
Si^{30}	activation	PR,72,888(47)	Seren
Si^{30}	activation	PR,59,102(41)	O'Neal
Si	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Si,$Si^{28,29}$	σ_γ	4.98-1404	73ASILOMAR,2E2(73)	Allen
Si^{29}	σ_t	15.29-650.3	ORNL-4844,47(73)+	Good
Si^{30}	σ_t	2.235-849.9	ORNL-4844,47(73)+	Good
Si,Si^{28}	σ_t	1594-1854	72BUDAPEST,198(72)	Choi
Si^{29}	$\sigma(\gamma,n)$	404-1409	PRL,29,379(72)+	Jackson
Si	analysis	190-1854	71ALBANY,309(71)	Newson
Si,Si^{28}	σ_γ	38-68	PS,4,95(71)	Nystroem
Si	σ_t	190-1594	PRIVATE COMM.(71)	Pineo
Si	σ_t	533.2-566.2	BAP,16,495(71)+	Schwartz
Si,Si^{28}	σ_γ	68	69STUDSVIK,667(69)	Lundberg
Si	σ_γ	5.05-191	AERE-PR/NP-16,10(69)	Moxon
Si,Si^{28}	σ_t	536-804	PRIVATE COMM.(68)	Bardolle
Si,Si^{28}	σ_t	500-1971	KFK-1000(68)+	Cierjacks
Si,Si^{28}	σ_t	500-1200	CEA-R-3279(67)	Cabe
Si,Si^{28}	polarization	830-1045	BAP,12,1186(67)	Cox
Si^{28}	compilation	5	NP/A,105,1(67)	Endt
Si,Si^{28}	$\bar{\sigma}_s$	570-2280	EUR-2798E(66)	Copolla
Si,Si^{28}	$\bar{\sigma}_s$	840-2280	65ANTWERP,146(65)	Copolla
Si,Si^{28}	$\bar{\sigma}_s$	537-2050	AP,12,135(61)	Lane
Si^{28}	(d,p)	5-804	NP,19,164(60)	Browne
Si,Si^{28}	σ_t	55-188	AP,8,211(59)	Newson
Si,Si^{28}	σ_t	195-570	PR,83,479(51)	Fields

$^{31}_{15}P$

THERMAL CROSS SECTIONS

σ_γ = 0.180±0.007 b
a_{coh} = 5.11±0.01 fm

RESONANCE PROPERTIES

I_γ = 0.08±0.02 b

RESONANCE PARAMETERS

J^π = 1/2$^+$ %Abn = 100 S_n = 7936.3±0.7 keV

E_0 (keV)	$2g\Gamma_n$ (keV)
27 ±1	
158 ±2	1.1±0.2

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
P^{31}	activation	DA/B,27,919(66)	Kappe
P^{31}	activation	NKA,8,437(63)	Jozefowicz
P^{31}	diffraction	ARN,11,303(61)	Wilkinson
P^{31}	activation	JNE,1,231(55)	Grimeland
P^{31}	diffraction	PRS/A,220,397(53)	Bacon
P^{31}	diffraction	AECU-2277(52)	Levy
P^{31}	pile osci.	PR,83,641(51)	Pomerance
P^{31}	pile osci.	PPS/A,63,1175(50)	Colmer
P^{31}	activation	PR,72,888(47)	Seren
P^{31}	activation	PR,59,102(41)	O'Neal
P^{31}	$\bar{\sigma}_s$	SCP,36,153(39)	Kimura
P^{31}	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
P^{31}	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
P^{31}	σ_γ(spectra)	26.5	PS,4,95(71)	Nystroem
P^{31}	σ_γ(spectra)	27	69STUDSVIK,667(69)	Lundberg
P^{31}	σ_t	158	PRIVATE COMM.(57)	Patterson
P^{31}	σ_t	147	PR,99,1625(55)	Patterson

THERMAL CROSS SECTIONS

σ_γ = 0.520±0.030 b
$\bar{\sigma}_s$ = 0.975±0.006 b
a_{coh} = 2.850±0.001 fm

RESONANCE PROPERTIES

R′ = 4.1±0.2 fm

THERMAL CROSS SECTIONS

σ_γ = 0.53±0.04 b
σ_a = 0.004±0.001 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ | %Abn = 95.0 | S_n = 8646±1 keV

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
30.35±0.09	0.040± .003	0.080±0.006	3/2	1	0.4±0.1		9.5
42.0							
[a]96.6 ± .5							
102.9 ±0.6	16.98 ±1.70	16.98 ±1.70	1/2	0	4.7±0.5	52.9 ±5.3	
[a]111.4 ± .5							
202.2 ±1.5	1.30 ±0.20	1.30 ± .20	1/2	1			20.5
272.5 ±2.5	1.17 ±0.18	1.17 ± .18	1/2	1			124
288.7 ±2.8	1.14 ±0.17	1.14 ± .17	1/2	1			13.4
380.3 ±3.0	4.82 ±0.72	4.82 ±0.72	1/2	0		7.81±1.17	
587.3 ± .4	1.4 ±0.5	4.2 ±1.5	5/2	2			
649.2 ± .4	<1.2						
675.5 ± .5	<1.4						
700.5 ± .6	10 ±2		1/2	0		12.0 ±2.4	
725.8 ± .6	6 ±1						
741.6 ± .6	2 ±1						
779.0 ± .7	2 ±1						
783.3 ± .7							
819.0 ± .7	<1.3						
920.5 ± .8	3 ±1	3 ±1	1/2	0		3 ±1	
947.1 ± .8	1.9 ± .4						

[a] Narrow resonance.

THERMAL CROSS SECTIONS

σ_p = 0.002±0.001 b
σ_a = 0.140±0.030 b

RESONANCE PARAMETERS

I^π = 3/2⁺ %Abn = 0.75 S_n = 11414.9±1.9 keV

E_0 (keV)	E_0 (keV)	E_0 (keV)
*13.44	*59.06	*168.7
*17.63	*77.84	*178.3
*23.93	*81.46	*197.3
*30.37	*87.50	*221.7
*52.17	*101.2	*228.8
*53.54	*151.6	*238.4

* Preliminary values.

$^{34}_{16}S$

THERMAL CROSS SECTIONS

σ_γ = 0.240±0.010 b

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 4.2 S_n = 6988.1±1.5 keV

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)
118.5	0.5			>1	
301.3	8.0			>1	
317.6	1.5	1.5	1/2	1	
357.2	4.0	4.0	1/2	0	15
396.6	7.0	7.0	1/2	1	
435.7	0.8	1.6	3/2	1	
464.0±5	0.5			>1	
470.8±5	1.0	1.0	1/2	0	1.5
*510.2					
*642.5					
*800.6					
*814.5					
*839.5					
*851.0					
*893.7					
*935.8					
*1019					
*1089					
*1125					
*1193					
*1313					
*1352					
*1391					
*1450					

* Preliminary values.

$^{36}_{16}S$

THERMAL CROSS SECTIONS

σ_γ = 0.15±0.03 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
S	σ_t (1.25,5.2 ev)	PRIVATE COMM.(73)	Koester
S	σ_t diffraction	ZN/A,26,400(71)	Truestedt
S	mirror reflections	PRIVATE COMM.(70)	Koester
S	ratio	BAP,13,1421(68)	DeVolpi
S^{34}	activation	NUK,10,278(67)	Koehler
S	$\sigma_t \bar{\sigma}_s$	AKE,13,152(67)	Maayouf
$S^{32,33}$	alpha emission	DA/B,27,2077(66)	Harris
S^{34}	activation	DA/B,27,919(66)	Kappe
$S^{32,33}$	alpha emission	APP,28,763(65)	Benisz
S	pile osci.	61BUCHAR,623(61)	Bouzyk
S^{34}	activation	NCS,19,4(61)	Durham
$S^{32,33}$	alpha emission	ZP,153,106(58)	Munnich
$S^{32,33}$	$\sigma_p \sigma_\alpha$	THESIS(56)	Seppi
S^{33}	σ_p	PR,88,573(52)	Westermark
S	pile osci.	PR,83,641(51)	Pomerance
S	diffraction	PR,81,527(51)	Shull
S	pile osci.	PPS/A,63,1175(50)	Colmer
S	pile osci.	PR,80,342(50)	Harris
S^{34}	activation	PR,72,888(47)	Seren
S^{36}	activation	CP-3574,32(46)	Hughes
S	$\bar{\sigma}_s$	SCP,36,153(39)	Kimura
S	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
S^{34}	σ_t	30.37-1450	ORNL-4844,47(73)+	Good
S^{33}	σ_t	13.44-238.4	ORNL-4844,47(73)+	Good
S,S^{32}	σ_t	202.2-591.7	NSE,51,119(73)	Wynchank
S^{34}	σ_t	120-466	PRIVATE COMM.(71)	Bilpuch
S,S^{32}	σ_γ(spectra)	30-42	PS,4,95(71)	Nystroem
S,S^{32}	σ_t	30-377	PRIVATE COMM.(71)	Singh
S	σ_t	96.6-111.4	ORNL-4513,33(70)	Macklin
S,S^{32}	σ_γ(spectra)	30-42	69STUDSVIK,667(69)	Lundberg
S,S^{32}	σ_t	500-947	68WASH,2,743(68)+	Cierjacks
S	σ_γ	30-127	BAP,12,512(67)+	Block
S,S^{32}	σ_γ(spectra)	30-111	PR,158,1049(67)	Bergqvist
S,S^{32}	σ_γ(spectra)	30-111	PL,18,323(65)	Bergqvist
S,S^{32}	σ_t	30-465	65ANTWERP,74(65)	Garg
S,S^{32}	σ_γ	30	PR/B,136,695(64)	Macklin
S,S^{32}	$\bar{\sigma}_s$	590	AP,12,135(61)	Lane
S,S^{32}	σ_t	100-800	PR,79,593(50)	Peterson
S,S^{32}	σ_t	108-205	PR,76,308(49)	Adair

$_{17}$Cl

THERMAL CROSS SECTIONS

σ_γ = 33.2±0.5 b
a_{coh} = 9.605±0.003 fm

RESONANCE PROPERTIES

I_γ = 12±2 b

UNASSIGNED RESONANCES

E_0 (keV)	$2ag\Gamma_n$ (keV)
66.358	34 ±10
66.500	.0174± .006
90.25 ±.15	.012 ± .006
133.74 ±.27	.400 ± .100
134.95 ±.28	.100 ± .020
140.55 ±.29	.090 ± .020
149.63 ±.32	.100 ± .020
165.35 ±.38	.096 ± .020
179 ±.5	.300 ± .100

THERMAL CROSS SECTIONS

σ_γ = 43±2 b
σ_p = 0.490±0.020 b
σ_a = 0.08±0.04 mb

RESONANCE PROPERTIES

I_p = 0.369±0.015 b
I_γ = 17±2 b
<D> = 13±4 keV

RESONANCE PARAMETERS

I^π = 3/2⁺ %Abn = 75.77 S_n = 8580.5±0.9 keV

E_0 (keV)	$2g\Gamma_n$ (keV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)	Γ_p (eV)
-.18 ± .03		2	0	.50 ± .02	1.4 ±.3		.0024±.0008
0.398±0.001	.074 ± .004+3	2	1	0.420±0.057		5.0	.07 ±.03
1.1 ±0.1	.000001						
4.249±0.002	.0005 ± .00005		1			.97	.04 ±.02
14.788±0.015	0.038 ±0.002	1	0		.312±.016		
17.124±0.018	0.021 ±0.001		1			5.1	
26.60 ±0.03	0.130 ±0.010		[0]		.798±.006		
44.12 ±0.05	0.0276 ±0.008		[1]			1.7	
57.70 ±0.08	0.117 ±0.006	2	1			4.8	
*68.17 ± .10	.156 ± .008	1	0		.596±.046		
103.33 ±0.19	0.264 ±0.014						
113.30 ±0.21	0.600 ±0.080	2	1			9.3	
142.89 ±0.31	0.950 ± .132		1				
182.82 ±0.44	2.380 ±0.528		1			15.0	
188.07 ±0.45	1.188 ± .132	2					
190.32 ±0.46	0.792 ±0.106	1					
200 ±1	2.8 ±0.5						

* Isotopic assignment uncertain.

$^{36}_{17}Cl$

[3.0×10^5 yr]

THERMAL CROSS SECTIONS

σ_γ < 10 b

$^{37}_{17}Cl$

THERMAL CROSS SECTIONS

σ_γ = 0.428±0.005 b [37 min $^{38}Cl^{m+g}$]
σ_γ = 0.005±0.003 b [1 sec $^{38}Cl^{m}$]

RESONANCE PROPERTIES

I_γ = 0.310±0.060 b
<D> = 9±3 keV

RESONANCE PARAMETERS

I^π = 3/2$^+$ %Abn = 24.23 S_n = 6110.4±3.9 keV

E_0 (keV)	$2g\Gamma_n$ (keV)	J	ℓ	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
8.314±0.005	0.088 ±0.014		0	.96 ±.15	
*16.34 ± .01	.0200± .002		1		4.1
25.30 ±0.06	0.105 ±0.030	1	0	.66 ±.19	
46.61 ±0.06	0.455 ±0.017	2	0	2.110±.079	
54.7 ±0.09	.131 ± .013	2	0	.560±.056	
55.15 ±0.09	.141 ± .014	2	0	.600±.060	
*93.00 ± .16	.809 ± .066				
125 ±2	.230 ± .100				
*127.66 ± .26	.413 ± .080				
*136.22 ± .28	1.240 ± .250				
145 ±2	1.450 ± .400				
159 ±3	.340 ± .340				
180 ±4	1.100 ± .350				
193 ±4	.925 ± .350				
202 ±4	2.2				

* Isotopic assignment uncertain.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cl	mirror reflections	PRL,27,956(71)	Koester
Cl^{37}	activation	JNE,24,35(70)	Ryves
Cl^{37}	activation	JNE,24,419(70)	Ryves
Cl^{35}	$\sigma_\gamma\sigma_p$	JIN,31,3721(69)	Sims
Cl^{35}	σ_p	PR,165,1184(68)	Schroeder
Cl	diffraction	ZP,198,187(67)	Koester
$Cl^{35,37}$	activation	DA/B,27,919(66)	Kappe
Cl^{35}	σ_p	PRIVATE COMM.(66)	Koehler
$Cl^{35,36}$		ORNL-4013(65)	Gillette
Cl	σ_γ	PRIVATE COMM.(64)	Kay
Cl	σ_γ	NKA,8,443(63)	Bouzyk
$Cl^{35,37}$	$\sigma_p\sigma_\alpha$ activation	NCS,19,4(61)	Durham
Cl	σ_γ	BOS,24,7(61)	Ghose
Cl	σ_γ	NSE,9,132(61)	Meadows
Cl^{35}	σ_c	PR,104,1054(56)	Brugger
Cl^{35}	alpha emission	THESIS(56)	Seppi
$Cl^{35,36}$	σ_γ	CJP,33,35(55)	Boyd
Cl^{35}	proton emission	HPA,27,159(54)	Berthet
Cl^{37}	activation	PR,95,613(54)	Scharff-Goldhaber
Cl	σ_γ	CR,232,2089(51)	Grimeland
Cl	σ_γ	PR,83,641(51)	Pomerance
Cl	diffraction	PR,81,527(51)	Shull
Cl	σ_γ	PPS/A,63,1175(50)	Colmer
Cl	σ_γ	PR,80,342(50)	Harris
Cl^{35}	σ_p	ZN/A,4,150(49)	Maurer
$Cl^{35,37}$	σ_p activation	PR,72,888(47)	Seren
Cl^{35}	proton emission	CP-2984(45)	Hughes
Cl^{35}	proton emission	HPA,17,97(44)	Gibert
Cl^{35}	σ_p	CP-2638(44)	Langsdorf
Cl	σ_γ	JPJ,24,569(42)	Kimura
Cl^{37}	activation	PR,59,102(41)	O'Neal
Cl	σ_γ	PR,58,554(40)	Lapointe
Cl	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Cl,$Cl^{35,37}$	σ_t	0.4-190.7	BAP,18,96(73)+	Singh
Cl	σ_t	14.81-113.8	NSE,51,119(73)	Wynchank
Cl,$Cl^{35,37}$	σ_t	0.4-190.8	71ALBANY,81(71)	Singh
Cl,Cl^{35}	σ_γ(spectra)	0.4-500	NP/A,135,241(69)	Alves
Cl,$Cl^{35,37}$	σ_t	0.404-113.0	NP/A,134,118(69)	Alves
Cl,$Cl^{35,37}$	σ_t	0.404-113.0	NP/A,123,561(69)	Morgenstern
Cl,Cl^{35}	σ_γ(spectra)	0.4	UJV-1705(66)	Becvar
Cl,Cl^{35}	σ_γ(spectra)	thermal	NP,77,267(66)	Middelkoop
Cl	σ_t	0.398-406	65ANTWERP,74(65)	Garg
Cl,Cl^{35}	σ_t	0.405	65ANTWERP,192(65)	Karzhavina
Cl	σ_γ	thermal	YF,1,229(65)	Romanov
Cl,Cl^{35}	σ_γ	0.020-4.3	JNE,14,76(61)	Kashukeev
Cl,Cl^{35}	σ_p	THERM.-4.3	ZET,40,1610(61)	Popov
Cl^{35}	σ_t	15-184	PRIVATE COMM.(59)	Bilpuch
Cl^{37}	σ_t	8.5-193	PRIVATE COMM.(59)	Bilpuch
Cl^{35}	σ_t	15-202	PRIVATE COMM.(57)	Patterson
Cl^{37}	σ_t	8-202	PRIVATE COMM.(57)	Patterson
Cl,$Cl^{35,37}$	σ_t	0.03-8.7	PR,104,1054(56)	Brugger
Cl^{35}	σ_t	26.5-190	PR,99,620(55)	Toller
Cl^{37}	σ_t	8.8-190	PR,99,620(55)	Toller
Cl,Cl^{35}	σ_t	thermal	PR,79,44(50)	Hibdon

$_{18}Ar$

THERMAL CROSS SECTIONS

σ_γ = 0.678±0.009 b
$\bar{\sigma}_s$ = 0.644±0.004 b
σ_t = 1.32±0.01 b
a_{coh} = 2.0±0.2 fm

RESONANCE PROPERTIES

I_γ = 0.42±0.05 b

$^{36}_{18}Ar$

THERMAL CROSS SECTIONS

σ_γ = 5±1 b
$\bar{\sigma}_s$ = 73.7±0.4 b
σ_a = 0.0055±0.0001 b
σ_t = 82.7±1.0 b
a_{coh} = 24.3±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 2.5±0.5 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.34 S_n = 8791.1±0.4 keV

E_0 (keV)	Γ_γ (eV)	Γ_n^0 (eV)
-9.8±1.0	1.85±0.22	82 ±10

$^{38}_{18}Ar$

THERMAL CROSS SECTIONS

σ_γ = 0.8±0.2 b

RESONANCE PROPERTIES

I_γ^c = 0.4±0.1 b

$^{39}_{18}Ar$ [269 yr]

THERMAL CROSS SECTIONS

σ_γ = 600±300 b

$^{40}_{18}Ar$

THERMAL CROSS SECTIONS

σ_γ = 0.660±0.010 b
σ_s = 0.40±0.02 b
a_{coh} = 1.83±0.05 fm

RESONANCE PROPERTIES

I_γ = 0.41±0.03 b
<D> = 24±3 keV
S_1 = 0.47±0.16

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 99.59 S_n = 6098.0±0.6 keV

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
11.17± .01		.00015± .00003		1		0.13
17.95± .02		.00043± .00007		1		.17
59.25± .05		.0059 ± .0009		1		.42
77.30± .22	5.0 ± .5	5.0 ± .5	1/2	0	18.0 ±1.8	
115.70± .14		.530 ± .060	[1/2]	1		14.7
172.8 ± .5	4.9 ± .5	4.9 ± .5	1/2	0	11.8 ±1.2	
180.4 ± .3	.260± .080	.260 ± .080	[1/2]	1		3.9
192.8 ± .3		.110 ± .030		1		1.5
220.0 ± .4	2.0 ± .3	2.0 ± .3	1/2	0	4.2 ± .6	
255.1 ± .5	3.8 ± .5	3.8 ± .5	1/2	0	6.9 ± .9	
268.4 ± .5	0.40 ± .12	.40 ± .12	1/2	0	.77± .23	
274.7 ± .5		.360 ± .120		1		3.2
296.9 ± .6	.335± .100	.335 ± .100	[1/2]	1		2.7
301.1 ± .6	.140± .050	.140 ± .050	[1/2]	1		1.1
340.8 ± .7	.460± .125	.920 ± .250	3/2	1		6.1
363.0 ± .8		.120 ± .050		1		0.7
371.3 ± .8	.540± .100	1.080 ± .200	3/2	1		6.5
390.6 ± .9	1.0 ±0.2	1.0 ±0.2	1/2	0	1.6 ±0.3	
401.7 ± .9	.480± .110	.480 ± .110	[1/2]	1		2.6
455.4 ±1.1	.860± .170	.860 ± .170	1/2	1		4.0
469.3 ±1.1	1.200± .285	2.400 ± .570	3/2	1		10.9
531.6 ±1.4	.850± .200	.850 ± .200	1/2	1		3.3
552.8 ±1.4	.255± .075	.510 ± .150	[3/2]	1		1.8
569.3 ±1.5	2.125± .600	4.250 ±1.200	[3/2]	1		15.3
593	0.8		1/2	1		2.8
596	4.0		1/2	0	5.2	
605	0.4			1		1.3
628	1.5	3.2	3/2	1		4.8

$^{41}_{18}Ar$

[1.83 hr]

THERMAL CROSS SECTIONS

σ_γ = 0.5±0.1 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ar^{36}	$\bar{\sigma}_s$	PL/A,28,642(69)	Andriesse
Ar^{40}	activation	NP/A,128,333(69)	Ranakumar
Ar	σ_t	NP/A,133,410(69)	Rorer
Ar^{36}	activation	AKE,13,383(68)	Wille
Ar^{39}	mass analysis	PRIVATE COMM.(66)	Cohen
Ar, Ar^{36}	$\bar{\sigma}_s$	PR,148,1303(66)	Krohn
Ar^{41}	evaluation	SCI,148,1325(66)	Stoenner
Ar^{39}	mass analysis	PRIVATE COMM.(66)	Zoch
Ar^{40}	activation	NP,65,225(65)	French
Ar	$\sigma_t \sigma_\gamma \bar{\sigma}_s$	JPR,24,21(63)	Genin
Ar^{40}	activation	ZN/A,18,1339(63)	Koehler
Ar^{36}	σ_t	PR,125,275(62)	Chrien
Ar^{36}	alpha emission	CJP,39,1784(61)	Hanna
Ar	σ_t	ZN/A,15,828(60)	Springer
$Ar^{36,40}$	$\sigma_t \bar{\sigma}_s$	PR,105,976(57)	Henshaw
$Ar^{38,40,41}$	activation	PR,87,886(52)	Katcoff
Ar	reflection	PR,84,969(51)	McReynolds
Ar	pile osci.	PPS/A,63,1175(50)	Colmer
Ar	$\bar{\sigma}_s$	PR,80,20(50)	Harris
Ar^{36}	activation	PR,77,840(50)	McMurtrie
Ar	σ_t	PR,76,1750(49)	Melkonian

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Ar	σ_t	11.2-569.3	PRIVATE COMM.(72)	Liou
Ar, Ar^{40}	σ_t	77-628	PRIVATE COMM.(71)	Bilpuch
Ar^{36}	σ_t	0-6	PR,125,275(62)	Chrien

THERMAL CROSS SECTIONS

σ_γ = 2.10±0.10 b
$\bar{\sigma}_s$ = 1.5±0.2 b
a_{coh} = 3.71±0.02 fm

RESONANCE PROPERTIES

I_γ = 1.0±0.1 b
S_1 = 2.0±0.4

UNASSIGNED RESONANCES

E_0 (keV)	$ag\Gamma_n$ (keV)	ℓ	$ag\Gamma_n^1$ (eV)
16.453±.014	.00008±.00003	1	.038
78.540±.120	.020 ±.012	1	0.97
90.40 ±.15	.012 ±.007	1	0.42
99.096±.175	.074 ±.030		
104.242±.189	.007 ±.004	1	0.23
126.915±.253	.024 ±.012	1	.60
138.554±.290	.018 ±.009	1	.39
146.200±.310	.082 ±.025	1	1.67
147.743±.317	.057 ±.017	1	1.14
148.995±.321	.045 ±.025	1	.89
184.547±.440	.037 ±.018	1	.55
198.780±.492	.130 ±.060	1	1.75

THERMAL CROSS SECTIONS

σ_γ = 1.96±0.15 b
σ_a = 0.0043±0.0005 b
a_{coh} = 3.7±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 0.9±0.1 b
<D> = 4.3±0.5 keV
S_1 = 2.0±0.6

RESONANCE PARAMETERS

I^π = 3/2⁺ %Abn = 93.3 S_n = 7800.53±.21 keV

E_0 (keV)	$2g\Gamma_n$ (keV)	J	ℓ	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
-1.0		1	0	1.08	
1.111± .0006	.000015±1.00-6		1		.20
3.277± .002	.000100±1.50-6		1		2.5
9.373± .005	.054 ± .006		0	.56 ±.06	
12.610± .009	.00131 ± .00026	1	1		.45
[a]14.279± .011	.00081 ± .00017		1		.23
[a]15.934± .013	.00169 ± .0003		1		.42
25.519± .024	.105 ± .017	1	0	.657±.106	
32.170± .034	.0036 ± .0009	1	1		.30
33.305± .035	.0202 ± .0043	[1]	1		1.6
37.490± .042	.0116 ± .0024	0	1		.80
42.565± .051	.643 ± .107	2	0	3.11 ±.52	
45.980± .057	.052 ± .015	1	1		2.6
52.090± .068	.0159 ± .0043		1		.67
54.585± .073	.0204 ± .0054	0	1		.80
57.868± .079	.922 ± .172	2	0	3.83 ±.72	
59.903± .083	.062 ± .015		1		2.1
68.818± .102	1.050 ± .215	1	1		29.4
[a]81.007± .130	.030 ± .011	[1]	1		.66
87.568± .146	.354 ± .086	1	1		7.0
92.909± .159	.036 ± .011		1		.65
96.582± .168	.450 ± .064	1	0	1.45 ±.21	
[a]102.065± .183	.045 ± .013		1		.70
[b]108.615± .201	1.500 ± .320	1	1		23.0
[a]118.450± .223	.077 ± .021		1		1.0
122.573± .240	.034 ± .011		1		.43
[a]132.279± .269	.279 ± .086		1		3.12
134.954± .277	.165 ± .049		1		1.78
136.322± .281	.090 ± .026		1		.97
143.782± .304	.215 ± .065	2	1		2.24
154.165± .337	1.500 ± .540	[3]	[1]		13.60
162.440± .365	.940 ± .320		[1]		7.93
177.791± .417	.835 ± .280	1	[1]		6.25
188.517± .455	.210 ± .065		1		1.50
193.081± .471	.665 ± .260		0	1.51 ±.59	

Note-Isotopic assignments for resonances below 100 keV from data of Good(73).

[a] Isotopic assignment on basis of peak cross-section.

[a] Isotopic assignment uncertain. [b] K-41 has a resonance about this energy.

$^{40}_{19}K$

[1.28×10^9 yr]

THERMAL CROSS SECTIONS

σ_γ = 30±8 b
σ_p = 4.4±0.3 b
σ_α = 0.39±0.03 b

$^{41}_{19}K$

THERMAL CROSS SECTIONS

σ_γ = 1.46±0.03 b

RESONANCE PROPERTIES

I_γ = 1.42±0.06 b
<D> = 4.8±1.2 keV
S_1 = 1.9±0.6

RESONANCE PARAMETERS

I^π = 3/2⁺ %Abn = 6.7 S_n = 7534.8±1.4 keV

E_0 (keV)	$2g\Gamma_n$ (keV)	J	ℓ	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
2.028±.0009	.0032 ±.0006	2	0	.071±.013	
3.205±.002	.00023±.00003		1		0.65
5.536±.003	.075 ±.009		[0]	1.01 ±.12	
*12.135±.009	.0024 ±.0004		1		0.90
13.330±.010	.0058 ±.0011		1		1.8
15.007±.012	.0046 ±.0012		1		1.2
16.710±.014	.174 ±.035		[0]	1.35 ±.27	
20.285±.018	.029 ±.009				
24.926±.024	.107 ±.020				
27.083±.026	.018 ±.004	[3]	1		2.0
38.587±.044	.810 ±.020	2	0	4.12 ±.10	
55.720±.075	.078 ±.023		1		1.8
75.384±.117	.405 ±.115		1		12.4
79.759±.127	.695 ±.230		1		15.8
83.329±.135	.347 ±.116		1		7.4
91.076±.154	.130 ±.072		1		2.5
100.827±.179	.434 ±.145		1		7.1
116.031±.221	.839 ±.260		1		11.2
120.944±.235	.405 ±.145		1		5.1

* Isotopic assignment on the basis of the peak cross-section.

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
K^{41}	activation	RCA,17,191(72)	Kim
K	Christiansen filters	ZN/A,27,901(72)	Koester
K^{40}	σ_γ(spectra)	PR/C,3,208(71)	Beckstrand
K^{41}	activation	JNE,24,35(70)	Ryves
K^{40}	$\sigma_p\sigma_\alpha$	PR,165,1184(68)	Schroeder
K^{41}	activation	NUK,9,270(67)	Koehler
K	diffraction	ACR,20,220(66)	Brown
K^{41}	activation	DA/B,27,919(66)	Kappe
$K^{39,40}$	mass spectrometry	ORNL-4013(65)	Gillette
K^{39}	σ_α	APP,28,763(65)	Benisz
K,K^{39}	diffraction	63ANL-6797,393(63)	Mueller
K	pile osci.	61BUCHAR,623(61)	Bouzyk
K^{41}	activation	NSE,8,378(60)	Lyon
K^{40}	σ_p	HPA,31,727(58)	Rossel
K	σ_t	PR,99,610(55)+	Joki
$K^{39,40,41}$	pile osci.	PR,88,412(52)	Pomerance
K	pile osci.	PR,83,641(51)	Pomerance
K	diffraction	PR,81,527(51)	Shull
K	pile osci.	PPS/A,63,1175(50)	Colmer
K	pile osci.	PR,80,342(50)	Harris
K	$\bar{\sigma}_s$ (120 ev)	PR,79,747(50)	Hibdon
K^{39}	activation	PR,76,577(49)	Hansen
K^{41}	activation	PR,72,888(47)	Seren
K^{41}	activation	PR,59,102(41)	O'Neal
K^{41}	activation	PR,59,102(41)	O'Neal
K	water bath	PR,58,554(40)	Lapointe
K	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
K	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
K^{39}	σ_t	1.108-109.05	PRIVATE COMM.(73)	Good
K^{41}	σ_t	0.896-121.12	PRIVATE COMM.(73)	Good
K,$K^{39,41}$	σ_t	1.1-198.8	PRIVATE COMM.(73)	Singh
K,$K^{39,41}$	σ_t	1.1-199.5	71ALBANY,81(71)	Singh
K,K^{39}	σ_t	445-447.8	PL/B,29,417(69)	Cierjacks
K	σ_t	1.114-142	65ANTWERP,74(65)	Garg
K^{39}	σ_t	3.4-9.2	PR,109,926(58)	Good
K^{41}	σ_t	5.4-16.2	PR,109,926(58)	Good
K^{39}	σ_t	43-68	PR,99,620(55)	Toller
K^{41}	σ_t	39	PR,99,620(55)	Toller

$_{20}$Ca

THERMAL CROSS SECTIONS

σ_γ = 0.43±0.02 b
a_{coh} = 4.83±0.07 fm

RESONANCE PROPERTIES

I_γ = 0.20±0.02 b
R' = 3.6±0.3 fm
S_0 = 2.6±0.4

$^{40}_{20}$Ca

THERMAL CROSS SECTIONS

σ_γ = 0.40±0.05 b
σ_a = 2.5±1.1 mb
a_{coh} = 4.9±0.2 fm

RESONANCE PROPERTIES

I_γ^c = 0.18±0.03 b
R' = 3.6±0.3 fm
<D> = 14±1 keV
S_0 = 2.6±0.6
S_1 = 0.12±0.04

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 96.94 S_n = 8363.1±0.5 keV

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
-1.0			1/2	0	0.11	
10.824± .007		.00064± .00021				
20.43 ±0.02		0.006 ±0.002	1/2	0	.042± .014	
42.041± .050		.00092± .00031				
*88.84 ±0.17		0.150 ±0.008	1/2	1		5.8
131.87 ±0.31		3.000 ±0.200	1/2	0	8.26 ± .55	
145.32 ±0.35		0.160 ±0.020		1		3.1
169.38 ±0.44		2.470 ±0.125	1/2	0	6.00 ± .30	
211.5 ±0.6		.165 ± .020	[3/2]	1		2.0
217.5 ±0.6		6.900 ±0.700	1/2	0	14.80 ±1.50	
223.0 ±0.7				>0		
229.8 ±0.7		0.120 ±0.020	[3/2]	1		1.3
235.0 ±0.8				>0		
242.0 ±0.8				>0		
244.5 ±0.8		19.00 ±1.00	1/2	0	38.42 ±2.02	
269 ±1				>0		
277 ±1		.107		>0		
282 ±1		.175		>0		
290 ±1		.038		>0		
292.6 ±1		2.4 ±0.2	1/2	0	4.44 ± .37	
294 ±1				>0		

E_0 (keV)		Γ (keV)	$g\Gamma_n$ (keV)		J	ℓ	$g\Gamma_n^0$ (eV)		$g\Gamma_n^1$ (eV)
295	±1					>0			
301	±1					>0			
303	±1					>0			
327.5	±2		14.0	±1.2	1/2	0	24.4	±2.1	
343	±1					>0			
346	±1					>0			
354	±1					>0			
357	±2		2.0	±0.2	1/2	0	3.34	± .34	
365	±2		.058			>0			
372	±2		.320			>0			
377	±2					>0			
380	±2					>0			
386	±2		.790			>0			
397	±2		.260			>0			
420	±2		.235			>0			
438	±2		.460			>0			
443	±2		10.0	±1.0	1/2	0	15.08	±1.51	
469	±2					>0			
471	±2		.390			>0			
479	±2		.480			>0			
493	±2		.410			>0			
525.3	±0.4	<0.9							
537.6	±0.4	<0.6							
559.0	±0.4	1.120±0.220	1.120	±0.220	[1/2]	[0]	1.50	± .29	
570.1	±0.4		0.390	±0.010	3/2	1			1.4
590.0	±1.5	58.0 ±4.0	58.0	±4.0	1/2	0	75.52	±5.21	
594.2	±0.4	0.148±0.040			5/2	2			
622.0	±0.4		<0.300		[5/2]	2			
635.5	± .4	2.0 ±0.6	2.0	±0.6	1/2	0	2.51	± .75	
638.4	± .4		<0.300		5/2	2			
640.9	± .5	1.300±0.25	1.300	±0.25	1/2	1			4.0
668.1	±		<0.300		[5/2]	2			
675.0	± .5	2.700±0.270	2.700	±0.270	1/2	0	3.29	± .33	
694.6	± .5		0.900	±0.200	1/2	1			2.5
713.2	± .6		0.200		3/2	1			.6
728.0	± .6		<0.200		3/2	1			.5
738.2	± .6		3.200		1/2	0	3.72		
742.8	± .6		4.400		1/2	0	5.11		
747.3	± .6		0.300		1/2	1			0.8
758.0	± .6		1.200		[3/2]	2			
764.8	± .6		0.200		3/2	[2]			
771.5	±1.0		12.000		1/2	0	13.66		
792.5	± .7		2.400		1/2	0	2.69		
800.2	± .7		0.300		5/2	2			
823.0	± .7		3.500		1/2	0	3.86		
826.0	± .7		0.400		1/2	[1]			0.9
830.0	± .8		0.300		[5/2]	2			
842.2	± .8		1.800		3/2	1			
857.2	± .8		0.600		[3/2]	2			
861.8	± .8		29.000		1/2	0	31.23		
867.6	± .8		0.300		[1/2]	1			.7
878.7	± .8		31.000		1/2	0	33.07		

$^{40}_{20}Ca$

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
884.8 ± .8		0.600	3/2	1		1.3
908.1 ± .8		1.500	1/2	1		3.2
924.6 ± .8		0.600	5/2	2		
940.5 ± .8		0.600	1/2	1		1.2
945.1 ± .8		1.000	[3/2]	2		
958.8 ± .9		0.800	3/2	1		1.6
970.0 ± .9		7.200	1/2	0	7.31	
993.3 ± .9		2.200	[3/2]	[2]		
1003.9 ± .9		11.00	1/2	0	10.98	
1018.7 ± .9		1.000	[3/2]	1		1.9
1025.2 ± .9		0.300	[1/2]	[1]		0.6
1037.4 ± .9		0.700	1/2	1		1.3
1058.0 ±1.0		0.400	1/2	[1]		.7
1061.5 ±1.0		0.400	1/2	[1]		0.7
1083.2 ±1.0		1.400	3/2	[1]		2.5
1094.4 ±1.0		1.200	[3/2]	2		
1094.9 ±1.0		1.200	1/2	0	1.15	
1097.7 ±1.0		0.600	5/2	2		
1126.0 ±1.0		0.500	1/2	[0]	.47	
1129.2 ±1.0		1.400	3/2	2		
1160.2 ±1.2		0.400	3/2	[2]		
1169.0 ±1.3		1.400	3/2	1		2.3
1189.4 ±1.3		3.000	1/2	0		
1202.6 ±1.4		12.00	5/2	[2]		
1210.8 ±1.4		15.00	1/2	0	13.63	
1214.0 ±1.4		2.000	3/2	1		3.2
1232.0 ±1.5		2.000	3/2	2		
1242.9 ±1.5		1.500	1/2	1		2.4
1250.0 ±1.5		1.500	[5/2]	2		
1262.0 ±1.5		1.000	[3/2]	[2]		
1284.0 ±1.5		15.000	1/2	0	13.24	
1289			[3/2]	2		
1308				[1]		
1318			[1/2]	[0]		
1333						
1337						
1348			3/2	1		
1355						
1375			1/2	0		
1388						
1408			1/2	1		
1424						
1433						
1445			3/2	1		
1457			3/2	1		
1468				1		
1478				1		

[a] Possibly doublet, one component with J=2.5, l=2.

THERMAL CROSS SECTIONS

σ_γ = 0.65±0.10 b

RESONANCE PROPERTIES

I_γ^c = 0.29±0.05 b
<D> = 14±2 keV
S_0 = 2.4±0.7

RESONANCE PARAMETERS

I^π = 0+ %Abn = 0.65 S_n = 7932.6±0.5 keV

E_0 (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)	E_0 (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)
40.0	5.0	1/2	0	25.0	385.0			>0	
124.2	3.75	1/2	0	10.641	399.5	0.500	1/2	0	0.791
128.5	11.00	1/2	0	30.686	418.0	0.400	1/2	0	0.619
157.7	0.300	1/2	0	0.755	425.0	0.300	1/2	0	0.460
175.0	2.50	1/2	0	5.976	445.0			>0	
189.0	.300		>0		447.0	1.000	3/2	>0	
213.2	1.75			3.790	450.5	1.750	1/2	0	2.607
221.5	0.250		>0		468.5	0.300	1/2	0	0.438
238.5	500	3/2	>0		478.0	0.750	1/2	0	1.085
249.0			>0		491.5	1.000	1/2	0	1.426
254.0	0.800	1/2	1		497.5			>0	
259.5	0.750	1/2	0	1.472	509.0			>0	
274.5	0.750	1/2	0	1.431	513.5	5.500	1/2	0	7.675
275.0			>0		532.0	6.500	1/2	0	8.912
278.5	1.5	1/2	0	2.842	545.5	2.00	1/2	0	2.708
280.5	0.750	1/2	1		555.0	0.300	1/2	0	0.403
297.0	0.238		>0		560.0	0.500	1/2	0	0.668
334.0	0.460		>0		564.5			>0	
338.0	0.550		>0		570.5	10.000	1/2	0	13.240
356.5	1.500	1/2	0	2.512	572.5			>0	
378.5	0.295		>0						

$^{43}_{20}Ca$

THERMAL CROSS SECTIONS

σ_γ = 6.2±0.6 b

RESONANCE PROPERTIES

I_γ^c = 5.5±1.5 b
<D> = 3.3±0.6 keV
S_0 = 1.6±0.7

RESONANCE PARAMETERS

I^π = 7/2⁻ %Abn = 0.14 S_n = 11136.3±2.8 keV

E_0 (keV)	$2g\Gamma_n$ (keV)	$2g\Gamma_n^0$ (eV)	E_0 (keV)	$2g\Gamma_n$ (keV)	$2g\Gamma_n^0$ (eV)
1.48±0.10	0.150±0.050		21.0	.054	0.37
4.36	.049	0.74	22.5	.109	0.73
5.23	.037	0.51	26.9	.204	1.24
8.70	.157	1.68	29.2	.089	0.52
13.80	.147	1.25	30.6	.060	0.34
18.9	.162	1.18	36.5	.299	1.57

$^{44}_{20}Ca$

THERMAL CROSS SECTIONS

σ_γ = 1.0±0.1 b
a_{coh} = 1.8±0.1 fm

RESONANCE PROPERTIES

I_γ = 0.56±0.04 b
<D> = 13±1 keV
S_0 = 2.0±0.7

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 2.08 S_n = 7414.4±1.0 keV

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
51.27±0.08		2.130±0.700	1/2	0	9.41	
101.2 ±0.2	5.50	5.50	1/2	0	17.29	
133.0				>0		
137.5				>0		
147.3	9.5 ±0.5		1/2	0		
158.5	0.300	0.300	1/2	0	0.754	
160.0				>0		
175.0	1.500	1.500	1/2	0	3.586	
213.5		0.440		>0		
221.0	0.605	0.605	[1/2]	1		5.25
247.0	3.00	3.00			6.036	
272.5				>0		

E_0 (keV)	Γ (keV)	$g\Gamma_n$ (keV)	J	ℓ	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
288.5		0.275		>0		
306.5				>0		
309.0				>0		
316.0				>0		
321.5	9.0			0	15.873	
332.5		0.530		>0		
361.5				>0		
370.0	11.000	11.000	1/2	0	18.084	
379.5				>0		
385.0	0.300	0.300	1/2	0	0.483	
402.0	2.75	2.75			4.337	
438.3	2.960	2.960	[1/2]	1		9.18
443.5	1.500	1.500	1/2	0	2.252	
448.5						
454.0						
461.0						
472.0						
475.5	1.172	1.172	[1/2]	1		3.21
483.0	17.500	17.500	1/2	0	25.181	
490.0	0.835	0.835	[1/2]	1		2.18
495.0		0.680		>0		
503.0		1.370		>0		
506.0	3.500	3.500	1/2	0	4.920	
525.5				>0		
530.0	2.000	2.000	1/2	0	2.747	
538.5	0.500	0.500	1/2	0	0.68	
546.0	0.800	0.800	1/2	0	1.08	
557.0				>0		
560.5	2.500	2.500	1/2	0	3.339	
568.0				>0		
576.0	0.581	0.581	[1/2]	1		1.19

$^{46}_{20}Ca$

THERMAL CROSS SECTIONS

σ_γ = 0.7±0.2 b

RESONANCE PROPERTIES

I_γ = 0.32±0.12 b

$^{48}_{20}Ca$

THERMAL CROSS SECTIONS

σ_γ = 1.1±0.2 b

RESONANCE PROPERTIES

<D> = 260±90 keV

RESONANCE PARAMETERS

I^π = 0° %Abn = 0.19 S_n = 5141.6±3.5 keV

E_0 (keV)	Γ (keV)	J	ℓ	$g\Gamma_n^l$ (eV)
302.25	3.000	1/2	1	22.4
399.0	3.000	3/2	1	20.7
412.25	2.000	1/2	1	10.2
448.0	2.000	1/2	1	9.2
956.0				
1305.0	10.0	3/2	>0	

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ca	refractrometer	PRIVATE COMM.(73)	Koester
Ca^{46}	activation	JIN,34,2699(72)	Steinnes
Ca,$Ca^{40,42,43,44}$	σ_γ(spectra)	NP/A,169,95(71)	Cranston
$Ca^{46,48}$	σ_γ(spectra)	NP/A,169,95(71)	Cranston
$Ca^{40,42,43,44}$	σ_γ(spectra)	NP/A,102,226(71)	Gruppelaar
Ca^{44}	activation	JIN,32,2839(70)	Sims
Ca	diffraction	JCP,35,1950(61)	Atoji
Ca^{44}	activation	NSE,8,378(60)	Lyon
Ca^{40}	alpha emission	ZP,153,106(58)	Munnich
Ca^{46}	activation	PR,90,1121(53)	Cook
Ca^{48}	activation	PR,91,1423(53)	Hughes
$Ca^{40,42}$	pile osci.	PR,88,412(52)	Pomerance
Ca	pile osci.	PR,83,641(51)	Pomerance
Ca,$Ca^{40,44}$	diffraction	PR,81,527(51)	Shull
Ca	pile osci.	PPS/A,63,1175(50)	Colmer
Ca	pile osci.	PR,80,342(50)	Harris
Ca^{44}	activation	PR,72,888(47)	Seren
Ca	absorption	PR,69,411(46)	Coltman

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Ca,Ca^{40}		212-596	ORNL-4844,67(73)	Johnson
Ca,Ca^{40}	σ_t	20.47-738.0	NSE,51,119(73)	Wynchank
Ca^{48}	σ_t	302-1355	AP,69,451(72)+	Seibel
Ca^{48}	σ_t	302-445	PRIVATE COMM.(71)	Bilpuch
Ca^{40}	σ_γ(spectra)	10-89	AUJ,24,671(71)	Chan
Ca,$Ca^{40,44}$	σ_t	10.83-292.6	PRIVATE COMM.(71)	Singh
Ca^{40}	$\bar{\sigma}_s$	558-1530	NP/A,154,36(70)	Kirouac
Ca,Ca^{40}	σ_t	570-1284	70HELSINKI,2,745(70)	Nebe
Ca^{42}	σ_t	124.2-572.5	AP,37,367(66)	Farrell
Ca^{44}	σ_t	103-576	AP,37,367(66)	Farrell
Ca^{43}	σ_t	4.36-36.5	PR,151,912(66)	Good
Ca,Ca^{43}	σ_t	4.36-36.5	65ANTWERP,99(65)+	Wagner
Ca^{43}	σ_t	1.47	PRIVATE COMM.(63)	Cote
Ca,Ca^{40}	σ_t	148-676	AP,17,319(62)	Bowman
Ca^{40}	σ_t	88-250	AP,14,387(61)	Bilpuch
Ca^{46}	σ_t	22-247	AP,14,387(61)	Bilpuch
Ca,Ca^{40}	σ_t	132-250	AP,14,365(61)	Newson
Ca,Ca^{40}	σ_t	254-595	PR,121,1150(61)	Wilenzick
Ca^{43}	σ_t	1.49	PRIVATE COMM.(59)	Chrien
Ca,Ca^{40}	σ_t	83-252	BAP,3,164(58)	Bilpuch
Ca^{44}	σ_t	150-248	BAP,3,164(58)	Bilpuch
Ca	σ_t	150-505	PR,75,1124(49)	Adair

THERMAL CROSS SECTIONS

σ_γ = 26.5±1.0 b
σ_γ = 9.6±1.0 b [20 sec $^{46}Sc^m$]
σ_γ = 16.9±1.0 b [83.8 day $^{46}Sc^g$]
σ_s = 24±2 b
σ_t = 50.5±2.3 b
a_{coh} = 11.8±0.5 fm

RESONANCE PROPERTIES

I_γ = 11.3±1.0 b
<D> = 1.1±0.2 keV
S_0 = 5.1±0.9

RESONANCE PARAMETERS

I^π = 7/2⁻ %Abn = 100 S_n = 8766.9±1.0 keV

E_0 (keV)	Γ (eV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
-0.140			[3]	0	0.29±0.06	0.94 ±0.17
0.455±0.020		.0076± 0.0112		[1]		0.00036± .00053
1.01 ±0.05		.022 ± .006		[1]		.00069± .00019
3.24 ±0.02		70 ± 15				1.2 ±0.2
4.27 ±0.05		250 ± 50			0.35±0.11	3.8 ±0.8
6.59 ±0.05		73 ± 15				0.90 ±0.18
8.0 ±0.1		160 ± 30				1.79 ± .34
9.2 ±0.1		260 ± 50				2.71 ± .52
11.7 ±0.1		140 ± 30				1.29 ± .28
19.17 ± .06	60	67.5 ± 6.8	4			.487 ±0.049
20.80 ± .06	60	67.5 ± 6.8	4			.468 ±0.047
20.95 ± .06	800	700 ± 70	3			4.84 ±0.48
24.18 ± .07	60	52.5 ± 5.3	3			.338 ±0.034
24.48 ± .07	60	67.5 ± 6.8	4			.431 ±0.043
27.12 ± .08	90	101.2 ± 10.1	4			.6145 ±0.0615
28.12 ± .08	110	96.3 ± 9.6	3			.574 ±0.057
29.85 ± .09	100	112.5 ± 11.3	4			0.6511 ±0.0651
32.40 ±0.10	570	498.7 ± 49.9	3			2.770 ±0.277
34.00 ±0.10	190	166 ± 17	3			.900 ± .090
35.3 ±0.11	280	315 ± 32	4			1.67 ± .17
40.37 ±0.12	130	146 ± 15	4			.727 ±0.073
40.77 ±0.12	100	87.5 ± 8.8	3			.433 ±0.043
41.15 ± .12	110	124 ± 12	4			.611 ± .061

E_0 (keV)	Γ (eV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
43.35 ± .13	170	190 ± 19	4			.912 ± .091
46.15 ± .14	480	420 ± 42	3			1.96 ±0.20
47.60 ± .14	180	157.5 ± 15.8	3			.722 ± .072
49.17 ± .15	160	180 ± 18	4			.812 ± .081
51.16 ± .16	840	952 ± 95	4			4.20 ± .42
52.18 ± .16	100	91 ± 9	3			.39 ± .04
54.83 ± .16	220	193 ± 19	3			.824 ± .082
57.68 ± .17	220	189 ± 19	3			.787 ± .079
58.77 ± .18	164	144 ± 14	3			.593 ± .059
61.84 ± .18	520	589 ± 59	4			2.36 ± .24
62.54 ± .19	570	494 ± 49	3			1.98 ± .20
65.94 ± .20	1040	1170 ±117	4			4.56 ± .46
70.11 ± .21	1690	1480 ±148	3			5.59 ± .56
71.76 ± .22	410	460 ± 46	4			1.72 ± .17
73.18 ± .22	350	307 ± 31	3			1.14 ± .11
74.90 ± .22	150	131 ± 13	3			.479 ± .048
77.15 ± .23	250	280 ± 28	4			1.00 ±0.10
77.55 ± .23	600	525 ± 53	3			1.89 ± .19
77.85 ± .23	150	168 ± 17	4			.602 ± .060
79.00 ± .24	200	175 ± 18	3			.623 ± .062
79.80 ± .24	2800	2450 ±245	3			8.67 ± .87
81.10 ± .24	600	675 ± 68	4			2.37 ± .24
83.00 ± .25	150	169 ± 17	4			.587 ± .059
85.60 ± .26	850	956 ± 96	4			3.27 ± .33
86.00 ± .26	650	569 ± 57	3			1.94 ± .19
88.60 ± .27	550	481 ± 48	3			1.62 ± .16
90.20 ± .27	120	135 ± 14	4			.450 ± .045
91.70 ± .28	550	481 ± 48	3			1.59 ± .16
94.40 ± .28	800	700 ± 70	3			2.28 ± .23
99.80 ± .30	2000	1750 ±175	3			5.54 ± .55
100.7 ± .3	300	337 ± 34	4			1.06 ± .11
101.0 ±0.3	400	350 ± 35	3			1.10 ± .11
102.1 ± .3	300	337 ± 34	4			1.06 ± .11
102.3 ± .3	350	306 ± 31	3			.957 ± .096
104.0 ± .3	150	169 ± 17	4			.524 ± .052
105.7 ± .3	150	169 ± 17	4			.520 ± .052

THERMAL CROSS SECTIONS

σ_γ = 8.0±1.0 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Sc^{45}	activation	JIN,34,2699(72)	Steinnes
Sc^{46}	activation	ARI,19,593(68)	Bak
Sc^{46}	Sc-47 build-up	AE,24,533(68)	Kondurov
Sc^{45}	σ_t	PRIVATE COMM.(67)	Wilson
Sc^{45}	isom. ratio	TID-22165(62)	Simons
Sc^{45}	activation	NSE,8,378(60)	Lyon
Sc^{45}	activation	60VIENNA,63(60)	Maier-Leibnitz
Sc^{45}	activation	NUK,2,255(60)	Wolf
Sc^{45}	activation	ZP,149,215(57)	Houtermans
Sc^{45}	σ_t	PPS/A,68,104(55)	Pattenden
Sc	pile osci.	PR,89,657(53)	Lockett
Sc^{45}	activation	PR,89,1307(53)	Lyon
Sc^{45}	σ_t diffraction	PCH,57,535(53)	Milligan
Sc	pile osci.	PR,89,657(53)-	Pomerance
Sc	pile osci.	PR,80,342(50)	Harris
Sc	activation	PR,74,1877(48)	Goldhaber
Sc	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Sc^{45}	σ_t	19.2-106	70HELSINKI,1,619(70)	Cho
Sc^{45}	σ_γ	0-4.3	YF,1,229(65)	Romanov
Sc^{45}	σ_γ(spectra)	0-1.0	BAP,8,120(63)+	Wasson
Sc^{45}	σ_t	4-40	ORNL-2718,22(59)+	Miller
Sc^{45}	σ_t	3.0-6.8	PR,111,288(58)	Cote
Sc^{45}	σ_t	4.0	PR,106,110(57)	Marshak
Sc^{45}	σ_t	0-3.6	PPS/A,68,104(55)	Pattenden

$_{22}$Ti

THERMAL CROSS SECTIONS

σ_γ = 6.1±0.2 b
$\bar{\sigma}_s$ = 4.0±0.3 b
σ_t = 10.1±0.3 b
a_{coh} = -3.4±0.2 fm

$^{46}_{22}$Ti

THERMAL CROSS SECTIONS

σ_γ = 0.6±0.1 b
$\bar{\sigma}_s$ = 3.2±0.3 b
σ_t = 3.8±0.3 b
a_{coh} = 4.8±0.2 fm

RESONANCE PROPERTIES

I_γ^c = 0.4±0.2 b
S_0 = 2.3±1.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 8.0 S_n = 8875.1±1.5 keV

E_0 (keV)	Γ (eV)	$g\Gamma_n$ (eV)	J	ℓ	$g\Gamma_n^0$ (eV)
Bound level					
11.0±0.1	230 ± 50	230 ± 50	1/2	0	2.19± .48
39.0±0.4	550 ± 80	550 ± 80	1/2	0	2.79± .41
48.7±0.2	1500 ±200	1500 ±200	1/2	0	6.80± .91
63.5±0.2	3500 ±400	3500 ±400	1/2	0	13.89±1.56
100.0±0.4	4800 ±500	4800 ±500	1/2	0	15.18±1.58
105 ±1		70		>0	
111 ±1		166		>0	
114 ±1		106		>0	
117 ±1		93		>0	
120 ±1		48		>0	
126 ±1		30		>0	
129 ±1		84		>0	
131 ±1		120		>0	
134 ±1		334		>0	
144 ±1		179		>0	
146 ±1		153		>0	
153 ±1		192		>0	
156 ±1		212		>0	
158 ±1		160		>0	
160 ±1		376		>0	
166 ±1		175		>0	
172 ±1		213		>0	
175 ±1		72		>0	
179.0±1.0	1300 ±260	1300 ±260	1/2	0	3.07± .61
185.0±1.0	3500 ±500	3500 ±500	1/2	0	8.14±1.16
207 ±1.5		448		>0	

E_0 (keV)	Γ (eV)	$g\Gamma_n$ (eV)	J	ℓ	$g\Gamma_n^0$ (eV)
210 ±1.5		144		>0	
213 ±1.5		182		>0	
216 ±1.5		270		>0	
223 ±1.5		138		>0	
216 ±1.5		270		>0	
223 ±1.5		138		>0	
226 ±1.5		333		>0	
230 ±1.5		460		>0	
233 ±1.5		645		>0	
236 ±1.5		420		>0	
241 ±1.5		100		>0	
243 ±1.5		200		>0	
246 ±1.5		660		>0	
250 ±1.5		290		>0	
252 ±1.5		125		>0	
259.0±1.5	500 ±100	500 ±100	1/2	0	.98± .20
263 ±1.5		190		>0	
267 ±1.5		232		>0	
271 ±1.5		170		>0	
276 ±1.5		665		>0	
281 ±1.5		113		>0	
287 ±1.5		314		>0	
291.5±1.5	1000 ±150	1000 ±150	1/2	0	1.85± .28
299 ±1.5		372		>0	
302 ±1.5		240		>0	
305.5±2.0	2000 ±300	2000 ±300	1/2	0	3.62± .54
320 ±1.5		268		>0	
328.0±2.0	3000 ±400	3000 ±400	1/2	0	.52± .70
333 ±1.5		580		>0	
337 ±1.5		180		>0	
340.5±2.0	900 ±150	900 ±150	1/2	0	1.54± .26
347 ±1.5		243		>0	
360 ±1.5		515		>0	
363 ±1.5		550		>0	

$^{47}_{22}Ti$

THERMAL CROSS SECTIONS

σ_γ = 1.7±0.2 b
$\bar{\sigma}_s$ = 3.0±0.3 b
σ_t = 4.7±0.3 b
a_{coh} = 3.3±0.2 fm

RESONANCE PROPERTIES

I_γ^c = 1.8±0.4 b
R' = 4.9±0.4 fm
<D> = 1.6±0.4 keV
S_0 = 3.5±0.7

RESONANCE PARAMETERS

I^π = 5/2⁻ %Abn = 7.5 S_n = 11628.1±1.0 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
3.074±0.004	140 ± 15	3	2.0±0.2	2.53±.27
*4.180±0.004	3.3± 1.6	3		.51±.03
8.13 ±0.01	55 ± 6	2	1.4±0.3	.61±.07
8.34 ±0.02	117 ± 15	2	2.0±0.4	1.28±.16
10.53 ±0.03	65 ± 7	3		.63±.07
12.13 ±0.03	130 ± 15	3		1.18±.14
12.16 ±0.04	18 ± 3	2	2.1±0.5	.16±.03
12.81 ±0.04	130 ± 15	2	2.5±0.5	1.15±.13
16.30 ±0.05	462 ± 50	3	2.0±0.4	3.61±.39
17.39 ±0.05	42 ± 7	3	2.0±0.3	.32±.05
19.08 ±0.05	23 ± 3	3	2.5±0.5	.17±.02
21.26 ±0.06	52 ± 5	2	1.7±0.3	.36±.03
27.12 ±0.06	100 ± 10	2		.61±.06
27.17 ±0.06	1000 ±100	3		6.07±.61
30.18 ±0.06	62 ± 6	2		.36±.04
32.33 ±0.07	498 ± 50	2		2.77±.28
38.11 ±0.11	100 ± 10	3		.51±.05
40.37 ±0.13	750 ±100	3		3.73±.50
41.03 ±0.13	48 ± 5	2		.24±.03
42.08 ±0.13	900 ±150	3		4.39±.73
42.23 ±0.13	500 ± 50	2		2.43±.24
46.40 ±0.14	750 ± 80	3		3.48±.37
49.27 ±0.14	330 ± 50	3		1.49±.23
51.34 ±0.15	230 ± 30	3		1.02±.13
55.37 ±0.17	300 ± 40	3		1.27±.17
57.56 ±0.17	800 ±100	3		3.33±.42
60.29 ±0.18	74 ± 10	2		.30±.04
61.78 ±0.19	177 ± 20	2		.71±.08
63.37 ±0.19	113 ± 15	3		.45±.06
63.80 ±0.19	62 ± 10	3		.25±.04
71.68 ±0.21	571 ± 70	3		2.13±.26
74.55 ±0.22	107 ± 15	2		.39±.06

* Isotopic assignment is uncertain

THERMAL CROSS SECTIONS

σ_γ = 7.8±0.3 b
$\bar{\sigma}_s$ = 4.2±0.2 b
σ_t = 12.0±0.4 b
a_{coh} = -5.8±0.2 fm

RESONANCE PROPERTIES

I_γ^c = 3.7±0.3 b
R' = 5.0±0.6 fm
<D> = 18±3 keV
S_0 = 4.9±2.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 73.7 S_n = 8143.4±0.8 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
*17.6±0.1	8710 ±200	1/2	0	8.5	65.65±1.51
23.8±0.1	650 ±100	1/2	0		4.21± .65
36.8±0.1	1250 ±150	1/2	0		6.52± .78
39.1±0.1		[5/2]	>0		
51.8±0.2	2360 ±200	1/2	0		10.37± .88
74.2±0.3	250 ±200		[1]		.92± .73
83.2±0.4	130 ±100	1/2	0		.45± .35
118.6±0.6	700 ±200	1/2	0		2.03± .58
127 ±1	114		>0		
131.5±1.0	1690		0		4.7
134 ±1	170		>0		
136.5±1	296		0		0.8
154.5±0.9	600 ±200	1/2	0		1.53± .51
157 ±1	135		>0		
161 ±1	49		>0		
164 ±1	136		>0		
175 ±1	269		>0		
185.6±1.0	650 ±100	1/2	0		1.51± .23
190.0±1.5	3000 ±300	1/2	0		6.88± .69
201 ±1.5	242		>0		
207 ±1.5	292		>0		
210 ±1.5	164		>0		
240 ±1.5	96		>0		
249.0±2.0	8500 ±850	1/2	0		17.03±1.70
257 ±2	152		>0		
262 ±2	154		>0		
270 ±2	4000 ±400	1/2	0		7.70± .77
288 ±2	366		>0		
292 ±2	250		>0		
295 ±2	193		>0		
298 ±2	122		>0		
303 ±2	310		>0		
307 ±2	255		>0		
312 ±2	2780		>0		
318 ±2	535		>0		

$^{48}_{22}Ti$

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^c$ (eV)
322 ±2	280		>0		
325 ±2	1040		>0		
333 ±2	760		>0		
336 ±2	175		>0		
338 ±2	365		>0		
341 ±2	4000 ±600	1/2	0		6.85± .103
351 ±2	272		>0		
354 ±2	218		>0		
362 ±2	600 ±150	1/2	0		1.00± .25
367 ±2	236		>0		

* Positive energy resonances so account for the sign and magnitude of the coherent scattering amplitude that no bound levels are required to account for the absorption cross sections.

THERMAL CROSS SECTIONS

σ_γ = 2.2±0.3 b
$\bar{\sigma}_s$ = 3.2±0.4 b
σ_t = 5.4±0.4 b
a_{coh} = 0.8±0.2 fm

RESONANCE PROPERTIES

I_γ = 1.5±0.3 b
<D> = 6.0±1.5 keV
S_0 = 3.2±0.7

RESONANCE PARAMETERS

I^π = 7/2⁻ %Abn = 5.5 S_n = 10946.0±2.4 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	$2g\Gamma_n^0$ (eV)
3.835±0.005	225 ± 25		3.63± .40
8.095±0.01	100 ± 20		1.11± .22
18.76 ±0.05	120 ± 20	4	.88± .15
21.54 ±0.06	130 ± 15	3	.89± .10
22.77 ±0.06	550 ± 100	3	3.64± .66
27.25 ±0.06	420 ± 60	4	2.54± .36
31.9 ±0.1	2000 ± 400	4	11.20±2.24
38.4 ±0.1	1700 ± 200	4	8.68±1.02
56.1 ±0.2	506 ± 113	4	2.14± .48
59.4 ±0.2	390 ± 90	3	1.60± .37
66.8 ±0.2	700 ± 90	3	2.71± .35
76.6 ±0.2	1000 ± 225	4	3.61± .81
96.6 ±0.3	2625 ± 440	3	8.45±1.42
106.4 ±0.3	2900 ± 450	3	8.89±1.38
138.8 ±0.4	1800 ± 225	4	4.83± .60
145.7 ±0.4	1700 ± 260	3	4.45± .68
151.2 ±0.5	2900 ± 900	3	7.46±2.31
152.2 ±0.5	3100 ±1125	4	7.95±2.88
170.5 ±0.5	900 ± 225	4	2.18± .55
172.3 ±0.5	3900 ± 800	4	9.40±1.93
176.2 ±0.5	2000 ± 560	4	4.77±1.33
184.7 ±0.5	2600 ± 525	3	6.05±1.22
185.8 ±0.6	2800 ± 560	4	6.50±1.30
187.7 ±0.6	3500 ± 875	3	8.08±2.02
197.0 ±0.6	3400 ± 675	4	7.66±1.52
208.5 ±0.6	1300 ± 260	3	2.85± .57
216 ±0.6	2500 ± 450	4	5.38± .97
224.5 ±0.7	1800 ± 350	3	3.80± .74
239.0 ±0.7	2300 ± 560	4	4.71±1.15

$^{50}_{22}Ti$

THERMAL CROSS SECTIONS

σ_γ = 0.179±0.003 b
$\bar{\sigma}_s^c$ = 3.80±0.27 b
σ_t^c = 3.98±0.27 b
a_{coh} = 5.5±0.2 fm

RESONANCE PROPERTIES

I_γ = 0.118±0.011 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 5.3 S_n = 6372.4±1.4 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	$g\Gamma_n^0$ (eV)
55.5±0.2	870 ± 90	1/2	0	3.69± .38
77.0±0.4	77		>0	
85.0±0.4	108		>0	
92.0±0.5	134		>0	
100.0±0.5	116		>0	
121.0±0.7	139		>0	
135.5±0.7	119		>0	
185.6±1.0	1500 ± 150	1/2	0	3.48± .35
194.0±1.0	265		>0	
224 ±1.5	253		>0	
227 ±1.5	274		>0	
233 ±1.5	190		>0	
245 ±1.5	236		>0	
248 ±1.5	172		>0	
251 ±1.5	221		>0	
254 ±1.5	136		>0	
258 ±1.5	174		>0	
288 ±1.5	82		>0	
307.0±2.0	20000 ±3000	1/2	0	36.10±5.41
331 ±2	170		>0	
342 ±2	410		>0	
346 ±2	332		>0	
470 ±2	967		>0	
506 ±2.5	2980		>0	
586 ±2.5	905		>0	

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ti^{50}	activation	JNE,24,35(70)	Ryves
$Ti^{46,47,48,49}$	σ_t	AE,27,144(69)	Doil'nitsyn
Ti	σ_t	NSE,11,298(61)	Joki
Ti	σ_t	NSE,7,193(60)	Schmunk
$Ti^{46,47,48,49,50}$	diffraction	PR,118,797(60)	Shull
Ti^{48}	diffraction	JAP,30,1323(59)	Sidhu
Ti	σ_t	CU-179(58)	Gould
Ti, Ti^{46-50}	$\bar{\sigma}_s$	ANL-5031,63(53)	Hibdon
$Ti^{46,47,48,49,50}$	pile osci.	PR,88,412(52)	Pomerance
Ti	local osci.	PR,83,641(51)	Pomerance
Ti	diffraction	PR,81,527(51)	Shull
Ti	$\bar{\sigma}_s$	PR,83,379(51)	Weiss
Ti	pile osci.	PPS/A,63,1175(50)	Colmer
Ti	pile osci.	PR,80,342(50)	Harris
Ti	σ_t	PR,75,975(49)	Winsberg
Ti^{50}	activation	PR,72,888(47)	Seren
Ti	capture	PR,69,411(46)	Coltman
Ti	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Ti	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Ti^{47}	σ_γ(spectra)	12-64	AUJ,25,9(72)	Broomhall
Ti^{48}	σ_γ(spectra)	14-76	AUJ,25,9(72)	Broomhall
Ti^{47}	σ_t	0.584-77.5	PRIVATE COMM.(72)	Good
Ti^{49}	σ_t	1.5-148	PRIVATE COMM.(72)	Good
Ti, Ti^{46-50}	σ_t	1-220	PR/C,3,2447(71)	Garg
Ti^{48}	σ_t	17-192	NP/A,164,97(71)	Mueller
Ti^{49}	σ_t	18.7-239	NP/A,164,97(71)	Mueller
Ti	σ_γ		BAP,15,1667(70)	Allen
Ti^{47}	σ_t	8.1-74.6	70HELSINKI,1,619(70)	Cho
Ti^{49}	σ_t	18.8-239	70HELSINKI,1,619(70)	Cho
Ti^{47}	σ_γ	8.1-21.2	70HELSINKI,1,633(70)	Ernst
Ti^{46}	σ_t	11-341	AP,37,367(66)	Farrell
Ti^{48}	σ_t	17.5-362	AP,37,367(66)	Farrell
Ti^{50}	σ_t	55-307	AP,37,367(66)	Farrell
Ti^{47}	σ_t	2.98-36.2	PR,151,912(66)	Good
Ti^{49}	σ_t	3.72-37.7	PR,151,912(66)	Good
Ti^{46}	σ_t	41-390	AP,17,319(62)	Bowman
Ti^{48}	σ_t	4.0-420	AP,17,319(62)	Bowman
Ti^{50}	σ_t	47-586	AP,17,319(62)	Bowman
Ti^{48}	σ_t	4.0-270	AP,14,387(61)	Bilpuch
Ti^{48}	σ_t	3.0-17.5	PR,109,926(58)	Good

$_{23}$V

THERMAL CROSS SECTIONS

σ_γ = 5.04±0.04 b
$\bar{\sigma}_s$ = 4.93±0.03 b
σ_t = 9.97±0.05 b
a_{coh} = -0.48±0.10 fm

RESONANCE PROPERTIES

I_γ = 2.7±0.1 b
R' = 6.9±0.2 fm
S_0 = 7.7±2.0

$^{50}_{23}$V

THERMAL CROSS SECTIONS

σ_γ = 70±33 b

RESONANCE PROPERTIES

I_γ^c = 67±15 b
S_0 = 4.4±2.2

RESONANCE PARAMETERS

I^π = 6⁺ %Abn = 0.25 S_n = 11052.4±3.1 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
0.167	2.25	0.60±0.08	0.174
1.42 ±0.01	100 ±40		2.64 ±1.05
6.2 ±0.1	74		0.94
7.3 ±0.1	280		3.27
8.25 ±0.17	125		1.38
11.8 ±0.2	319		2.92
15.0 ±0.3	121		1.0
15.3 ±0.3	156		1.26
17.6 ±0.4	132		1.00
20.5 ±0.4	529		3.70
22.6 ±0.4	660		4.40
25.8 ±0.5	195		1.22
29.0 ±0.5	323		1.90
34.1 ±0.7	752		4.06
37.0 ±0.7	621		3.23
40.7 ±0.8	466		2.3

THERMAL CROSS SECTIONS

σ_γ = 4.88±0.08 b

RESONANCE PROPERTIES

I_γ = 2.7±0.1 b
R' = 6.9±0.2 fm
S_0 = 7.7±2.0

RESONANCE PARAMETERS

I^π = 7/2$^-$ %Abn = 99.75 S_n = 7311.3±1.0 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
4.163±0.005	565 ± 6	4	0	1.32 ±0.20	8.76 ±0.09
5.39 ±0.015			1	*0.032±0.006	
6.797±0.007	1120 ± 12	3	0	2.45 ±0.36	13.56 ± .15
7.03 ±0.03			1	*0.012±0.002	
10.13 ±0.03			1	*0.058±0.010	
11.62 ±0.04	4250 ± 50	3	0	1.87 ±0.37	39.43 ± .46
11.77 ±0.04			1	*0.044±0.008	
12.00 ±0.04			1	*0.046±0.008	
15.7 ±0.05			1	*0.15 ±0.03	
16.23 ±0.02	387 ± 25	4	0	1.5 ±0.5	3.04 ± .20
16.99 ±0.03	310 ± 20				2.38 ± .15
18.00 ±0.07			1	*0.29 ±0.05	
20.70 ±0.08			1	*0.40 ±0.07	
21.70 ±0.04	635 ± 45	3	0	1.50 ±0.18	4.31 ± .31
24.20 ±0.10			1		
28.80 ±0.12			1		
29.63 ±0.07	150 ± 20	4	0	0.50 ±0.06	.871± .12
29.90 ±0.08	3.0± 1.0	(3)	1	0.53 ±0.15	.017± .006
32.20 ±0.14			1		
33.51 ±0.09	14 ± 4	(2)	1	0.50 ±0.08	.076± .022
37.43 ±0.10	24 ± 4	[4]	1	0.55 ±0.10	.12 ± .02
39.44 ±0.11	470 ± 35	3	0	0.98 ±0.12	2.37 ± .18
40.90 ±0.12	6.0± 2.0	(5)	1	1.2 ±0.3	.030± .010
42.37 ±0.12	24 ± 4	(4)	1	0.57 ±0.11	.12 ± .02
44.45 ±0.13	8 ± 2		1		.038±0.010
45.90 ±0.14	10 ± 4	(2)	1	0.56 ±0.10	.047± .018
48.04 ±0.15	130 ± 20	4	0		0.59 ± .09
48.40 ±0.15	15 ± 5				.058± .023
49.50 ±0.15	490 ± 35	3	0		2.20 ± .16
51.90 ±0.16	99 ± 8	4	0		.44 ± .04
52.97 ±0.17	815 ± 60	3	0		3.54 ± .26
63.5 ±0.3	3300 ± 300	3	0		13.10 ±1.19
68.6 ±0.3	5290 ± 115	4	0		20.20 ± .44
73.5 ±0.3	42 ± 8		0		.16 ± .03
78.7 ±0.3	20 ± 6				.071± .021
82.6 ±0.3	1400 ± 100	4	0		4.87 ± .35
83.7 ±0.3	160 ± 6				.55 ± .02
87.3 ±0.4	3280 ± 240	4	0		11.10 ± .81
92.9 ±0.4	70 ± 20				.23 ± .07

$^{51}_{23}V$

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
94.5 ±0.4	74 ± 20				.24 ± .07
95.3 ±0.4	50 ± 16				.16 ± .05
96.8 ±0.4	24 ± 12				.077± .039
98.3 ±0.4	50 ± 16				.16 ± .05
103.5 ±0.5	24 ± 10				.075± .031
110.3 ±0.5	250 ± 40		[0]		.75 ± .12
114.2 ±0.5	70 ± 10				.21 ± .02
116.0 ±0.5	4000 ±1000	4	0		11.74 ±2.94
117.5 ±0.5	18000 ±2400	4	0		52.51 ±7.00
118.5 ±0.6	140 ± 40				.407± .12
127.4 ±0.6	70 ± 30				.20 ± .08
134.5 ±0.7	3600 ± 170	4			9.82 ± .46
140.9 ±0.7	3150 ± 130	3			8.25 ± .34
145.6 ±0.7	1310 ± 100	3			3.43 ± .26
152.7 ±0.8	3940 ± 170	4			10.08 ± .44

* $2g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
V	σ_t	70HELSINKI,1,461(70)	Ceulemans
V^{50}	activation	JNE,24,419(70)	Ryves
V	σ_t	70HELSINKI,1,651(70)	Vertebnyi
V	σ_t 1.44 ev	NP,61,381(65)	Rayburn
V	σ_t	RSI,36,887(65)	Rustad
V^{51}	activation	BAP,8,335(63)	Glickstein
V^{51}	activation	PRIVATE COMM.(62)	Sher
V	pile osci.	61BUCHAR,623(61)	Bouzyk
V	σ_t	NSA,15,3471(61)	Denis
V	pile osci.	JNE,12,32(60)	Tattersall
V^{50}	σ_γ(spectra)	PR,89,386(53)	Bartholomew
V	$\bar{\sigma}_s$	CJP,31,432(53)	Brockhouse
V	pile osci.	AERE-N/R-1147(53)	Egelstaff
V	σ_t	PRIVATE COMM.(53)	Palevsky
V	diffraction	PR,87,462(52)	Peterson
V	pile osci.	CR,232,2089(51)	Grimeland
V	mirror reflections	PR,83,171(51)	McReynolds
V	pile osci.	PPS/A,63,1175(50)	Colmer
V	mirror reflections	PR,80,342(50)	Harris
V^{51}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
V	$\sigma_t\sigma_\gamma$	4.16-87.6	NP/A,163,592(71)	Stieglitz
V	$\sigma_t\sigma_\gamma$	4.16-16.2	70HELSINKI,2,815(70)	Moxon
V	polarization	0.000115	NCSAC-31,24(70)+	Postma
V	σ_t	41.8-52.9	69MONTREAL,367(69)	Garg
V	σ_t	4.1-130	NP/A,123,561(69)	Morgenstern
V	σ_t	21.7-153	NP/A,104,1(67)	Rohr
V^{50}	σ_t	6.2-40.7	PRIVATE COMM.(68)	Good
V	σ_γ	0.167	AE,19,294(65)	Kapchigashev
V	σ_t	29.5-68.6	65ANTWERP,86(65)	Morgenstern
V	σ_t	1.42-202	CR-1860(64)	Garg
V	σ_t	4.1-22.3	PPS,82,477(63)	Firk
V	σ_t	4.1-30.7	NRDC-135,10(61)+	Moxon
V	σ_t	6.3	BAP,4,42(59)	Miller
V,V^{50}	σ_t	0.167-1.43	PR,111,288(58)	Cote
V	σ_t	4.1-87	PR,106,110(57)	Marshak

$_{24}$Cr

THERMAL CROSS SECTIONS

σ_γ = 3.1±0.2 b
$\bar{\sigma}_s$ = 3.8±0.3 b
σ_t = 6.9±0.3 b
a_{coh} = 3.532±0.010 fm

RESONANCE PROPERTIES

I_γ = 1.7±0.2 b

$^{50}_{24}$Cr

THERMAL CROSS SECTIONS

σ_γ = 15.9±0.2 b

RESONANCE PROPERTIES

I_γ = 7.6±0.4 b
R' = 5.4±0.4 fm
S_0 = 2.2±0.8
S_1 = 0.26±0.15

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 4.35 S_n = 9262.0±1.0 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
Bound level		1/2	0			
5.49 ±0.02			1	*0.014±0.003		
5.64 ±0.03	1665 ± 50	1/2	0	3.10 ±0.25	22.17 ± .67	
9.30 ±0.03			1	*0.053±0.01		
18.60 ±0.08			1	*0.66 ±0.11		
19.2 ±0.08			1	*0.437±0.073		
24.0 ±0.1			1	*0.058±0.013		
24.8 ±0.1			1	*0.365±0.060		
28.426±0.006	415 ± 6	1/2	0	*0.57 ±0.07	2.46 ± .04	
33.40 ±0.12		[3/2]	1	*0.99 ±0.15		
35.30 ±0.13		[3/2]	1	1.65 ±0.23		
37.3 ±0.2	2250 ± 20	1/2	0	2.50 ±0.3	11.65 ± .10	
40.6 ±0.2			1	*0.88 ±0.12		
50.1 ±0.3		[1/2]	1	*0.60 ±0.08		
53.7 ±0.3			1	*0.72 ±0.13		
54.99 ±0.01	281 ± 8	1/2	0	0.88 ±0.10	1.20 ± .03	
59.7 ±0.3		[3/2]	1	*1.12 ±0.17		
63.4 ±0.4			1			
64.79 ±0.03	43 ± 6	1/2	0		.16 ± .02	
64.9 ± .4			1			
66.0 ±0.43			1			
69.2 ± .5			1			
70.5 ± .5			1			
73.5 ± .5			1			

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
77.8 ± .5			1			
79.4 ± .5			1			
88.9 ± .6			1			
90.7 ± .6			1			
94.75 ±0.03	1800 ± 100	1/2	0		5.85 ± .32	
111.80 ±0.08	90 ± 20	1/2	0		.27 ± .06	
113.0			>0			
114.78 ±0.08	120 ± 20	1/2	0		.35 ± .05	
116.5	168 ± 30		>0			
122.0			>0			
129.01 ±0.07	520 ± 50	1/2	0		1.45 ± .14	
142.0	240 ± 50		>0			
156.63 ±0.07	1230 ± 70	1/2	0		3.11 ± .18	
162.45 ±0.07	700 ± 50	1/2	0		1.74 ± .12	
185.21 ±0.07	3300 ± 200	1/2	0		7.67 ± .46	
218.3 ±0.3	170 ± 40				.364± .09	
231.7 ±0.3	750 ± 100	1/2	0		1.56 ± .21	
245.6 ±0.4	200 ± 50	1/2	0		.40 ± .10	
276.8 ±0.4	1800 ± 100	1/2	0		3.42 ± .19	
283.5			>0			
293.0 ±3.0	3700 ± 400	1/2	0		6.84 ± .74	
313.5	1060 ± 480	3/2	1			6.2
328.6 ±3.3	4500 ±1000	1/2	0		7.85 ±1.74	
341.0			>0			
348.0			>0			
356.6 ±3.9	4500 ±1000	1/2	0		7.54 ±1.67	
359.5 ±4.0	1750 ± 350	1/2	0		2.92 ± .58	
370.0 ±4.0	10000 ±3000	1/2	0		16.44 ±4.93	
381.0	684 ± 70		>0			
388.5 ±4.0	4000 ± 800	1/2	0		6.42 ±1.28	
395.0	0.250	1/2	0		0.415	
405.0	1110 ± 220	3/2	1			4.8
413.7	1.750	1/2	0		2.841	
416.5	14.000	1/2	0		22.655	
431.5	1090 ± 180	3/2	1			4.4
433.5	10.000	1/2	0		15.889	
442.0			>0			
454.5	.250	1/2	0		0.389	
459.5	733 ± 50	1/2	1			2.8
467.5	6.500	1/2	0		9.980	
472.0	875 ± 125	1/2	1			3.2
478.0	2.500	1/2	0		3.800	
489.0	1.750	1/2	0		2.633	
502.5	4.000	1/2	0		5.945	
509.0			>0			
515.0	2.000	1/2	0		2.940	
523.0	0.500	1/2	0		0.730	
536.0			>0			
538.5	3.000	1/2	0		4.323	
547.0	2.500	1/2	0		3.577	
553.8	6.000	1/2	0		8.538	
560.5	3.000	1/2	0		4.246	
578.0	2.700	1/2	0		3.770	
580.5	7.000	1/2	0		9.755	
590.7	1.500	1/2	0		2.074	

* $g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

σ_γ = 0.76±0.06 b
a_{coh} = 4.9 fm

RESONANCE PROPERTIES

I_γ = 0.60±0.05 b
R' = 5.7±0.3 fm
S_0 = 2.1±1.1
S_1 = 0.30±0.15

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 83.79 S_n = 7940.5±0.9 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
Bound level						
1.626±0.005	0.080± 0.012		1		.0020± .0003	0.84
22.92 ±0.01	4 ± 1		1	*0.55±0.09	.026 ± .007	1.1
27.60 ±0.11			1	*0.46±0.08		
31.62 ±0.01	15 ± 1		0	0.31±0.05	.084 ± .006	
33.90 ±0.13			1	*0.34±0.06		
34.30 ±0.13			1	*0.26±0.05		
48.30 ±0.21		[3/2]	1	0.47±0.08		
50.19 ±0.01	1710 ± 20	1/2	0	1.16±0.20	7.63 ± .09	
57.58 ±0.01	75 ± 10	[3/2]	1	0.36±0.16	.31 ± .04	4.0
79.2 ±0.6			1	*0.38±0.07		
96.23 ±0.03	6800 ± 100	1/2	0	4.80±0.80	21.92 ± .32	
106.0 ±0.1	60 ± 20	3/2	1	0.43±0.07	.18 ± .06	1.3
111.6 ±0.1	60 ± 20	3/2	1	0.31±0.05	.18 ± .06	1.3
113.0 ±0.4		3/2	1	0.7 ±0.1		
117.6 ±0.4	30 ± 10	1/2	0		.088 ± .029	
121.38 ±0.02	610 ± 20	1/2	0		1.75 ± .06	
124.0 ±1.0		[3/2]	1	0.73±0.13		
130.10 ±0.05	220 ± 20	3/2	1	0.67±0.11	.61 ± .05	3.8
139.71 ±0.07	5400 ± 200	1/2	0		14.45 ± .54	
141.3 ±0.2	700 ± 200	1/2	0		1.86 ± .532	
155.0 ±1.2		1/2	1	*0.62±0.11		
168.0 ±1.3			1	*0.84±0.15		
205.0 ±1.5	130 ± 60	3/2	1		.29 ± .13	1.4
224 ±1.5	<100					
234.0 ±0.6	300 ± 100		>0		.62 ± .21	

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^{\pm}$ (eV)
235.8 ±0.2	1100 ± 100	1/2	0		2.27 ± .21	
242.6 ±0.4	220 ± 50		>0		.45 ± .10	
246.3 ±0.2	1010 ± 60	1/2	1		2.04 ± .12	7.7
249.3 ±0.2	550 ± 50				1.10 ± .10	
252.0 ±1.0	810 ± 70	3/2	1		1.62 ± .14	6.0
256.7 ±0.3	310 ± 50		1		.612 ± .10	2.2
281.9 ±0.3	550 ± 80	1/2	0		1.04 ± .15	
288.0 ±1.0	<100	3/2	1			
331.1 ±3.5	6700 ±1000	1/2	0		11.72 ±1.75	
349.0 ±3.5	152		>0			
363.5 ±3.5	3500 ±1000	1/2	0		5.81 ±1.66	
401.0 ±3.5	18000 ±4000	1/2	0		28.43 ±6.32	
418.0 ±3.5	1000 ± 300	1/2	0		1.55 ±4.64	
442.0 ±3.5	813		>0			
460.5 ±4.0	12000 ±4000	1/2	0		17.68 ±5.89	
530.0 ±5.0	8000 ±2400	1/2	0		10.98 ±3.30	

[a] $g\Gamma_n\Gamma_\gamma/\Gamma$

[b] $g\Gamma_\gamma$

$^{53}_{24}Cr$

THERMAL CROSS SECTIONS

σ_γ = 18.2±1.5 b

RESONANCE PROPERTIES

I_γ = 8.85±1.00 b
R' = 6.9±0.3 fm
<D> = 4.1±0.7 keV
S_0 = 5.0±2.1
S_1 = 0.074±0.050

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 9.50 S_n = 9720.2±0.7 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
Bound level		1			
4.185±0.015	1140 ± 60	1	0	3.23±0.45	17.62 ± .93
5.67 ±0.025	260 ± 20	2	0	1.33±0.20	3.45 ± .27
6.74 ±0.04	900 ± 75	1	0	5.28±0.80	10.96 ± .91
8.18 ±0.04	1230 ± 110	2	0	3.25±0.4	13.60 ± 1.22
12.10 ±0.04			1	[a]0.38±0.06	
12.90 ±0.04			1	[a]0.22±0.04	
14.60 ±0.05			1	[a]0.26±0.05	
19.60 ±0.06	133 ± 19	2	0		.95 ± .14
20.20 ±0.08			1	[a]0.77±0.14	
22.40 ±0.10			1	[a]0.29±0.05	
25.90 ±0.08	280 ± 25	2	0	0.61±0.07	1.74 ± .16
27.00 ±0.09	550 ± 50	1	0	1.57±0.17	3.35 ± .30
28.80 ±0.11			1	[a]0.65±0.12	
29.30 ±0.12	430 ± 40	2	0	1.21±0.14	2.51 ± .23
31.50 ±0.13			1	[a]0.31±0.06	
32.00 ±0.14			1	[a]0.23±0.05	
34.90 ±0.15			1	[a]0.32±0.07	
37.70 ±0.17			1	[a]0.35±0.07	
42.40 ±0.19			1	[a]0.21±0.04	
43.20 ±0.20			1	[a]0.20±0.04	
47.1 ±0.2			1	[a]0.37±0.07	
49.8 ±0.2			1		
51.0 ±0.3			1		
53.5 ±0.3			1	0.40±0.08	
64.8 ±0.3			1	0.60±0.08	
65.7 ±0.3	5700 ± 150	2	0		22.23 ± .59
69.7 ±0.3			1	1.25±0.24	
73.1 ±0.3	800 ± 200	1			2.95 ± .74
74.1 ±0.3	1400 ± 100	2	0		5.14 ± .37
87.2 ±0.3	5500 ± 750	1	0		18.63 ± 2.54
94.5 ±0.4	750 ± 125	[2]	0		2.44 ± .41
99.7 ±0.4	300 ± 75	1	0		.95 ± .24
107.8 ±0.4	1700 ± 200	2	0		5.18 ± .61
123.6 ±0.4	3000 ± 750	1			8.53 ± 2.13
124.5 ±0.4	600 ± 250	2			1.70 ± .71
127.6 ±0.4	500 ± 250	2			1.40 ± .70

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
129.5 ±0.5	300 ± 150	2			.83 ± .42
135.0 ±0.5	18000 ±3750	1	0		48.99 ±10.20
145.9 ±0.5	800 ± 125	2			2.09 ± .33
157.8 ±0.5	1100 ± 125	2			2.77 ± .32
159.5 ±0.5	2600 ± 375	2			6.51 ± .94
172.7 ±0.6	1500 ± 250	2			3.61 ± .60
175.7 ±0.6	3000 ± 600	1	0		7.156± 1.4
183.0 ±0.7	2600 ± 525	1			6.08 ± 1.22
186.0 ±0.7	600 ± 250	2			1.39 ± .58
195.7 ±0.7	800 ± 125	2			1.80 ± .28
201.7 ±0.7	700 ± 125	2			1.55 ± .28
221.6 ±0.7	5200 ±1000	2			11.04 ± 2.12
227.5 ±0.7	400 ± 125	2			.84 ± .26
239.0 ±0.8	3750 ± 750	2			7.67 ± 1.53
244.5 ±0.8	3000 ± 750	1			6.07 ± 1.51
246.0 ±0.8	600 ± 375	2			1.20 ± .76

[a] Positive energy resonances contribute about 11 b to the thermal absorption cross section. Support for spin 1 assignment is based on ratio of thermal capture of spin 2 state to spin 1 state.

[b] $2g\Gamma_n\Gamma_\gamma/\Gamma$

$^{54}_{24}Cr$

THERMAL CROSS SECTIONS

σ_γ = 0.36±0.04 b

RESONANCE PROPERTIES

I_γ = 0.18±0.04 b
R' = 4.8±0.2 fm
S_0 = 1.8±1.0
S_1 = 0.042±0.024

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 2.36 S_n = 6246.3±0.4 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
10.30±0.04			1	[a]0.14±0.02	
14.40±0.05			1	[a]0.28±0.04	
19.10±0.08			1	[a]0.25±0.04	
23.1 ±0.1	550 ± 35		0	0.19±0.05	3.62± .23
51.1 ±0.3			1	[a]0.34±0.05	
54.9 ±0.3			1	[a]0.36±0.06	
67.5 ±0.3		[3/2]	1	[a]0.94±0.18	
76.4 ±0.5			1		
90.1 ±0.6			1		
120.1 ±0.8	5600 ± 400	1/2	0		16.16±1.2
129.0	250	1/2	0		.70
169.8	500		>0		
179.1 ±1.4	1900 ± 170	1/2	0		4.49± .40
189.3	255		>0		
228.0			>0		
233.0			>0		
247.5	1255	1/2	1		
264.0			>0		
279.5	9000	1/2	0		17.02
282.5	3000	1/2	0		5.70
285.0	300		>0		
290.5	600	1/2	0		1.12
300.5	500	1/2	0		0.92
314.0			>0		
325.0	16000	1/2	0		28.33
330 ±3	13000 ±1500	1/2	0		22.63±2.61
332.0	810		>0		
342.0	200	1/2	0		.34
351.5	500	1/2	0		.84
355.5	300	1/2	0		.50
358.7	400		>0		
362.0	500	1/2	0		.83
387.5	1040		>0		
393.5	4000	1/2	0		6.38

[a] $g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cr^{54}	σ_γ(spectra) (thermal)	NP/A,187,12(72)	White
Cr	Christiansen filter	ZN/A,26,391(71)	Koester
Cr^{50}	activation	JIN,30,349(68)	Sims
Cr^{53}	σ_γ(spectra) (thermal)	CJP,43,1128(65)	Bartholomew
Cr^{53}	σ_γ(spectra) (thermal)	PR,131,777(63)	White
Cr^{52}	diffraction	ARN,11,303(61)	Wilkinson
Cr^{50}	activation	NSE,8,378(60)	Lyon
Cr^{54}	activation	PR,95,781(54)	Bazorgan
Cr	σ_t	PR,92,702(53)	Melkonian
$Cr^{50,52,53,54}$	pile osci.	PR,88,412(52)	Pomerance
Cr	pile osci.	CR,232,2089(51)	Grimeland
Cr	pile osci.	PR,83,641(51)	Pomerance
Cr	$\bar{\sigma}_s$ diffraction	PR,81,527(51)	Shull
Cr	pile osci.	PPS/A,63,1175(50)	Colmer
Cr	$\bar{\sigma}_s$ diffraction	PR,80,342(50)	Harris
Cr		PR,69,411(46)	Coltman
Cr	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Cr	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell
Cr	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Cr^{50}	σ_t	28.4-290	KFK-1517(72)	Spencer
Cr^{52}	σ_t	22.9-282	KFK-1517(72)	Spencer
Cr^{53}	$\sigma(\gamma,n)$	23-543	PR/C,3,672(71)	Baglan
Cr^{53}	$\sigma(\gamma,n)$	50.2-364	PR/C,4,1314(71)	Jackson
Cr^{53}	σ_t	19.5-246	NP/A,164,97(71)	Mueller
Cr^{50}	$\sigma_t\sigma_\gamma$	5.6-357	NP/A,163,592(71)	Stieglitz
Cr^{52}	$\sigma_t\sigma_\gamma$	1.6-331	NP/A,163,592(71)	Stieglitz
Cr^{53}	$\sigma_t\sigma_\gamma$	4.2-176	NP/A,163,592(71)	Stieglitz
Cr^{54}	$\sigma_t\sigma_\gamma$	23.1-355	NP/A,163,592(71)	Stieglitz
Cr,Cr^{52}	σ_t	755-902	CEA-R-3279(67)	Cabe
Cr^{50}	σ_t	95.5-591	AP,37,367(66)	Farrell
Cr^{54}	σ_t	116-394	AP,37,367(66)	Farrell
Cr^{53}	σ_t	3.6-28.8	PR,151,912(66)	Good
Cr^{50}	σ_γ	5.5	AE,16,256(64)	Kapchigashev
Cr^{52}	σ_γ	1.7	AE,16,256(64)	Kapchigashev
Cr^{53}	σ_t	19-39	BAP,8,556(63)	Kim
Cr^{52}	σ_t	51-636	AP,17,319(62)	Bowman
Cr^{50}	σ_t	6.6-95	AP,14,387(61)	Bilpuch
Cr^{52}	σ_t	51-140	AP,14,387(61)	Bilpuch
Cr^{54}	σ_t	23.5-119	AP,14,387(61)	Bilpuch
Cr,Cr^{52}	$\bar{\sigma}_s$	30-115	PR,109,1620(58)	Block
Cr^{50}	σ_t	5.5	PR,111,288(58)	Cote
Cr^{52}	σ_t	51-406	PR,108,414(57)	Hibdon
Cr	σ_t	102-342	ANL-5554,55(56)	Hibdon
Cr^{53}	σ_t	69.0-396	ANL-5554,55(56)	Hibdon
Cr	σ_t	3.8	PR,92,702(53)	Melkonian

$^{53}_{25}$Mn

[3.7×10^6 yr]

THERMAL CROSS SECTIONS

σ_γ = 33±9 b

$^{54}_{25}$Mn

[312.5 day]

THERMAL CROSS SECTIONS

σ_γ < 10 b

$^{55}_{25}$Mn

THERMAL CROSS SECTIONS

σ_γ = 13.3±0.2 b
σ_s = 2.1±0.2 b
σ_t = 15.4±0.3 b
a_{coh} = -3.7±0.1 fm

RESONANCE PROPERTIES

I_T = 14.0±0.4 b
R^1 = 3.6±0.4 fm
S_0 = 3.3±0.5

RESONANCE PARAMETERS

I^π = 5/2$^-$ $\qquad$ IAbn = 100 $\qquad$ S_n = 7270.4±0.5 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
-2.830		2		(0.45)	4.21
-0.078		3		(0.45)	0.019
0.337±0.001	18.67± 0.017	2	0	0.5 ±0.1	1.017±0.002
1.098±0.002	17.01± 0.82	3	0		0.513±0.025
2.375±0.005	467 ± 11	3	0		9.57 ±0.23
6.330±0.006			1		
7.17 ±0.02	354 ± 14	2	0		4.21 ±0.17
8.87 ±0.02	471 ± 22	3	0		5.02 ±0.23
17.80 ±0.06	12.8 ± 2.3	(3)			0.087±0.015
18.00 ±0.06	54.1 ± 8.3	(2)			.40 ± .06
21.00 ±0.08	1000 ± 40	3			6.80 ± .28
23.7 ±0.1	316 ± 30	2			2.05 ± .19
25.9 ±0.1	7.0 ± 2.0		(1)		.043± .012
26.4 ±0.1	100 ± 12	2			.62 ± .07
27.0 ±0.1	442 ± 44	3			2.69 ± .27
30.4 ±0.1					
35.3 ±0.1	~1200	(3)	0		~6.4
35.6 ±0.1	~1400	(2)	0		~7.4
36.4 ±0.1		(2)			
41.0 ±0.1	325 ± 32	3			1.61 ± .16

E_0 (keV)	$2gΓ_n$ (eV)	J	ℓ	$Γ_γ$ (eV)	$2gΓ_n^0$ (eV)
43.2 ±0.1	2 ± 1				.010± .005
46.8 ±0.1	10 ± 5				.046± .023
47.3 ±0.2	16 ± 4				.074± .018
53.4 ±0.2	70 ± 8	2			.301± .035
54.1 ±0.2	10 ± 3				.043± .013
54.4 ±0.2	8.4 ± 2.8				.036± .012
57.4 ±0.2	540 ±100	3			2.25 ± .42
58.1 ±0.2	500 ±100	2			2.07 ± .41
59.5 ±0.2	315 ± 50	3			1.29 ± .20
60.0 ±0.2	83 ± 10	2			.34 ± .04
64.1 ±0.2	1050 ± 60	3			4.15 ± .24
65.5 ±0.2	20 ± 4				.078± .016
66.6 ±0.2	137 ± 16	3			.53 ± .06
69.5 ±0.2	150 ± 20	2			.55 ± .08
70.0 ±0.2	300 ± 20	3			1.13 ± .08
72.7 ±0.2	15 ± 4				.056± .015
73.9 ±0.2	830 ± 45	3			3.05 ± .17
81.5 ±0.2	370 ± 25	2			1.30 ± .09
84.4 ±0.2	1530 ± 60	3			5.27 ± .21
96.3 ±0.2	175 ± 20	2			.55 ± .06
98.5 ±0.2	525 ± 50	3			1.67 ± .16
104.0 ±0.3	225 ± 20	2			.70 ± .06
105.2 ±0.3	1260 ± 50	2			3.89 ± .15
107.5 ±0.3	340 ± 40	2			1.04 ± .12
109.4 ±0.3	1100 ±110	2			3.33 ± .33
110.9 ±0.3	2135 ±175	3			6.41± .53
116.1 ±0.3	550 ± 50	3			1.61 ± .15
118.7 ±0.3	830 ± 60	3			2.41 ± .17
123.5 ±0.4	425 ± 50	2			1.21 ± .14
127.0 ±0.4	2370 ±240	3			6.65 ± .67
128.1 ±0.4	1260 ±150	2			3.52 ± .42
129.5 ±0.4	1010 ±150	2			2.81 ± .42
131.0 ±0.4	260 ± 50	3			.72 ± .14
142.1 ±0.4	640 ± 80	3			1.70 ± .21
151.3 ±0.4	340 ± 70	2			.87 ± .18
155.8 ±0.4	850 ±100	2			2.15 ± .25
158.7 ±0.4	1070 ±100	3			2.69 ± .25
166.9 ±0.4	260 ± 50	2			.64 ± .12
172.2 ±0.5	2000 ±200	3			4.82 ± .48
176.9 ±0.5	370 ± 50	3			.88 ± .12
179.9 ±0.5	290 ± 50	2			.68 ± .12
181.0 ±0.5	290 ± 80	3			.68 ± .19
184.4 ±0.5	830 ±150	2			1.93 ± .35
186.2 ±0.6	2570 ±250	3			5.96 ± .58
188.5 ±0.6	945 ±150	3			2.18 ± .35
193.9 ±0.6	350 ± 50	3			.79 ± .11
197.6 ±0.6	520 ± 75	2			1.17 ± .17
203.4 ±0.6	3150 ±400	3			6.98 ± .89
207.7 ±0.6	2350 ±300	2			5.16 ± .66

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Mn^{54}	flux monitor	ANS,14,353(71)	Jenkins
Mn^{55}	activation	IN-1317,53(70)	Hogg
Mn^{55}	Mn bath	NET,5,128(69)	DeVolpi
Mn^{55}	pile osci.	AE-351(69)	Sokolowski
Mn^{55}	Mn bath	JNE,22,465(68)	Ryves
Mn^{55}	pile osci.	66PARIS,1,479(66)	Carre
Mn^{55}	activation	SCI,147,503(65)	Millard
Mn^{56}	burn up	IDO-16977,41(64)	Hogg
Mn^{55}	pile osci.	NKA,8,443(63)	Bouzyk
Mn^{55}	local osci.	KE,6,336(63)	Huttel
Mn^{55}	activation	PRIVATE COMM.(62)	Berreth
Mn^{55}	pulsed n	NSE,9,132(61)	Meadows
Mn^{55}	diffraction	ANN,11,303(61)	Wilkinson
Mn^{55}	pile osci.	JNE,12,32(60)	Tattersall
Mn^{55}	activation	ZN/A,13,820(58)	Meister
Mn^{55}	ratio,Mn/H	ZAP,10,537(58)	Wunderer
Mn^{55}	pile osci.	AERE-R/R-100(57)	Cummins
Mn^{55}	activation	PR,99,191(55)	DeJuren
Mn^{55}	activation	CJC,31,204(53)	Bartholomew
Mn^{55}	ratio,Mn/U	JPR,13,412(52)	Barloutaud
Mn^{55}	pile osci.	CR,232,2089(51)	Grimeland
Mn^{55}	local osci.	PR,83,641(51)	Pomerance
Mn^{55}	diffraction	PR,81,527(51)	Shull
Mn^{55}	pile osci.	PPS/A,63,1175(50)	Colmer
Mn^{55}	pile osci.	PR,80,342(50)	Harris
Mn^{55}	ratio	CR,225,328(47)	Ballini
Mn^{55}	mirror reflections	PR,71,666(47)	Fermi
Mn^{55}	σ_t	PR,71,65(47)	Rainwater
Mn^{55}	activation	PR,72,888(47)	Seren
Mn^{55}	absorption	PR,69,411(46)	Coltman
Mn^{55}	σ_t	PR,60,155(41)	Whitaker
Mn^{55}	σ_t	PR,57,976(40)	Beyer
Mn^{55}	water bath	PR,58,554(40)	Lapointe
Mn^{55}	σ_s	PRS/A,162,127(37)	Goldhaber
Mn^{55}	σ_s	PR,50,133(36)	Mitchell
Mn^{55}	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Mn^{55}	σ_γ(spectra)	0-2.50	NP/A,135,241(69)	Alves
Mn^{55}	analysis	0.335-73.9	NSE,32,377(68)	Stephenson
Mn^{55}	σ_t	4.932-119	NP/A,102,602(67)	Morgenstern
Mn^{55}	σ_t	53.4-207.7	NP/A,104,1(67)	Rohr
Mn^{55}	σ_t	4.932-119	GSANTWERP,86(65)	Morgenstern
Mn^{55}	σ_t	0.337-8.86	PRIVATE COMM.(66)	Garg
Mn^{55}	σ_t	0-17.8	PR/B,134,1047(64)	Cote
Mn^{55}	σ_t	0.337-192.5	CR-1860(64)	Garg
Mn^{55}	σ_t	2.36-27.3	PR,106,110(57)	Marshak
Mn^{55}	σ_t	0.337-2.36	PR,100,126(55)	Bollinger
Mn^{55}	σ_t	0.337-2.56	KAPL-1084(54)	Gaerttner
Mn^{55}	σ_t	0.337-1.12	PR,95,476(54)	Seidl
Mn^{55}	$\bar{\sigma}_s\sigma_\gamma$(51)	0.337	PR,80,1014(50)	Harris

$_{26}$Fe

THERMAL CROSS SECTIONS

σ_γ = 2.55±0.03 b
σ_s = 10.9±0.2 b
σ_a < 5 mb
σ_t = 13.5±0.4 b
a_{coh} = 9.51±0.05 fm

RESONANCE PROPERTIES

I_γ = 1.4±0.2 b
S_0 = 1.9±0.5

$^{54}_{26}$Fe

THERMAL CROSS SECTIONS

σ_γ = 2.25±0.18 b
a_{coh} = 4.2±0.1 fm

RESONANCE PROPERTIES

I_γ = 1.2±0.2 b
R' = 5.6±0.6 fm
<D> = 20.0±3.5 keV
S_0 = 5.6±1.7

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 5.8 S_n = 9298.4±1.0 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
3.10					
7.76±0.01	1000 ± 20	1/2	0	*2.5 ±0.5	11.35 ± .23
8.10					
9.48±0.02				*0.51±0.05	
11.2 ±0.1					
13.5 ±0.1					
14.4 ±0.1				*0.53±0.14	
19.2 ±0.1					
23.0					
28.2					
30.6					
35.1					
38.3					
39.1					
52.1 ±0.2	2300 ± 200	1/2	0		10.08 ± .88
71.8 ±0.3	2000 ± 200	1/2	0		7.46 ± .75
98.5 ±0.4	490 ± 100	1/2	0		1.56 ± .32
102.6 ±0.5	840 ± 250	1/2	0		2.62 ± .78
129.3 ±0.6	1260 ± 300				3.50 ± .83
146.8 ±0.8	1950 ± 490	1/2	0		5.09 ± 1.28
163.0 ±0.9	200 ± 100				.50 ± .25

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
173.0 ±1.0	4800 ± 1200	1/2	0		11.54 ± 2.89
188.5 ±1.0	38000 ±10000	1/2	0		87.52 ±23.03
223.0 ±1.5	1900 ± 380	1/2	0		4.023± .80
230.0 ±1.5	500 ± 100	1/2	0		1.04 ± .21
244.5 ±2.0	1300 ± 260	1/2	0		2.63 ± .53
245	240		>0		
262	200		>0		
277	265		>0		
280	110		>0		
282	250		>0		
293	450		>0		
305.5 ±3.0	7000 ± 1400	1/2	0		12.66 ± 2.53
317.0 ±3.0	14000 ± 2800	1/2	0		24.87 ± 4.97
329.5 ±3.0	2750 ± 550	1/2	0		4.79 ± .96
369 ±3.0	3000	1/2	0		4.9
399	250		>0		
403	110		>0		
411	600		>0		
415	120		>0		
416 ±4	19000 ± 5000	1/2	0		29.46 ± 7.75
419	<100	(1/2)	>0		
431.0 ±4.0	7500 ± 1800	1/2	0		11.42 ± 2.74
435.5 ±4.0	1750 ± 350	1/2	0		2.65 ± .53
438	<100	(1/2)	>0		
441	<100	(1/2)	>0		
445	<100	(1/2)	>0		
449	905		>0		
453	2060		>0		
462	<100	(1/2)	>0		
464	<100	(1/2)	>0		
471	<100	(1/2)	>0		
489.0 ±5.0	10000 ± 2000	1/2	0		14.30 ± 2.86
491	215		>0		
494	680		>0		
496	435		>0		
503	650		>0		
506.5	750	1/2	0		1.1

[a] $g\Gamma_n\Gamma_\gamma/\Gamma$

[b] Calculated

$^{56}_{26}Fe$

THERMAL CROSS SECTIONS

σ_γ = 2.63±0.21 b
a_{coh} = 10.1±0.2 fm

RESONANCE PROPERTIES

I_γ^c = 1.4±0.2 b
R' = 6.1±0.7 fm
<D> = 25±4 keV
S_0 = 1.6±0.5

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 91.7 S_n = 7646.2±0.5 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
-2.0		1/2	0	0.64	3.96	
1.15±0.01	0.068± 0.006	1/2	1	0.6 ±0.1	.0020± .0001	1.1
22.7 ±0.1				*0.19±0.02		
27.7 ±0.2	1600 ± 50	1/2	0	1.45±0.15	9.61 ± .30	
34.1 ±0.3		1/2	1	*0.59±0.04		
36.6 ±0.3				*0.30±0.03		
38.3 ±0.4				*0.46±0.05		
51.9 ±0.5				*0.51±0.05		
53.3 ±0.5				*0.54±0.06		
55.0 ±0.6				*0.14±0.04		
59.0 ±0.6		1/2	1	*0.54±0.06		
63.1						
72.6						
74.0 ±0.4	540 ± 40	1/2	0		1.99 ± .15	
76.7						
80.4						
83.0						
83.6 ±0.4	960 ± 80	1/2	0		3.32 ± .28	
90.2	50				0.17	
92.1						
95.9						
104						
112						
123.2 ±0.6	130 ± 20	1/2	0		.37 ± .06	
129.6 ±0.6	500 ± 50	1/2	0		1.39 ± .19	
139.9 ±0.7	2370 ± 200	1/2	0		6.33 ± .27	
169.0 ±0.8	750 ± 65	1/2	0		1.82 ± .16	
188.0 ±0.8	3400 ± 230	1/2	0		7.98 ± .53	
221.0 ±1.0	1400 ± 100	1/2	0		2.98 ± .22	
224		3/2	1			
232		3/2	1			
243.5 ±1.0	500 ± 100	3/2	1		1.01 ± .20	
265	120		>0			
267	<100		>0			
273.0 ±1.0	3500 ± 700	1/2	0		6.70 ±1.34	
280		3/2	1			
288		1/2	1			

E_0 (keV)	$g\Gamma_n$ (eV)		J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)		$g\Gamma_n^1$ (eV)
290	<100			>0				
315.0 ±1.0	5500	±1100	1/2	0		9.80	±1.96	
337	130			>0				
350	670			>0				
357	260			>0				
360.5 ±1.0	9300	±2000	1/2	0		15.48	±3.33	
382.0 ±1.0	10000	±3000	1/2	0		16.18	±4.85	
404	610			>0				
406.0 ±1.0	2500	± 500	1/2	0		3.92	± .78	
418	800		[3/2]	>0				
428	<100		(1/2)	>0				
438.0 ±1.0	1500	± 300	1/2	0		2.27	± .45	
442	<100		(1/2)	>0				
448	1000		[1/2]	1				3.3
465	115			>0				
469.5 ±1.0	1500	± 300	1/2	0		2.19	± .44	
481	385			>0				
491	1300		[1/2]	1				4.1
496	<100		(1/2)	>0				
501.0 ±0.4	2000		1/2	0				
503.5 ±0.2	600							
512.1 ±0.2	770							
513.1 ±0.4	700							
527.2 ±0.4	365			>0				
531.9 ±0.4	395			>0				
536.2 ±0.4	235			>0				
538.7 ±0.4	925			>0				
544.5 ±0.4	600			>0				
545.6 ±0.4	1100			>0				
552.3 ±0.4	450			>0				
558.7 ±0.4	465			>0				
561.5 ±0.4	1230		1/2	0				
562.8 ±0.8	~600							
565.4 ±0.5								
569.3 ±0.5								
577.5 ±0.5	2000		[3/2]	1				5.5
578.8 ±0.5	~700							
590.4 ±0.5								
595.0 ±0.5								
604.2 ±0.6								
615.0 ±0.6	2500		1/2	0		3.19		
623.7 ±0.6								
631.1 ±0.6								
633.3 ±0.6								
637.0 ±0.6	385			>0				
641.0 ±0.6	330							
646.4 ±0.6	2000		[3/2]	>0				

[a] $g\Gamma_n\Gamma_\gamma/\Gamma$

$^{57}_{26}Fe$

THERMAL CROSS SECTIONS

σ_γ = 2.48±0.30 b
a_{coh} = 2.3±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 1.3±0.2 b
R' = 6.5±0.7 fm
S_0 = 5.4±1.6

RESONANCE PARAMETERS

I^π = 1/2⁻ %Abn = 2.19 S_n = 10043.0±1.0 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
1.63± 0.01				*0.10±0.02	
3.92± 0.05	100 ± 20	0	0	1.14±0.06	1.60± .32
4.75± 0.06				*0.10±0.02	
6.21± 0.07	615 ± 75	1	0	1.32±0.12	7.80± .95
7.22± 0.08				*0.72±0.18	
7.90± 0.08				*0.36±0.06	
12.8 ± 0.1				*0.86±0.20	
13.9 ± 0.1				*1.4 ±0.4	
17.7 ± 0.3				*1.17±0.32	
21.3 ± 0.4				*2.18±0.56	
[a]29.0 ± 0.4	4870 ± 400	1	0	4 ±1	28.60±2.35
41.0 ± 0.5	1350 ± 150	1			6.67± .74
45.5 ± 0.5	525 ± 150	1			2.46± .70
55.81	5000 ± 750	0			21.16±3.17
61.0	5550 ± 750	1			22.47±3.04
77.2	2925 ± 300	1			10.53±1.08
93.7	300 ± 75	1			9.80± .25
109.6	3450 ± 450	1			10.42±1.36
110.15	1800 ± 150	1			5.42± .45
125.0	2250 ± 300	1			6.36± .85
126.0	1250 ± 250	0			3.52± .70
129.5	6300 ±1050	1			17.51±2.92
134.5	4950 ± 750	1			13.50±2.05
141.0	2250 ± 450	1			5.99±1.20
167.3	1650 ± 150	1			4.03± .37
169.0	2550 ± 300	1			6.20± .73
176.3	350 ± 50	0			.83± .12
185.5	5250 ± 600	1			12.19±1.39
189.5	1600 ± 200	0			3.68± .46

* $2g\Gamma_n\Gamma_\gamma/\Gamma$

[a] Rohr et al reported also inelastic widths in the energy range from 29.15 to 189.5 kev.

THERMAL CROSS SECTIONS

σ_γ = 1.15±0.02 b

RESONANCE PROPERTIES

I_γ = 1.19±0.07 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.31 S_n = 6586.6±3.5 keV

E_0 (keV)	Γ_γ (eV)
0.230	*0.0065±0.0014
0.359	*0.017 ±0.005
2.82	
6.16	
10.5	
19.2	

* $g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Fe^{58}	activation	JIN,34,2699(72)	Steinnes
Fe	activation	JNE,24,35(70)	Ryves
Fe^{58}	activation	PRIVATE COMM.(67)	Fabry
Fe	pile osci.	66PARIS,1,479(66)	Carre
Fe^{58}	activation	66BERKLEY,331(66)	Carter
Fe	σ_t 1.44 ev	NP,61,381(65)	Rayburn
Fe	pile osci.	CEA-2485(64)	Carre
Fe^{58}	activation	AC,36,1588(64)	Girardi
Fe^{58}	activation	PRIVATE COMM.(63)	Girardi
Fe	reflection	RSI,33,916(62)	Bally
Fe	diffraction	JPJ,17,(B111),1(62)	Shull
Fe	pile osci.	61BUCHAR,623(61)	Bouzyk
Fe	pulsed n	ZET,41,1037(61)	Isakov
Fe^{54}	activation	NSE,8,378(60)	Lyon
Fe^{58}	activation	NSE,8,378(60)-	Lyon
Fe	pile osci.	JNE,12,32(60)	Tattersall
Fe	reactivity	DP-207(57)	Wade
Fe^{58}	activation	PRIVATE COMM.(56)	Grimeland
Fe	σ_t	PR,91,451(53)	Goldberg
Fe	σ_a	HPA,25,521(52)	Haenni
Fe^{56}	σ_a	JPR,13,333(52)	Longchamp
$Fe^{54,56,57,58}$	pile osci.	PR,88,412(52)	Pomerance
Fe	pile osci.	CR,232,2089(51)	Grimeland
Fe	σ_t	PR,83,1123(51)	Havens
Fe	local osci.	PR,83,641(51)	Pomerance
Fe,$Fe^{54,56,57}$	diffraction	PR,81,527(51)	Shull
Fe	pile osci.	PPS/A,63,1175(50)	Colmer
Fe	σ_a	CR,231,1475(50)	Faraggi
Fe	σ_a	HPA,23,513(50)	Haenni
Fe	pile osci.	PR,80,342(50)	Harris
Fe	reflection	PR,71,666(47)	Fermi
Fe^{58}	activation	PR,72,888(47)	Seren
Fe	capture	PR,69,411(46)	Coltman
Fe	$\sigma_t\bar{\sigma}_s$	PR,60,155(41)	Whitaker
Fe	σ_t	PR,57,976(40)	Beyer
Fe	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Fe^{54}	$\sigma_t \sigma_\gamma$	3.1-39.0	PRIVATE COMM.(72)	Block
Fe^{58}	$\sigma_t \sigma_\gamma$	0.23-19.2	PRIVATE COMM.(72)	Block
Fe^{56}	analysis	27.9-435.5	PRIVATE COMM.(72)	Wynchank
Fe^{56}	$\sigma(\gamma,n)$	27-410	PR/C,3,2475(71)	Baglan
$Fe,Fe^{54,56,57}$	σ_t	0-187	PR/C,3,2447(71)	Garg
Fe^{57}	$\sigma(\gamma,n)$	27.7-269	PR/C,4,1314(71)	Jackson
Fe^{54}	σ_γ(spectra)	7.8-52	AUJ,24,805(71)	Kenny
Fe^{56}	σ_γ(spectra)	11-73	AUJ,24,805(71)	Kenny
Fe	σ_t	500-2500	NSE,42,28(70)	Carlson
Fe,Fe^{56}	σ_γ(spectra)	1.17	PR/C,1,973(70)	Chrien
Fe,Fe^{56}	$\bar{\sigma}_s$	1.15	PL/B,28,656(69)	Asami
$Fe,Fe^{54,56,57}$	σ_γ	10.2-129	70HELSINKI,1,633(70)	Ernst
$Fe,Fe^{54,56,57,58}$	σ_γ	0.23-102	70HELSINKI,2,815(70)	Moxon
Fe^{54}	σ_γ	7.82-52	PR,178,1746(69)	Hockenbury
Fe^{56}	σ_γ	1.15-129	PR,178,1746(69)	Hockenbury
Fe^{57}	σ_γ	1.63-40	PR,178,1746(69)	Hockenbury
Fe^{58}	σ_γ	0.23-10.4	PR,178,1746(69)	Hockenbury
Fe,Fe^{56}	σ_t	1.15	NP/A,132,129(69)	Julien
Fe^{57}	σ_t	29.2-189.5	ZP,227,1(69)	Rohr
Fe^{56}	analysis	512-1442	CHP,6,15(68)	Chien
Fe	σ_t	500-646.4	KFK-1000(68)	Cierjaks
Fe^{57}	σ_t	3.9-45.5	PR,151,912(66)	Good
Fe^{56}	σ_t	74-242.7	66PARIS,1,137(66)	Rohr
$Fe,Fe^{54,56,57}$	σ_γ	1.15-28	65ANTWERP,88(65)	Moxon
Fe,Fe^{56}	σ_t moving sample	1.2	PL,14,123(65)	Muradyan
Fe,Fe^{56}	σ_t	1.15	PL,13,234(64)	Block
Fe^{56}	σ_γ(spectra)	1.15	ORNL-3778,64(64)	Block
$Fe,Fe^{54,56,57}$	σ_t	1.17-221	CR-1860(64)	Garg
Fe^{56}	$\sigma_t \sigma_\gamma$	22-50	PR/B,136,695(64)	Macklin
Fe^{57}	$\sigma_t \sigma_\gamma$	12.7-27	PR/B,135,695(64)	Macklin
Fe,Fe^{56}	σ_t	0-1.2	PR,132,801(63)	Moore
Fe,Fe^{56}	σ_γ	1.18	AERE-PR/NP-6,15(63)+	Moxon
Fe^{54}	σ_t	8-507	AP,17,319(62)	Bowman
Fe^{56}	σ_t	28-645	AP,17,319(62)	Bowman
Fe	σ_γ	1.15	RPI-(ATR),8(62)	Russell
Fe^{54}	σ_t	7.25-147	AP,14,387(61)	Bilpuch
Fe^{56}	σ_t	28.3-189	AP,14,387(61)	Bilpuch
Fe^{57}	σ_t	6	AP,14,387(61)	Bilpuch
Fe	σ_γ	1.18-10	ZET,38,989(60)	Isakov
Fe^{57}	σ_t	3.9-6.1	ORNL-2610,19(58)	Miller
Fe,Fe^{56}	σ_t	29-406	PR,108,414(57)	Hibdon
Fe^{56}	σ_t	8-85	PR,102,1574(56)	Gibbons
Fe,Fe^{54}	σ_t	92-401	ANL-5554,55(56)	Hibdon
Fe,Fe^{57}	σ_t	143-149	ANL-5554,55(56)	Hibdon

$^{58}_{27}Co$ (9.1 hr)

THERMAL CROSS SECTIONS

σ_γ = 136000±10000 b

$^{58}_{27}Co$ (71.3 day)

THERMAL CROSS SECTIONS

σ_γ = 1880±120 b

RESONANCE PROPERTIES

I_γ = 6890 b

$^{59}_{27}Co$

THERMAL CROSS SECTIONS

σ_γ = 37.2±0.2 b
σ_γ = 17±2 b (5.272 yr $^{60}Co^g$)
σ_γ = 20±2 b (10.48 min $^{60}Co^*$)
σ_a = 6.7±0.3 b
σ_t = 43.9±0.4 b
b_{coh} = 2.5±0.3 fm
b_{coh} = -5.80±0.54 fm [J4]
b_{coh} = 10.60±0.70 fm [J3]

RESONANCE PROPERTIES

I_γ = 75.5±1.5 b
R' = 5.3±0.4 fm
<D> = 1.4±0.2 keV
S_0 = 3.8±1.6

RESONANCE PARAMETERS

I^π = 7/2$^-$ | Abn = 100 | S_n = 7491.6±1.4 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
-0.502		3		(0.48)	2.06
0.1320±0.0005	5.77 ± 0.04	4	0	0.48±0.04	0.501 ±0.039
1.38 ±0.02	0.0049± 0.0010				0.00013± .00003
2.85 ±0.01	0.118 ± 0.026			(0.48)	0.0022 ±0.0005
3.98 ±0.01	0.08 ± 0.04				0.00013±0.0006
4.322 ±0.006	124 ± 5	4	0	~0.5	1.89 ±0.08
5.015 ±0.008	570 ± 25	3	0	~1.0	8.05 ±0.35
5.80 ±0.01					
6.38 ±0.01	2.3 ± 0.4			*0.22±0.03	0.0029 ±0.005
8.05 ±0.01	32.4 ± 1.2	3	0	0.30±0.05	0.36 ±0.01
8.75 ±0.01	0.92 ± 0.40			*0.32±0.05	0.0098 ±0.0042

E_0 (keV)		$2g\Gamma_n$ (eV)		J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	
9.69	±0.01	2.4	± 0.6			*0.56±0.06	0.024	±0.006
10.70	±0.01	73.0	± 6.2	4	0	0.63±0.07	0.71	±0.06
11.85	±0.02	2.2	± 0.4			*0.25±0.06	0.020	±0.004
13.28	±0.02	23.6	± 3.0	4	0	0.65±0.10	0.21	±0.03
15.64	±0.03	64.8	± 6.0	3	0	0.47±0.08	0.52	±0.05
16.92	±0.03	185.6	± 15.0	4	0	0.52±0.11	1.43	±0.12
19.75	±0.04	3.1	± 0.8				0.022	±0.006
21.94	±0.04	652	± 40	3	0		4.40	±0.27
22.51	±0.04	285	± 30	4	0		1.90	±0.20
24.46	±0.05	315	± 30	3	0		2.01	±0.19
25.15	±0.05	207	± 20	4	0		1.31	±0.13
25.92	±0.05	28	± 5	4	0		0.17	±0.03
27.35	±0.06	191	± 20	4	0		1.16	±0.12
29.40	±0.07	14	± 4	3	0		0.082	±0.023
30.11	±0.07	368	± 40	4	0		2.12	±0.23
31.36	±0.08	136	± 20	3	0		0.770	±0.113
31.76	±0.08	9.5	± 2.4				0.053	±0.014
32.73	±0.08	125	± 12	3	0		0.69	±0.07
33.05	±0.08	49.5	± 8.0	4	0		0.27	±0.04
34.51	±0.08	5.0	± 2.0				0.027	±0.011
34.90	±0.08	277	± 30	4	0		1.48	±0.16
36.74	±0.09	23	± 4	3	[1]		0.12	±0.02
39.35	±0.10							
40.25	±0.10	24	± 4	[3]	0		0.12	±0.02
40.67	±0.10	3.6	± 2.0				0.018	±0.010
41.48	±0.11	41	± 6	4	0		0.20	±0.03
42.81	±0.12	3.0	± 1.0				0.015	±0.005
43.61	±0.12	3.0	± 1.0				0.014	±0.005
45.23	±0.13	283	± 20	3	0		1.33	±0.09
45.97	±0.13	338	± 20	4	0		1.58	±0.09
47.14	±0.14	45	± 8	4	0		0.21	±0.04
51.26	±0.15	540	± 40	4	0		2.39	±0.18
52.85	±0.17	58.4	± 8.0	4	0		0.25	±0.04
53.83	±0.18	438	± 30	3	0		1.89	±0.13
56.45	±0.19	15	± 6				0.063	±0.025
57.74	±0.19	20	± 4		[1]		0.083	±0.016
58.94	±0.20	298	± 32	3	0		1.23	±0.13
59.76	±0.20	112	± 18	4	0		0.458	±0.074
61.08	±0.20	80	± 16		0		0.32	±0.07
62.80	±0.21	44	± 16		0		0.18	±0.06
66.04	±0.24	76	± 14		0		0.30	±0.05
69.51	±0.25	22	± 8				0.083	±0.030
69.96	±0.25	236	± 24	4	0		0.892	±0.091
71.87	±0.26	384	± 40	3	0		1.43	±0.15
72.31	±0.27	192	± 30	3	0		0.714	±0.112
74.47	±0.28	4	± 3				0.015	±0.011
74.73	±0.28	40	± 6		0		0.15	±0.02
75.70	±0.29	10	± 4				0.036	±0.015
75.89	±0.29	10	± 4				0.036	±0.015
76.53	±0.29	18	± 8				0.065	±0.029
77.00	±0.30	350	± 40	3	0		1.26	±0.14
77.72	±0.30	10	± 6				0.036	±0.022

$^{59}_{27}Co$

E_0 (keV)		$2g\Gamma_n$ (eV)		J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	
78.78	±0.30	10	± 6				0.036	±0.021
79.39	±0.31	280	± 50	4	0		0.99	±0.18
81.46	±0.32	258	± 50	4	0		0.904	±0.175
82.46	±0.34	50	± 16				0.17	±0.06
83.14	±0.36	192	± 50	3	0		0.666	±0.173
84.06	±0.36	238	± 50	4	0		0.821	±0.173
86.29	±0.36	20	± 10				0.068	±0.034
88.35	±0.36	1300	±140	4	0		4.37	±0.47
89.05	±0.37	30	± 16				0.10	±0.05
91.51	±0.37	30	± 16				0.099	±0.053
92.70	±0.38	380	± 70	4	0		1.25	±0.23
92.78	±0.38	2360	±180	3	0		7.75	±0.59
94.80	±0.38	480	± 70	4	0		1.56	±0.23
95.11	±0.39	74	± 14	[3]	[0]		0.24	±0.05
96.94	±0.39	60	± 14				0.19	±0.05
97.63	±0.40	520	±180	[3]	[0]		1.66	±0.58
98.30	±0.40	3360	±460	4	0		10.72	±1.47
100.28	±0.40	114	± 20	3	0		0.360	±0.063
101.64	±0.40	300	± 50	3	0		0.941	±0.157
105.33	±0.5	220	± 40	3	0		0.678	±0.123
106.63	±0.5	258	± 50	4	0		0.790	±0.153
108.83	±0.5	220	± 40		0		0.667	±0.121
110.05	±0.5	160	± 30		0		0.482	±0.090
110.95	±0.6	80	± 24				0.24	±0.07
111.40	±0.6	20	± 10				0.060	±0.030
112.12	±0.6	124	± 20		0		0.370	±0.060
113.21	±0.6	150	± 30		0		0.446	±0.089
114.11	±0.6	16	± 10				0.047	±0.030
114.87	±0.6	1060	±140	3	0		3.13	±0.41
116.44	±0.6	100	± 40				0.29	±0.12
117.26	±0.6	680	±140	4	0		1.99	±0.41
118.63	±0.6	1220	±220	[3]	0		3.54	±0.64
119.40	±0.6	460	±100	[4]	0		1.33	±0.29

" $2g\Gamma_\gamma$

$^{60}_{27}Co$

[5.272 yr]

THERMAL CROSS SECTIONS

σ_γ = 2.0±0.2 b

RESONANCE PROPERTIES

I_γ = 4.3±1.0 b

$^{60}_{27}Co$

(10.48 min)

THERMAL CROSS SECTIONS

σ_γ = 58±8 b

RESONANCE PROPERTIES

I_γ = 230±50 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Co^{59}	depletion	JNE,26,403(72)	Werner
Co^{59}	burn up	DAN/B,32,3249(71)	Elgart
Co^{59}	pulsed n	JNE,24,43(70)	Silk
Co^{59}	polarization	PR,185,961(69)	Ito
Co^{59}	activation	RCA,8,61(68)	Kim
Co^{59}	activation	NE,24,530(68)	Kondurov
Co^{59}	activation	CJP,46,2325(68)	Merritt
Co^{59}	activation	PRIVATE COMM.(67)	Deworm
Co^{59}		NSE,24,87(66)-	Cance
Co^{59}	pile osci.	[illegible],979(66)	Carre
Co^{60}	activation	IN-1024(66)	Hogg
Co^{59}		NSE,24,87(66)-	Swiatorski
Co^{59}	activation	NSE,24,87(66)	Vaninbroukx
Co^{59}		ORNL-3679,16(64)	Halperin
Co^{59}	pile osci.	ZFK-RN-23(64)	Huttel
Co^{59}	activation	AERE-R-4111(64)	Taylor
Co^{60}	activation	ANS,6,420(63)	Hogg
Co^{59}	pile osci.	KE,6,336(63)	Huttel
Co^{59}	activation	PR,129,769(63)	Keisch
Co^{59}	polarization	PR,130,1907(63)	Schermer
Co^{59}	activation	IDO-16744(62)	Hogg
Co^{59}	pulsed n	NSE,9,132(61)	Meadows
Co^{59}	activation	60VIENNA,63(60)	Maier-Leibnitz
Co^{59}	pile osci.	JNE,12,32(60)	Tattersall
Co^{59}	activation	NUK,2,255(60)	Wolf
Co^{59}	diffraction	PR,110,1333(58)	Roth
Co^{59}	activation	ZP,149,215(57)	Houtermans
Co^{60}	activation	CJP,31,903(53)	Brown
Co^{59}	activation	CJC,31,391(53)	Moss
Co^{59}	pile osci.	JPR,13,171(52)	Alloud
Co^{59}	σ_t	PR,87,487(52)	Bernstein
Co^{59}	activation	PR,83,1059(51)	Deutsch
Co^{59}	pile osci.	CR,232,2089(51)	Grimeland
Co^{59}	local osci.	PR,83,641(51)	Pomerance
Co^{59}	diffraction	PR,81,527(51)	Shull
Co^{59}	activation	PR,82,553(51)	Yaffe
Co^{59}	pile osci.	PPS/A,63,1175(50)	Colmer
Co^{59}	pile osci.	PR,80,342(50)	Harris
Co^{59}	activation	PR,72,888(47)	Seren
Co^{59}	σ_t	PR,71,174(47)	Wu
Co^{59}	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Co^{59}	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Co^{59}	σ_t	.132-130.	PRIVATE COMM.(72)	Garg
Co^{59}	σ_t	0.132	NST,7,7(70)	Nakajima
Co^{59}	activation	0.132	69MONTREAL,365(69)	Stroud
Co^{59}	activation	0.132	AAEC/TM-466(68)	Wall
Co^{59}	σ_t	0.132-119	NP/A,102,602(67)	Morgenstern
Co^{59}	σ_t	4.318-27.3	PRIVATE COMM.(66)	Garg
Co^{59}	σ_t	1.38-76.95	65ANTWERP,86(65)	Morgenstern
Co^{59}	σ_γ	1.381-16.8	65ANTWERP,88(65)	Moxon
Co^{59}	σ_t	0.132-100.60	CR-1860(64)	Garg
Co^{59}	$\sigma_t \sigma_\gamma$(spectra)	0.132	NSE,17,319(63)	Jain
Co^{59}	σ_γ	0.132-16.6	AERE-PR/NP-4(62)	Moxon
Co^{59}	σ_γ	0.132	BAP,6,274(60)	Block
Co^{59}	σ_t	4.2-5.0	BAP,5,449(60)+	Good
Co^{59}	σ_t	4.9-30.	BAP,4,42(59)	Miller
Co^{59}	σ_t	0.132-30.	PR,111,288(58)	Cote
Co^{59}	σ_t	4.7-28.3	PR,106,110(57)	Marshak
Co^{59}	σ_t	0.132	KAPL-1084(54)	Gaerttner
Co^{59}	σ_t	0.132	PR,95,476(54)	Seidl
Co^{59}	σ_t	0.132	PRS/A,215,278(52)	Merrison
Co^{59}	σ_t	0.132	PR,83,1123(51)	Havens
Co^{59}	σ_t	0.132	PR,75,1508(49)	Seidl

$_{28}$Ni

THERMAL CROSS SECTIONS

σ_γ = 4.43±0.16 b
$\bar{\sigma}_s$ = 17.3±0.5 b
a_{coh} = 10.3±0.1 fm

RESONANCE PROPERTIES

I_γ = 2.2±0.2 b
R' = 7.3±0.4 fm
S_0 = 2.9±0.3

$^{58}_{28}$Ni

THERMAL CROSS SECTIONS

σ_γ = 4.6±0.3 b
$\bar{\sigma}_s$ = 26.0±0.3 b
σ_a = 0.68±0.36 mb
σ_t = 30.4±0.4 b
a_{coh} = 14.4±0.1 fm

RESONANCE PROPERTIES

$I_\gamma{}^c$ = 2.2±0.2 b
R' = 7.5±0.5 fm
<D> = 3.0±0.3 keV
S_0 = 3.1±0.8

RESONANCE PARAMETERS

I^π = 0+ %Abn = 67.88 S_n = 8999.3±1.0 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
-28.5 ±5.0		1/2	0	9.0 ±0.6	98.0 ±5.4	
6.89			[1]	*0.022±0.003		
13.34±0.03			[1]	*0.39 ±0.05		
13.66±0.04			[1]	*0.57 ±0.05		
15.50±0.04	1200 ± 100	1/2	0	2.1 ±0.7	9.64±0.80	
19.03±0.05			[1]	*0.07 ±0.01		
20.04±0.05			[1]	*0.22 ±0.03		
21.16±0.05			[1]	*0.56 ±0.06		
26.08±0.07			[1]	*0.25 ±0.05		
26.67±0.07			[1]	*0.70 ±0.07		
32.36±0.08		[3/2]	[1]	*1.38 ±0.15		
34.24±0.08			[1]	*0.65 ±0.08		
36.12±0.09			[1]	*0.86 ±0.10		
39.59±0.10			[1]	*0.66 ±0.15		
47.8 ±0.2		[3/2]	[1]	*1.3 ±0.2		
52.0 ±0.2		[3/2]	[1]	*1.5 ±0.3		
54.7 ±0.2			[1]	*0.30 ±0.10		
58.6 ±0.2			[1]	*0.52 ±0.15		
60.1 ±0.2			[1]	*0.44		

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
61.8 ±0.2			[1]	*0.71 ±0.15		
63.0 ±0.2	3600 ± 200	1/2	0	3.2 ±0.8	14.34±0.80	
66.4 ±0.2			[1]	*0.36		
68.8 ±0.2			[1]	*0.24		
69.8 ±0.2			[1]	*0.46		
78.0 ±0.2			[1]	*0.12 ±0.03		
81.1 ±0.2			[1]	*0.73		
83.1 ±0.2	110 ± 40		0	3.5 ±0.7	0.38±0.14	
89.8 ±0.2			[1]	*0.45		
92.3 ±0.2			[1]	*0.17		
94.5 ±0.3			[1]	*0.9 ±0.2		
97.0 ±0.3			[1]	*0.5 ±0.1		
101.1 ±0.3			[1]	*1.0 ±0.2		
105.3 ±0.3			[1]	*1.8 ±0.4		
107.7 ±0.5	1400 ± 200	1/2	0	3.5 ±0.8	4.27±0.61	
110.7 ±0.3			[1]	*1.3 ±0.3		
117.5 ±0.3			[1]	*0.8 ±0.3		
120.3 ±0.3		1/2	0	3.3 ±0.6		
125.0 ±0.5	700 ± 200	1/2	0	3.2 ±0.6	1.98±0.57	
137.5 ±0.7	1760 ± 200	1/2	0		4.75±0.54	
140.5 ±0.8	3460 ± 500	1/2	0		9.23±1.33	
147.5 ±0.8	175		>0			
159.5 ±0.9	6000 ±1000	1/2	0		15.02±2.50	
169.0 ±1.0	750 ± 220	1/2	0		1.82±0.54	
183.5 ±1.1	250		>0			
193.0 ±1.2	3500 ± 500	1/2	0		7.97±1.14	
207.0 ±1.5	6800 ±1200	1/2	0		14.95±2.64	
215.0 ±1.5	260		>0			
231.0 ±1.8	6000	1/2	0		12.48	
243.0 ±1.8	250	1/2	0		0.51	
247.5 ±1.8	360		>0			
270.0 ±2.0	6000	1/2	0		11.55	
278.0 ±2.0	2000	1/2	0		3.79	
286.5 ±2.0	215		>0			
303.0 ±2.0	750	1/2	0		1.36	
325.0 ±2.0	2000	1/2	0		3.51	
334.5 ±2.5	624		>0			
343.5 ±2.5	585		>0			
349.0	1500	1/2	0		2.54	
357.5	443		>0			
367.0	250	1/2	0		0.41	
378.5	443		>0			
387.5	500		>0			
394.0	750	1/2	0		1.20	
417.0	5000	1/2	0		7.74	
426.0	1830 ± 400	3/2	1			5.2
426.5	8000	1/2	0		12.25	
454.5	3000	1/2	0		4.45	
461.5	750	1/2	0		1.10	
492.5	2000		>0			
495.5	2000	1/2	0		2.84	
507.0	2000	1/2	0		2.81	

$^{58}_{28}$Ni

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
522.5	750	1/2	0		1.04	
530.0	430		>0			
544.0	640		>0			
554.5	1490 ± 300	1/2	1			3.3
559.5	1260		>0			
571.0	10000	1/2	0		13.23	
588.5	2500	1/2	0		3.26	
600.0	6000	1/2	0		7.75	

* $g\Gamma_n\Gamma_\gamma/\Gamma$

$^{59}_{28}$Ni

[8×10^4 yr]

THERMAL CROSS SECTIONS

σ_γ = 92±4 b
σ_a = 12±2 b

RESONANCE PROPERTIES

I_γ = 138±8 b

RESONANCE PARAMETERS

I^π = 3/2$^-$ S_n = 11387.5±1.7 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_a (eV)	$2g\Gamma_n^0$ (eV)
.20310±.00005	7.88±0.231	1	0	3.4±1.0	0.548±0.015

THERMAL CROSS SECTIONS

σ_γ = 2.8±0.2 b
$\bar{\sigma}_s$ = 1.0±0.1 b
σ_t = 3.8±0.2 b
a_{coh} = 2.8±0.1 fm

RESONANCE PROPERTIES

I_γ = 1.5±0.2 b
R' = 6.7±0.3 fm
<D> = 3.8±0.6 keV
S_0 = 2.4±0.6

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 26.23 S_n = 7819.5±1.0 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
1.293±0.009				*0.0003±0.0001		
2.257±0.009			[1]	*0.065 ±0.007		
5.53 ±0.02			[1]	*0.056 ±0.009		
12.23 ±0.03			[1]	*0.11 ±0.02		
12.5 ±0.1	2660 ± 100		0	3.3 ±0.3	23.79±0.89	
13.62 ±0.03			[1]	*0.11 ±0.03		
23.88 ±0.06		3/2	1	*0.78 ±0.10		
28.47 ±0.07			[1]	*0.15 ±0.05		
28.60 ±0.10	850 ± 100	1/2	0	1.1 ±0.1	5.02±0.59	
29.47 ±0.08			[1]	*0.09 ±0.02		
30.24 ±0.08			[1]	*0.35 ±0.06		
33.03 ±0.08		3/2	1	*0.34 ±0.06		
33.3 ±0.1			[1]	*0.20 ±0.03		
39.5 ±0.1				*0.49 ±0.08		
43.0 ±0.1	90 ± 30	1/2	0	1.3 ±0.3	0.43±0.15	
47.6 ±0.1	~10	1/2	1	0.9 ±0.2		~0.49
49.8 ±0.1			[1]	*0.26 ±0.04		
50.9 ±0.2			1	*0.11 ±0.02		
51.5 ±0.2		3/2	1			
56.0 ±0.2			[1]	0.20 ±0.06		
56.7 ±0.2			[1]	*0.44 ±0.09		
65.42 ±0.16	500 ± 150	1/2	0	2.1 ±0.3	1.96±0.59	
71.5 ±0.2			[1]	*0.36 ±0.07		
73.3 ±0.2			[1]	*0.48 ±0.09		
78.3 ±0.2			[1]	*0.23 ±0.04		
80.0 ±0.2			[1]	*0.33 ±0.07		
82.0 ±0.2	110 ± 40	[1/2]	1	*0.22 ±0.05		
84.9 ±0.2	80 ± 40	[3/2]	1	0.20 ±0.04		1.61
86.3 ±0.2	330 ± 25	1/2	0		1.12±0.09	
87.9 ±0.2			[1]	*0.64 ±0.13		
89.9 ±0.3			[1]	*0.17 ±0.04		
91.6 ±0.3			[1]	*0.25 ±0.05		
93.9 ±0.3			[1]	*0.48 ±0.10		
97.5 ±0.3	1000 ± 200	1/2	0	1.0 ±0.2	3.20±0.64	
99.2 ±0.3			[1]	*0.92 ±0.20		

$^{60}_{28}Ni$

E_0 (keV)		$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)		$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
101.9	±0.3			[1]	*0.10	±0.05		
108.3	±0.3	700 ± 100	1/2	0	1.1	±0.3	2.13±0.31	
111.6	±0.3		1/2	1	2.7	±0.6		
120.6	±1.1		3/2	1	1.3	±0.3		
123.8	±1.2			1				
129.7	±1.3			1				
136.5	±1.4		1/2	1	4.3	±0.9		
139.6	±1.4		1/2	1	4.0	±0.9		
156.4	±1.2	440 ± 50		0			1.11±0.13	
162.0	±0.4	1400 ± 200	1/2	0	2.2	±0.5	3.48±0.50	
186.6	±1.5	5800 ± 800	1/2	0			13.43±1.85	
198.0	±1.8	3100 ± 350	1/2	0			6.97±0.79	
206.0	±1.8	120		>0				
214.0	±1.8	74		>0				
220.0	±1.8	106		>0				
229.0	±1.8	224		>0				
252.0	±2.0	910		>0				
257.8	±2.1	3500 ± 600	1/2	0			6.89±1.18	
279.6	±2.3	750 ± 160	1/2	0			1.42±0.30	
282.5	±2.4	647		>0				
292.5	±2.4	378		>0				
306	±2.5	525		>0				
316.0	±2.5	3200 ± 600	1/2	0			5.69±1.07	
326.3	±2.5	7000 ±1100	1/2	0			12.25±1.93	
339.5	±2.5	6500 ±1500	1/2	0			11.16±2.57	
357.2	±2.6	1000	1/2	0			1.67	
358.5	±2.6	1113		>0				
375.5		4000	1/2	0				
378.5		226		>0				
387.5		290		>0				
392.0		225		>0				
397.0		321		>0				
401.5		400		>0				
412.3		750	1/2	0			1.17	
421.0		2000	1/2	0			3.08	
426.5		500	1/2	0			0.77	
431.5		230		>0				
446.0		3000	1/2	0			4.49	
453.0		1500	1/2	0			2.23	
462.0		1000	1/2	0			1.47	
473.0		500	1/2	0			0.73	
484.6		3750	1/2	0			5.39	
497.5		578		>0				
498.0		5000					7.63	
502.5		333		>0				
511.5		2420	3/2	1				
513.5		2250	1/2	0			3.14±6.3	
520.3		5000	1/2	0			6.93	
525.5		3000	1/2	0			4.14	
533.0		500	1/2	0			0.69	
552.5		710		>0				
556.5		500	1/2	0			0.67	

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
566.0	260		>0			
580.3	250	1/2	0		0.33	
588.5	500	1/2	0		0.65	
594.8	2500	1/2	0		3.24	

[a] $g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

σ_γ = 2.5±0.8 b
$\bar{\sigma}_s$ = 9.6±2.0 b
σ_a = 0.047±0.021 b
σ_t = 12.1±0.8 b
a_{coh} = 7.60±0.06 fm

RESONANCE PROPERTIES

I_γ^c = 1.6±0.4 b
R' = 6.4±0.3 fm
<D> = 0.79±0.10 keV
S_0 = 3.0±0.8

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 1.19 S_n = 10596.6±1.4 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
1.35±0.01				[a]0.48±0.060	
2.35±0.01					
3.14±0.01				[a]0.17±0.04	
3.30±0.01				[a]0.96±0.12	
6.36±0.01					
6.47±0.01				[a]0.70±0.20	
7.15±0.02	50 ± 6	1	0	2.5 ±0.4	0.59 ±0.07
7.55±0.02	225 ± 20	2	0	2.3 ±0.6	2.59 ±0.23
8.73±0.02	7.5± 2.5	2	0	2.6 ±0.8	0.080±0.027
9.91±0.02			[1]	[a]0.18±0.06	
10.20±0.03			[1]	[a]0.38±0.10	
10.90±0.03					
11.4 ±0.03					
11.8 ±0.03					
12.64±0.03	90 ± 10	2	0	1.7 ±0.4	0.80 ±0.09
13.60±0.03	76 ± 5	2	0	1.6 ±0.4	0.65 ±0.04
14.02±0.03	13 ± 3	1	0	3.1 ±0.5	0.11 ±0.03
14.45±0.04			[1]	[a]0.60±0.06	
15.38±0.04			[1]	[a]0.34±0.08	
16.70±0.05	600 ± 20	1	0	2.2 ±0.4	4.64 ±0.15
16.80±0.05			[1]	[a]0.28±0.08	
17.83±0.05	140 ± 10	1	0	1.6 ±0.5	1.05 ±0.08

$^{61}_{28}$Ni

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
18.83±0.05	90 ± 10	2	0	0.9 ±0.3	0.66 ±0.07
20.25±0.05			[1]	*0.18±0.06	
20.50±0.05			[1]	*0.22±0.06	
21.35±0.05			[0]	*1.76±0.40	
24.12±0.05			[1]	*0.72±0.18	
24.62±0.06	97 ± 8	1	0	1.4 ±0.3	0.62 ±0.05
25.12±0.06			[1]	*0.50±0.12	
25.96±0.06			[1]	*0.48±0.12	
26.45±0.06			[1]	*0.36±0.10	
27.10±0.07			[1]	*0.40±0.10	
27.65±0.07			[1]	*0.80±0.20	
28.21±0.07	6.3± 5.0	2	0	3.0 ±1.0	0.038±0.030
29.11±0.07	310 ± 20	1	0	2.4 ±0.4	1.82 ±0.12
30.64±0.08	19 ± 10	2	0		0.11 ±0.06
31.13±0.08	570 ± 40	1	0		3.23 ±0.23
31.83±0.08	12.5± 7.5	2	0		0.070±0.042
32.70±0.08	265 ± 25	2	0		1.47 ±0.14
33.68±0.08	50 ± 10	1	0	2.8 ±0.5	0.27 ±0.05
37.13±0.09	180 ± 20	2	0	3.0 ±0.5	0.93 ±0.10
41.34±0.10	150 ± 20	1	0		0.74 ±0.10
43.25±0.11	12.5± 10.0				0.060±0.048
43.61±0.11	37.5± 17.5	2	0		0.18 ±0.08
45.49±0.11	50 ± 6	1	0		0.23 ±0.03
46.16±0.12	40.5± 6.0	1	0		0.19 ±0.03
50.51±0.12	100 ± 9	1	0		0.45 ±0.04
53.30±0.13	176 ± 13	2	0		0.76 ±0.06
54.81±0.14	142 ± 14	1	0		0.61 ±0.06
56.49±0.14	149 ± 13	2	0		0.63 ±0.06
58.16±0.15	133 ± 15	1	0		0.55 ±0.06
64.07±0.16	68 ± 6	2	0		0.27 ±0.02
65.87±0.16	1790 ±225	2	0		6.97 ±0.09
68.77±0.17	1375 ±625	2	0		5.24 ±2.38

* $2g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

σ_γ = 14.2±0.3 b
σ_s = 9.5±0.4 b
σ_t = 23.7±0.5 b
a_{coh} = -8.7±0.2 fm

RESONANCE PROPERTIES

I_γ = 6.8±0.2 b
R' = 6.2±0.3 fm
S_0 = 2.9±0.7

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 3.66 S_n = 6837.7±1.0 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
4.54±0.05	1600 ±160	1/2	0	0.76±0.12	23.75±2.29	
42.87±0.01	340 ± 10	1/2	0		1.64±0.05	
56.91±0.02	56 ± 4		[1]			2.5
77.23±0.03	70 ± 7	1/2	0		0.25±0.03	
78.42±0.04	48 ± 7		[1]			1.4
94.7 ±0.02	2500 ±100	1/2	0		8.12±0.33	
105.65±0.03	4600 ±200	1/2	0		14.15±0.62	
137.5	127		>0			
149.3 ±0.1	140 ± 20	1/2	0		0.36±0.05	
188.2 ±0.2	90 ± 20		0		0.21±0.05	
214.7 ±0.2	190 ± 20	1/2	0		0.41±0.04	
229.5 ±0.04	6250 ± 80	1/2	0		13.25±0.17	
242.2 ±0.08	780 ± 40	1/2	0		1.58±0.08	
259.5	113		>0			
272.5	333		>0			
280.5	4800 ±200	1/2	0		9.06±0.38	
286.0	1500 ±500	1/2	0		2.81±0.93	
297.0	200		>0			
299.5	500		>0			
304.0	800	1/2	0		1.45	
315.5	238		>0			
319.0	375		>0			
323.0	580		>0			
327.0	5500	1/2	0		9.62	
344.2	7500	1/2	0		12.78	
352.0	279		>0			
356.2	2000	1/2	0		3.35	
364.0	194		>0			
374.5	250	1/2	0		0.41	
382.5	1250	1/2	0		2.02	
388.5	4500	1/2	0		7.22	
401.5	1500	1/2	0		2.37	
403.3	392		>0			
420.3	813		>0			
423.0	1500	1/2	0		2.31	
433.0	6500	1/2	0		9.88	

$^{62}_{28}$Ni

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
444.0	350	1/2	0		0.53	
449.8	250		>0			
450.0	236		>0			
458.0	500	1/2	0		0.74	
461.8	550		>0			
475.0	1500	1/2	0		2.18	
480.0	324		>0			
488.5	4000	1/2	0		5.72	
493.5	934	1/2	1			2.8
498.0	1500	1/2	0		2.13	
508.5	500	1/2	0		0.70	
515.5	145		>0			
522.0	390		>0			
529.0	1690	3/2	1			4.7
535.5	1390	1/2	1			
539.0	2000	1/2	0		2.72	
554.0	675		>0			
568.5	843		>0			
571.8	4000	1/2	0		5.29	
581.0	500	1/2	0		0.66	
583.5	10000	1/2	0		13.09	
590.5	2000	1/2	0		2.60	
599.5	905	1/2	1			2.2

$^{63}_{28}$Ni

[100 yr]

THERMAL CROSS SECTIONS

σ_γ = 23±3 b

THERMAL CROSS SECTIONS

σ_γ = 1.49±0.03 b [2.520 hr ^{65}Ni]
a_{coh} = -0.38±0.07 fm

RESONANCE PROPERTIES

I_γ = 1.1±0.2 b
R' = 6.4±0.1 fm
S_0 = 1.3±0.1
S_1 = 0.6±0.3

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 1.08 S_n = 6837.7±1.0 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
9.52				*1.7 ±0.2		
14.3 ±0.2	2900 ±500	1/2	0	.76± .15	24.25 ±4.18	
25.8 ±0.1						
31.8 ±0.1						
33.81±0.04	8900 ±500	1/2	0		48.40 ±2.72	
62.4 ±0.1						
82.8 ±0.1						
106.52±0.08	110 ± 30		>0			
129.32±0.03	1400 ± 50	1/2	0		3.89 ±0.14	
141.5 ±0.1	170 ± 20		>0			
148.8 ±0.1	80 ± 20	1/2	0		0.21 ±0.05	
155.0 ±0.1	3950 ±100	1/2	0		10.04 ±0.25	
163.2 ±0.1	160 ± 20	1/2	0		0.40 ±0.05	
177.7 ±0.1	470 ± 30	1/2	0		1.12 ±0.07	
191.0 ±0.2	140 ± 30		[1]			
205.3 ±0.2	60 ± 20	1/2	0		0.13 ±0.04	
214.7 ±0.3	90 ± 20		>0			
219.8 ± .1	30 ± 20	1/2	0		0.064±0.043	
226.9 ± .3	120 ± 30	1/2	0		0.25 ±0.06	
231.95± .04	3770 ± 90	1/2	0		7.83 ±0.19	
237.9 ±0.1	320 ± 40		>0			
255.7 ±0.3	170 ± 40		>0			
269.7 ±0.1	2210 ± 90	1/2	0		4.26 ±0.17	
283.5 ±0.4	350 ± 70	1/2	0		0.66 ±0.13	
298.0 ±2.5	1000	1/2	0		1.83	
308.5 ±2.5	1500	1/2	0		2.70	
327.0 ±2.5	597		>0			
333.0 ±2.5	250	1/2	0		0.43	
340.2	500	1/2	0		0.86	
360.3	728		>0			
365.0	1857	[3/2]	1			7.6
371.5	1318	[3/2]	1			5.3
383.0	1597	[3/2]	1			
389.0	6000	1/2	0		9.62	
392.5	235		>0			
395.5	815		>0			
407.0	2020	[3/2]	1			7.4

$^{64}_{28}$Ni

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
414.0	759		>0			
420.8	8000	1/2	0		12.33	
455.5	560	[1/2]	1			
459.5	1100	[3/2]	1			
466.5	995	[1/2]	1			
470.0	535		>0			
479.0	1090	[1/2]	1			
483.0	5000	1/2	0		7.19	
499.5	535		>0			
503.0	766		>0			
519.0	477		>0			
523.0	1000	1/2	0		1.38	
536.5	10000	1/2	0		13.65	
541.5	1670	[3/2]	1			4.5
552.0	2000	1/2	0		2.69	
565.0	900		>0			
576.0	4000	1/2	0		5.27	
583.0	300	1/2	0		0.39	

[a] $g\Gamma_n\Gamma_\gamma/\Gamma$

$^{65}_{28}$Ni

[2.520 hr]

THERMAL CROSS SECTIONS

σ_γ = 24.3±2.0 b

RESONANCE PROPERTIES

I_γ = 11±2 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ni^{59}	σ_a	KAPL-3979(72)+	Eiland
Ni^{59}	pile osci.	PRIVATE COMM.(72)	Kirouac
Ni^{59}	pile osci.	KAPL-3980(72)	Kirouac
Ni^{63}	radiation balance	ARI,22,777(71)	Barnes
Ni^{59}	σ_a	ANS,14,168(71)	Kangilaski
Ni	σ_γ moxon rae	NIM,86,83(70)	Malik
Ni^{62}	activation	JNE,24,35(70)	Ryves
Ni^{65}	activation	NAP,9,662(70)	Serment
Ni^{62}	activation	JIN,32,2839(70)	Sims
Ni^{59}	σ_a	ANS,13,557(70)	Weitman
Ni^{65}	mass spectrometry	JIN,31,1241(69)	Pinajian
Ni^{64}	activation	ORNL-4343,71(68)	Emery
$Ni^{61,64}$	diffraction	PR,156,1225(67)	Sidhu
$Ni^{61,62,64}$	σ_t	PRIVATE COMM.(65)	Doil'nitsyn
Ni,Ni^{58}	σ_t 1.44 ev	NP,61,381(65)	Rayburn
Ni^{62}	mass spectrometry	PR,125,1619(62)	Horrocks
Ni^{64}	activation	NSE,8,378(60)	Lyon
Ni	pile osci.	JNE,12,32(60)	Tattersall
$Ni^{58,61}$	σ_a	ZP,153,106(58)	Munnich
Ni^{65}	activation	PRIVATE COMM.(58)	Schuman
Ni^{62}	mass spectrometry	CJC,34,1742(56)	McMullen
Ni	mirror reflections	PR,96,1297(54)	Allen
Ni	σ_t	PR,91,451(53)	Goldberg
$Ni^{58,60,61,62,64}$	pile osci.	PR,88,412(52)	Pomerance
Ni	pile osci.	CR,232,2089(51)	Grimeland
Ni	local osci.	PR,83,641(51)	Pomerance
$Ni,Ni^{58,60,62}$	σ_t diffraction	PR,81,527(51)	Shull
Ni	$\bar{\sigma}_s$	PR,83,379(51)	Weiss
Ni	$\bar{\sigma}_s$	PR,77,575(50)	Bendt
Ni	pile osci.	PPS/A,63,1175(50)	Colmer
Ni	pile osci.	PR,80,342(50)	Harris
$Ni,Ni^{58,60,62}$	diffraction	PR,79,395(50)	Koehler
Ni	$\bar{\sigma}_s$	PR,71,666(47)	Fermi
Ni	σ_γ	PR,69,411(46)	Coltman
Ni	$\bar{\sigma}_s$	JPJ,24,569(42)	Kimura
Ni	σ_t	PR,60,155(41)	Whitaker
Ni	σ_t	PR,57,976(40)	Beyer
Ni	$\sigma_t\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Ni	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell
Ni	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Ni^{62}	σ_t	4.6	PRIVATE COMM.(73)	Good
Ni^{58}	$\sigma_t\sigma_\gamma$	15	AERE-PR/NP-18,4(72)	Axmann
Ni^{62}	$\sigma_t\sigma_\gamma$	4.6	AERE-PR/NP-18,4(72)	Axmann
Ni^{61}	$\sigma_t\sigma_\gamma$	1.35-21.3	PRIVATE COMM.(72)	Block
Ni^{64}	$\sigma_t\sigma_\gamma$	14.3-82.8	PRIVATE COMM.(72)	Block
Ni^{58}	σ_γ	13.3-125	PRIVATE COMM.(72)	Froehner
Ni^{60}	σ_γ	12.2-162	PRIVATE COMM.(72)	Froehner
Ni^{61}	σ_γ	7.2-69	PRIVATE COMM.(72)	Froehner
Ni^{59}	σ_t	0.203	KAPL-3980(72)	Kirouac
Ni^{59}		0.203	PRIVATE COMM.(72)	Kirouac
Ni^{62}	σ_t	42.9-288	KFK-1517(72)	Spencer
Ni^{64}	σ_t	14.3-284	KFK-1517(72)	Spencer
Ni^{58}	σ_t	15.3-110.7	KFK-1271/3(71)	Beer
Ni^{60}	σ_t	12.5-194.6	KFK-1271/3(71)	Beer
Ni^{62}	σ_t	12.9-288	KFK-1271/3(71)	Beer
Ni^{64}	σ_t	14.3-283.5	KFK-1271/3(71)	Beer
Ni	σ_t	32.2-333	PR/C,3,2447(71)	Garg
Ni^{58}	σ_t	0-207	PR/C,3,2447(71)	Garg
Ni^{60}	σ_t	12.4-196	PR/C,3,2447(71)	Garg
Ni^{62}	σ_t	4.5-149	PR/C,3,2447(71)	Garg
Ni^{61}	$\sigma(\gamma,n)$	11.6-198	PR/C,4,1314(71)	Jackson
Ni^{60}	$\sigma_t\sigma_\gamma$	1.3-340	NP/A,163,592(71)	Stieglitz
Ni^{61}	σ_t	7.2-69	70HELSINKI,1,619(70)	Cho
Ni^{60}	σ_γ	12.5-66	70HELSINKI,1,633(70)	Ernst
Ni^{61}	σ_γ	7.2-37	70HELSINKI,1,633(70)	Ernst
Ni^{58}	σ_γ	6.9-124	PR,178,1746(69)	Hockenbury
Ni^{60}	σ_γ	1.3-97	PR,178,1746(69)	Hockenbury
Ni^{61}	σ_γ	1.4-90	PR,178,1746(69)	Hockenbury
Ni^{62}	σ_γ	2.3-4.6	PR,178,1746(69)	Hockenbury
Ni^{64}	σ_γ	9.5-83	PR,178,1746(69)	Hockenbury
Ni^{58}	σ_t	107-600	AP,37,367(66)	Farrell
Ni^{60}	σ_t	97-594	AP,37,367(66)	Farrell
Ni^{62}	σ_t	94-600	AP,37,367(66)	Farrell
Ni^{64}	σ_t	105-583	AP,37,367(66)	Farrell
Ni^{61}	σ_t	7.0-48.4	PR,151,912(66)	Good
Ni^{58}	σ_t	0-207	AP,14,387(61)	Bilpuch
Ni^{60}	σ_t	14.5-199	AP,14,387(61)	Bilpuch
Ni,Ni^{58}	σ_t	65	ANL-5498,52(55)	Hibdon
Ni^{62}	σ_t	4.2	ORNL-1496,14(52)	Pawlicki

THERMAL CROSS SECTIONS

σ_γ = 3.79±0.03 b
$\bar{\sigma}_s$ = 7.9±0.2 b
σ_t = 11.7±0.2 b
a_{coh} = 7.63±0.04 fm

RESONANCE PROPERTIES

I_γ = 3.2±0.3 b
R' = 7.1±0.2 fm
S_0 = 2.1±0.4
S_1 = 0.3±0.2

UNASSIGNED RESONANCES

E_0 (keV)	$4ag\Gamma_n$ (eV)	$ag\Gamma_n^1$ (eV)
0.400	0.00049± .00005	0.011
2.211	0.0294 ±0.0032	0.051
2.319	0.0179 ±0.0021	0.029
2.851	0.046 ±0.005	0.054
3.304	0.038 ±0.004	0.036
3.498	0.036 ±0.004	0.031
3.583	0.029 ±0.003	0.024
4.434	0.038 ±0.005	0.023
5.250	0.030 ±0.005	0.014
6.290	0.067 ±0.010	0.024
7.009	0.038 ±0.006	0.012

$^{63}_{29}$Cu

THERMAL CROSS SECTIONS

σ_γ = 4.5±0.1 b
$\bar{\sigma}_s$ = 5.7±0.3 b
σ_t = 10.2±0.3 b
a_{coh} = 6.72±0.15 fm

RESONANCE PROPERTIES

I_γ = 4.9±0.4 b
<D> = 0.62±0.07 keV
S_0 = 2.4±0.6

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 69.1 S_n = 7916.1±0.8 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
Bound level					
0.577±0.001	1.08 ± 0.04	2	0	0.520±0.040	0.045 ±0.002
0.650±0.001	0.0123± 0.0003	1		0.350±0.100	0.00048 ± .00001
0.806±0.001	0.0050± 0.0004				0.000176± .014-3
0.996±0.002	0.0166± 0.001				0.00053 ± .00003
2.038±0.003	31.9 ± 1.0	1	0	0.57 ±0.07	0.71 ±0.02
2.642±0.004	5.1 ± 0.2	2	0	0.58 ±0.05	0.099 ±0.004
4.393±0.004	3.88 ± 0.10	1	0	0.68 ±0.07	0.059 ±0.002
4.852±0.004	10.5 ± 0.3	1	0	0.62 ±0.06	0.151 ±0.004
5.387±0.005	44.6 ± 1.5	2	0	0.44 ±0.05	0.618 ±0.020
5.819±0.006	11.7 ± 0.7	2	0	0.46 ±0.04	0.153 ±0.009
6.840±0.007	0.14 ± 0.04				0.0017 ±0.0005
7.086±0.008	0.98 ± 0.40	(1)		0.40 ±0.04	0.012 ±0.005
7.565±0.009	12.0 ± 0.5	1	0		0.136 ±0.006
7.930±0.009	110 ±10	2	0		1.23 ±0.12
8.350±0.010	4.54 ± 0.20	1		0.68 ±0.08	0.050 ±0.002
9.190±0.012	58 ± 6	2	0	0.42 ±0.04	0.61 ±0.06
9.930±0.013	72.0 ± 3.5	1	0		0.722 ±0.035
10.840±0.015	70 ± 4	2	0		0.67 ±0.04
12.530±0.020	11.0 ± 1.0	1	0	0.75 ±0.09	0.098 ±0.009
13.170±0.020	92.4 ± 2.5	2	0		0.80 ±0.02
13.710±0.022	25 ± 5	1		0.40 ±0.11	0.21 ±0.04
15.090±0.025	14.5 ± 1.5	[2]	0	0.51 ±0.06	0.12 ±0.01
15.820±0.027	17.7 ± 0.5	[2]	0	0.57 ±0.07	0.141 ±0.004
16.320±0.028	13.9 ± 1.4	1		0.56 ±0.08	0.109 ±0.011
17.880±0.033	60 ± 3	1	0		0.45 ±0.02
18.035±0.033	37.2 ± 1.8	2	0		0.277 ±0.013
20.806±0.040	1.5 ± 0.5				0.010 ±0.004
20.900±0.042	88.4 ± 9.0	2	0		0.61 ±0.06
21.050±0.043	3.6 ± 1.6				0.025 ±0.011
21.124±0.043	76.5 ± 7.6	1	0		0.53 ±0.05
21.619±0.044	5.2 ± 2.0				0.036 ±0.014
22.672±0.045	120 ± 6	2	0		0.80 ±0.04
23.204±0.049	1.4 ± 0.8				0.0092 ±0.0053
23.487±0.049	2.4 ± 1.0				0.016 ±0.007
24.765±0.052	94 ± 5	2			0.60 ±0.03

E_0 (keV)	$2g\Gamma_n$ (eV)		J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	
25.618±0.056	233	±23	1			1.46	±0.14
25.779±0.057	1.6	± 0.8				0.010	±0.005
26.447±0.060	90	±20	1			0.55	±0.12
29.359±0.069	231.1	±18.4	1			1.35	±0.11
30.285±0.073	1.6	± 0.8				0.009	±0.005
31.205±0.077	48	± 5	2			0.27	±0.03
33.400±0.084	325					1.78	
36.200±0.095	308					1.61	
*39.89 ± .09							
*40.06 ± .09							
*40.28 ± .09							
*40.63 ± .09							
*40.75 ± .09							
*42.03 ± .10	260		[1]	0		[illegible].3	
*42.55 ± .10	680		[1]	0		3.3	
*44.06 ± .11							
*44.85 ± .11							
*47.74 ± .11							
*47.78 ± .11							
*50.37 ± .12							
*53.16 ± .13							
*53.43 ± .13							
*53.83 ± .13			[1]				
*55.00 ± .13			[2]				
*55.42 ± .13			[2]				
*56.35 ± .13			[1]				
*56.86 ± .14							
*57.67 ± .14							
*58.85 ± .14			[1]				
*59.20 ± .14							
*59.51 ± .14							
*59.91 ± .14							
*60.39 ± .14							
*63.29 ± .15							
*63.64 ± .15							
*65.05 ± .16							
*65.23 ± .16							
*66.51 ± .16							
*67.07 ± .16							
*67.82 ± .16							
*69.78 ± .17							
*71.30 ± .17							
*72.97 ± .17							
*73.72 ± .17							
*74.71 ± .18							
*76.05 ± .18							
*78.01 ± .18							
*79.20 ± .19							
*81.70 ± .19			[2]				
*83.76 ± .20			[1]				
*90.13 ± .22							
*91.46 ± .22							

$^{63}_{29}Cu$

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
*92.52 ± .22					
*95.00 ± .23					
*96.28 ± .23					
*97.09 ± .23					
*101.66 ± .24					
*102.36 ± .24					
*104.16 ± .25					
*105.44 ± .25					
*107.89 ± .26					
*109.24 ± .26					

* Isotopic assignment ard analysis carried out by NNCSC.

$^{65}_{29}Cu$

THERMAL CROSS SECTIONS

σ_γ = 2.17±0.03 b
$\bar{\sigma}_s$ = 15.5±0.4 b
σ_t = 17.7±0.4 b
a_{coh} = 11.09±0.19 fm

RESONANCE PROPERTIES

I_γ = 2.4±0.3 b
<D> = 1.0±0.2 keV
S_0 = 1.5±0.4

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 30.9 S_n = 7066.7±0.8 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
Bound level					
0.229±0.001	0.0216± 0.0014	2		0.245±0.020	0.0143±0.0001
1.363±0.002	0.022 ± 0.003				0.0006±0.0001
2.528±0.004	21.0 ± 2.2	2	0	0.36 ±0.04	0.418 ±0.044
3.913±0.006	17.7 ± 0.6	1	0	0.47 ±0.05	0.283 ±0.010
4.486±0.006	12.0 ± 1.5	1	0	0.33 ±0.04	0.179 ±0.022
6.448±0.007	32.0 ± 1.2	2	0	0.35 ±0.04	0.400 ±0.015
7.604±0.009	27.3 ± 1.4		0		0.313 ±0.016
7.879±0.010	122 ± 7	2	0		1.37 ±0.08
8.360±0.010	0.42 ± 0.20				0.0046±0.0022
9.775±0.010	1.5 ± 0.6				0.015 ±0.006
12.130±0.018	0.80 ± 0.15				0.0073±0.0014
13.192±0.020	104 ± 6	2	0		0.905 ±0.052
13.617±0.022	1.54 ± 0.50				0.013 ±0.004
14.230±0.023	45 ± 3	[1]	0	0.31 ±0.05	0.38 ±0.03
16.060±0.027	38.0 ± 1.4	1	0		0.300 ±0.011
19.895±0.037	160 ±10	2	0		1.13 ±0.07
21.921±0.044	6.9 ± 3.0				0.046 ±0.020

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
23.681±0.050	45 ± 3	1			0.29 ±0.02
24.133±0.051	100 ± 6	1			0.64 ±0.04
25.017±0.054	45.4 ± 4.4	2			0.29 ±0.03
25.108±0.060	70 ± 7	1			0.44 ±0.04
25.312±0.060					
25.784±0.060	10.4 ± 4.2				0.065 ±0.026
34.9	324				1.73
*39.65 ± .09	285	1	0		1.4
*40.17 ± .09					
*41.05 ± .09					
*43.20 ± .10	190	1	0		0.92
*43.84 ± .10					
*44.29 ± .11					
*45.94 ± .11					
*46.81 ± .11					
*47.64 ± .11					
*50.52 ± .12	85		0		0.38
*53.53 ± .13	125		0		0.54
*54.47 ± .13					
*54.83 ± .13					
*56.46 ± .13					
*57.19 ± .14					
*57.94 ± .14					
*58.31 ± .14					
*62.15 ± .14					
*64.56 ± .15					
*65.46 ± .16					
*67.30 ± .16		[2]			
*68.21 ± .16					
*69.63 ± .17					
*72.92 ± .17		[1]			
*74.76 ± .18					
*76.33 ± .18					
*78.78 ± .18					
*82.66 ± .19					
*84.35 ± .20					
*86.51 ± .21					
*89.91 ± .21					
*91.84 ± .22					
*94.45 ± .22					
*96.68 ± .23					
*97.34 ± .23					
*98.66 ± .24					
*99.85 ± .24					
*107.41 ± .26					
*107.98 ± .26					
*108.76 ± .26					
*111.72 ± .27					
*114.60 ± .27					
*117.81 ± .28					
*119.58 ± .29					
*122.31 ± .29					
*123.94 ± .30					
*127.07 ± .30					

* Isotopic assignment and analysis carried out by NNCSC.

$^{66}_{29}Cu$

[5.1 min]

THERMAL CROSS SECTIONS

σ_γ = 135±10 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cu	σ_t	ZP,250,166(72)	Steyerl
Cu	σ_t	AKE,19,172(72)	Suszkin
Cu	diffraction	ZK,135,416(72)	Zigan
Cu	σ_γ moxon rae	NIM,86,33(70)	Malik
$Cu^{63,65}$	activation	JNE,24,35(70)	Ryves
Cu^{66}	activation	NAP,9,662(70)	Serment
Cu,$Cu^{63,65}$	$\bar{\sigma}_s$	70HELSINKI,1,651(70)	Vertebnyi
Cu^{64}	activation	AE,24,533(68)	Kondurov
Cu	reactivity	AECL-3073(68)	Okazaki
Cu^{63}	activation	PRIVATE COMM.(67)	Pinarelli
Cu	$\bar{\sigma}_s$	67JUELICH,80(67)	Simpson
Cu	pile osci.	66PARIS,1,479(66)	Carre
Cu	$\bar{\sigma}_s$	ZAP,18,295(65)	Christ
Cu	σ_t 1.44 ev	NP,61,381(65)	Rayburn
Cu	pile osci.	NKA,8,443(63)	Bouzyk
Cu	n reflection	RSI,33,916(62)	Bally
Cu	pile osci.	RRP,6,(3),311(61)	Stefanescu
Cu	reactivity	NSE,7,184(60)	Donahue
Cu^{63}	activation	NSE,8,378(60)	Lyon
Cu	pile osci.	JNE,12,32(60)	Tattersall
Cu,$Cu^{63,65}$	σ_t reflection	PR,111,261(58)	Keating
Cu^{63}	activation	ZN/A,13,820(58)	Meister
Cu^{66}	activation	BAP,3,408(58)	Passell
Cu	σ_t	HW-55879,3(58)	Seppi
Cu	reactivity	OP-207(57)	Wade
$Cu^{63,65}$	diffraction	RSI,27,620(56)	Heindl
Cu	σ_t	PR,99,611(55)+	Palevsky
$Cu^{63,65}$	pile osci.	PR,88,412(52)	Pomerance
Cu	pile osci.	CR,232,2089(51)	Grimeland
Cu	local osci.	PR,83,641(51)	Pomerance
Cu	$\bar{\sigma}_s$	ORNL-1164,3(51)	Rayburn
Cu	diffraction	PR,81,527(51)	Shull
Cu	pile osci.	PPS/A,63,1175(50)	Colmer
Cu	pile osci.	PR,80,342(50)	Harris
Cu	σ_t	PR,73,963(48)	Havens
Cu^{65}	activation	PR,72,888(47)	Seren
Cu	σ_t	PR,68,159(45)	Nix
Cu	σ_t	PR,60,155(41)	Whitaker
$Cu^{63,65}$	activation	PR,58,869(40)	Rasetti
Cu	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Cu	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell
Cu	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Cu,$Cu^{63,65}$		1-15	PRIVATE COMM.(72)	Garg
Cu	σ_γ(spectra)	0.229	PR/C,1,1468(70)	Stein
Cu	σ_t	0.229	JPJ,29,1378(70)	Yamamuro
Cu	σ_t	0.200-30.0	NP/A,134,118(69)	Alves
Cu^{63}	σ_t	0.578-31.205	NP/A,134,118(69)	Alves
Cu^{65}	σ_t	0.23-25.784	NP/A,134,118(69)	Alves
Cu^{63}	σ_γ(spectra)	THERM.-0.580	NP/A,135,241(69)	Alves
Cu^{65}	σ_γ(spectra)	THERM.-0.227	NP/A,135,241(69)	Alves
Cu^{63}	σ_t	0.579-0.651	NP/A,132,129(69)	Julien
Cu^{65}	σ_t	0.229	NP/A,132,129(69)	Julien
Cu^{63}	σ_t	40-240	PRIVATE COMM.(68)	Rohr
Cu^{65}	σ_t	40-240	PRIVATE COMM.(68)	Rohr
Cu	σ_γ	0.229-16.37	ZP,213,411(68)	Weigmann
Cu,$Cu^{63,65}$	σ_t	0.230-13.614	CEA-R-3128(67)	Chevillon
Cu^{63}	σ_t	2.63-42.2	PR,151,912(66)	Good
Cu^{65}	σ_t	2.5-58.0	PR,151,912(66)	Good
Cu	σ_t	0.230-13.6	65ANTWERP,80(65)	Julien
Cu	σ_t	0.229-99.4	CR-1860(64)	Garg
Cu^{63}	σ_γ	0.229	AE,15,120(63)	Kapchigashev
Cu^{63}	σ_t	5.28-23	BAP,4,42(59)	Miller
Cu^{63}	σ_t	0.557-5.4	PR,111,288(58)	Cote
Cu^{65}	σ_t	0.229-4.2	PR,111,288(58)	Cote
Cu^{63}	σ_t	1.1-97.2	PR,106,110(57)	Marshak
Cu^{65}	σ_t	1.1-97.2	PR,106,110(57)	Marshak
Cu^{63}	σ_t	0.57-2.52	PRIVATE COMM.(57)	Zimmerman

$_{30}Zn$

THERMAL CROSS SECTIONS

σ_γ = 1.10±0.04 b
σ_s = 4.2±0.2 b
σ_t = 5.3±0.2 b
a_{coh} = 5.8±0.1 fm

RESONANCE PROPERTIES

I_γ = 2.3±0.3 b
R' = 6.7±0.2 fm

UNASSIGNED RESONANCES

E_0 (keV)	E_0 (keV)	E_0 (keV)
0.587±0.001	16.010±0.028	29.160±0.069
0.750±0.001	16.090±0.028	29.640±0.070
1.322±0.002	16.430±0.029	30.200±0.072
2.070±0.003	16.680±0.029	31.200±0.076
2.130±0.003	16.920±0.030	32.500±0.081
2.476±0.004	17.060±0.030	33.450±0.084
3.434±0.006	17.270±0.031	34.050±0.087
3.793±0.006	17.800±0.032	34.400±0.088
4.050±0.008	17.950±0.033	34.700±0.089
5.040±0.004	18.440±0.034	35.200±0.091
5.200±0.005	19.010±0.036	35.700±0.093
5.340±0.005	20.160±0.039	36.200±0.095
6.320±0.006	20.420±0.040	36.500±0.096
7.010±0.008	20.820±0.041	36.900±0.098
7.100±0.008	20.980±0.042	37.200±0.099
7.480±0.008	21.500±0.043	37.500±0.100
7.500±0.009	21.680±0.044	39.300±0.108
7.790±0.009	21.840±0.044	39.800±0.110
7.920±0.009	22.090±0.045	40.200±0.111
8.260±0.009	23.080±0.048	41.100±0.115
8.320±0.010	24.490±0.053	41.700±0.118
8.420±0.010	24.760±0.054	42.300±0.120
8.500±0.010	24.920±0.054	42.800±0.122
9.370±0.012	25.140±0.055	43.700±0.126
9.820±0.013	25.250±0.055	44.200±0.129
11.100±0.016	25.420±0.056	44.600±0.130
11.880±0.017	25.740±0.057	45.000±0.132
12.200±0.018	25.980±0.058	45.100±0.133
13.300±0.021	26.190±0.058	46.300±0.138
13.370±0.021	26.520±0.058	46.600±0.139
13.520±0.021	26.900±0.061	48.000±0.146
13.920±0.022	27.080±0.061	49.800±0.154
14.100±0.023	27.250±0.062	50.700±0.158
14.230±0.023	27.450±0.063	51.700±0.163
14.470±0.024	28.080±0.065	52.200±0.165
14.610±0.024	28.520±0.066	53.600±0.172
15.600±0.027	28.750±0.067	54.900±0.178

THERMAL CROSS SECTIONS

σ_γ = 0.78±0.02 b
$\bar{\sigma}_s$ = 3.8±0.2 b
σ_a = 0.015±0.010 mb
a_{coh} = 5.6±0.2 fm

RESONANCE PROPERTIES

I_γ = 1.4±0.1 b
R' = 6.7±0.2 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 48.9 S_n = 7979.2±0.8 keV

E_0 (keV)	Γ_n (eV)	J	ℓ	Γ_γ (eV)	Γ_n^0 (eV)	Γ_α (meV)
0.2818±0.0004	0.0060±0.0006	7/2	[0]	0.294±0.030	0.00037± .00004	0.052±0.020
2.637 ±0.008	70 ±4	1/2			1.4 ±0.1	0.12 ±0.05
4.18 ±0.01	25 ±5	1/2	0		0.37 ±0.07	
10.790 ±0.015	85	1/2	0		0.82	
13.040 ±0.020	175	1/2	0		1.54	

$^{66}_{30}Zn$

THERMAL CROSS SECTIONS

σ_γ = 0.85±0.20 b
σ_s = 5.0±0.2 b
σ_a < 0.020 mb
σ_t = 5.9±0.3 b
a_{coh} = 6.3±0.2 fm

RESONANCE PROPERTIES

I_γ^c = 0.8±0.2 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 27.8 S_n = 7052.4±0.7 keV

E_0 (keV)	Γ_n (eV)	J	ℓ	Γ_γ (eV)	Γ_n^0 (eV)
0.323±0.001	0.010± 0.001			0.170±0.020	.00056± .00006
10.43 ±0.02	90 ± 20	1/2	0		0.88 ±0.19
15.3 ±0.3	500 ±100	1/2	0		4.04 ±0.81
19.56 ±0.04	355 ± 71				2.54 ±0.51
21.32 ±0.08	130 ± 25	1/2	0		0.89 ±0.16
22.7 ±0.1	130 ± 25	1/2	0		0.86 ±0.16
24.3 ±0.1	650 ± 50	1/2	0		4.17 ±0.32
30.8 ±0.2	325 ± 30	1/2	0		1.85 ±0.17

$^{67}_{30}Zn$

THERMAL CROSS SECTIONS

σ_γ = 6.9±1.4 b
σ_a = 0.006±0.004 mb

RESONANCE PROPERTIES

I_γ^c = 20±4 b

RESONANCE PARAMETERS

$I^\pi = 5/2^-$ %Abn = 4.1 S_n = 10198.1±0.5 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	Γ_a (meV)
0.223±0.001	1.08± 0.04	2	0	0.420±0.100	0.072±0.003	<0.08
0.448±0.001	11 ± 1	3	0	0.5 ±0.1	0.52 ±0.05	<0.03
1.548±0.002	10 ± 3		[0]		0.25 ±0.08	0.75±0.40
2.246±0.006	43 ±10		[0]		0.91 ±0.21	

$^{68}_{30}Zn$

THERMAL CROSS SECTIONS

σ_γ = 0.072±0.004 b [13.8 hr $^{69}Zn^m$]
σ_γ = 1.0±0.1 b [51 min $^{69}Zn^g$]
$\bar{\sigma}_s$ = 5.6±0.2 b
σ_a < 0.020 mb
σ_t = 6.7±0.2 b
a_{coh} = 6.7±0.2 fm

RESONANCE PROPERTIES

I_γ = 3.3±0.3 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 18.6 S_n = 6482.2±0.9 keV

E_0 (keV)	Γ_n (eV)	J	ℓ	Γ_γ (eV)	Γ_n^0 (eV)
0.514±0.001	8.7± 0.5	1/2	0	0.180±0.030	0.38±0.02
18.82 ±0.04	400 ±50	1/2	0		2.92±0.37

$^{70}_{30}Zn$

THERMAL CROSS SECTIONS

σ_γ = 83±5 mb [2.2 min $^{71}Zn^g$]
σ_γ = 8.7±0.5 mb [3 hr $^{71}Zn^m$]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Zn, $Zn^{64,66,68}$	diffraction	PRIVATE COMM.(73)	Shull
$Zn^{66,67}$	σ_γ(spectra)	NP/A,164,69(71)	Ottmar
$Zn^{64,68}$	activation	IN-1317,53(70)	Hogg
$Zn^{64,68}$	activation	CJP,47,2031(69)	Ricabarra
Zn^{6}	isom. ratio	NP/A,124,15(69)	Zoller
$Zn^{66,67}$	σ_γ(spectra)	SNP,6,660(68)	Bystrov
Zn	σ_t	JNE,22,389(68)	AbuEl-Ela
Zn^{64}	activation	RCA,9,61(68)	Kim
$Zn^{68,70}$	isom. ratio	ZP,210,13(68)	Mannhart
Zn^{64}	activation	JIN,29,2853(67)	Sims
$Zn^{66,67}$	σ_γ(spectra)	BAS,30,1187(66)	Groshev
Zn	diffraction	ZMP,16,820(65)	Fisher
Zn^{68}	activation	PR,129,769(63)	Keisch
$Zn^{68,70}$	activation	NP,36,542(62)	Mangal
Zn	pile osci.	61BUCHAR,623(61)	Bouzyk
Zn^{70}	activation	PR,124,1526(61)	Thwaites
Zn	diffraction	ARN,11,303(61)	Wilkinson
$Zn^{64,68}$	activation	NSE,8,378(60)	Lyon
Zn	pile osci.	JNE,12,32(60)	Tattersall
$Zn^{64,68}$	σ_a	CR,234,1684(52)	Faraggi
$Zn^{66,67}$	σ_a	CR,235,425(52)	Faraggi
Zn	σ_t	PR,83,1123(51)	Havens
Zn^{70}	activation	PRIVATE COMM.(51)	Hughes
Zn	local osci.	PR,83,641(51)	Pomerance
Zn	diffraction	PR,81,527(51)	Shull
Zn	pile osci.	PPS/A,63,1175(50)	Colmer
Zn	pile osci.	PR,80,342(50)	Harris
Zn^{68}	activation	PR,75,1781(49)	Hughes
Zn	σ_t	PR,75,975(49)	Winsberg
Zn^{68}	activation	PR,72,888(47)	Seren
Zn	σ_γ	PR,69,411(46)	Coltman
Zn	$\bar{\sigma}_s$	SCP,36,153(39)	Kimura
Zn	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Zn	σ_t	PR,48,265(35)	Dunning
Zn	$\bar{\sigma}_s$	PR,48,653(35)	Mitchell

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Zn^{64}	σ_α	0.281-2.64	JINR-P3-5875(71)	Popov
Zn^{67}	σ_α	0.229-2.246	JINR-P3-5875(71)	Popov
$Zn^{64,66,67}$	σ_t	0.229-0.323	NP/A,132,129(69)	Julien
Zn^{64}	σ_γ	0.288	ZET,49,410(65)	Kim
Zn^{66}	σ_γ	0.328	ZET,49,410(65)	Kim
Zn^{68}	σ_γ	0.514	ZET,49,410(65)	Kim
Zn	σ_t	0.229-54.90	CR-1860(64)	Garg
Zn	σ_t	0.323	PRIVATE COMM.(63)	Bianchi
Zn^{66}	σ_t	10.4-30.8	ORNL-2718,22(59)+	Miller
Zn^{68}	σ_t	20.8	ORNL-2718,22(59)+	Miller
Zn^{64}	σ_t	2.75-4.60	PR,104,1006(56)	Dahlberg
Zn^{67}	σ_t	0.232-2.3	PR,104,1006(56)	Dahlberg
Zn^{68}	σ_t	0.514	PR,104,1006(56)	Dahlberg
Zn	σ_t	0.218-2.51	KAPL-1084(54)	Gaerttner
Zn	σ_t	0.52-3.8	PR,83,1123(51)	Havens

$_{31}$Ga

THERMAL CROSS SECTIONS

σ_γ = 2.9±0.1 b
σ_s = 6.5±0.2 b
σ_t = 9.4±0.2 b
a_{coh} = 7.2±0.1 fm

RESONANCE PROPERTIES

I_γ = 18.7±1.5 b
S_I = 0.8±0.3

THERMAL CROSS SECTIONS

σ_γ = 1.68±0.07 b

RESONANCE PROPERTIES

I_γ = 15.6±1.5 b
<D> = 230±55 eV
S_0 = 1.2±0.4

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 60.0 S_n = 7651±1 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
Bound level				
0.1110±0.0005	.068 ±0.006	2	0.270±0.030	0.0065 ±0.0006
0.3340±0.0007	0.220 ±0.022	2	0.210±0.040	0.0120 ±0.0013
0.473 ±0.001	0.144 ±0.020	1	0.260±0.060	0.0066 ±0.0009
*0.532 ±0.002	.0042±0.0008			.00018± .00004
*0.611 ±0.002	0.0052±0.0008			0.00021± .00003
0.692 ±0.002	1.440 ±0.140	2	0.270±0.040	0.054 ±0.005
0.941 ±0.003	0.0052±0.0010			0.00017± .00003
1.252 ±0.005	0.007 ±0.002			0.00020± .00006
1.354 ±0.005	0.340 ±0.060	2	0.290±0.060	0.0092 ±0.0016
1.582 ±0.006	2.570 ± .375	2	0.260±0.040	0.0647 ±0.0094
1.638 ±0.007	3.600 ±0.320	1	0.260±0.040	0.089 ±0.008
1.870 ±0.009	3.200 ±0.400	2	0.250±0.040	.074 ± .009
1.906 ±0.009	0.012 ±0.006			0.00027± .00014
*1.994 ±0.010	0.012 ±0.006			0.00027± .00013
2.167 ±0.011	0.015 ±0.004			0.00032± .00010
2.458 ±0.013	9.000 ±1.000	1	0.290±0.04	0.182 ±0.020
*2.989 ±0.019	0.080 ±0.040			0.0015 ±0.0007
3.084 ±0.020	0.220 ±0.080			0.0040 ±0.0014
*3.377 ±0.022	0.020 ±0.010			0.00034± .00017
3.497 ±0.022	22.400 ±2.000	2	0.260±0.040	0.379 ±0.034
*3.739 ±0.026	0.024 ±0.010			0.00039± .00016
*3.873 ±0.028	0.040 ±0.012			0.00064± .00019
*3.970 ±0.030	0.020 ±0.014			0.00032± .00022
4.206 ±0.030	1.660 ±0.600			0.0256 ± .00093
4.361 ±0.032	1.880 ±0.800			0.0285 ±0.0120
4.556 ±0.035	0.400 ±0.0200			0.0059 ±0.0030
4.810 ±0.037	~18.000			~0.260

* Possibly p-wave resonance

$^{71}_{31}$Ga

THERMAL CROSS SECTIONS

σ_γ = 0.15±0.05 b [36 ms ^{72}Ga^m]
σ_γ = 4.71±0.23 b [14.2 hr ^{72}Ga^g]

RESONANCE PROPERTIES

I_γ = 31.2±1.9 b
<D> = 330±70 eV
S_0 = 1.4±0.4

RESONANCE PARAMETERS

I^π = 3/2$^-$ %Abn = 40.0 S_n = 6519±1 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
0.0958±0.0004	0.124 ±0.024	2	0.260±0.060	0.0127 ±0.0025
0.2875±0.0017	7.900 ±0.600	2	0.240±0.040	.466 ± .035
0.3760±0.0008	2.730 ±0.220	1	0.240±0.030	.141 ± .011
0.705 ±0.002	0.560 ±0.056	2	0.230±0.035	0.021 ±0.002
*1.092 ±0.004	0.010 ±0.003			0.00030± .00009
*1.133 ±0.009	0.0158±0.0044			0.00044± .00013
*1.481 ±0.013	0.014 ±0.008			0.00036± .00021
1.525 ±0.007	4.080 ±0.500	2	0.220±0.035	0.105 ±0.013
*1.870 ±0.009	0.016 ±0.008			0.00037± .00018
1.930 ±0.010	0.560 ±0.160	1	0.220±0.040	0.0128 ±0.0036
2.400 ±0.012	4.200 ±0.800	1	0.250±0.040	0.0857 ±0.016
2.784 ±0.016	1.520 ±0.280	2	0.230±0.035	0.0288 ±0.0053
*2.880 ±0.018	0.080 ±0.040			0.0015 ±0.0008
*3.110 ±0.018	0.060 ±0.040			0.0011 ±0.0007
*3.200 ±0.020	0.120 ±0.060			0.0021 ±0.0011
3.311 ±0.020	4.000 ±0.800	1	0.240±0.035	0.0696 ±0.0140
*3.400 ±0.023	0.120 ±0.060			0.0021 ±0.001
*3.510 ±0.024	0.040 ±0.020			0.00068± .00034
*3.790 ±0.028	0.040 ±0.020			0.00065± .00032
4.170 ±0.030	0.180 ±0.120			0.0028 ±0.0019
4.690 ±0.036	1.200 ±0.600			0.0175 ±0.0088
4.810 ±0.038	~18.000			~0.260
5.054 ±0.040	12.200 ±2.600			0.172 ±0.037

* Possibly p-wave resonance

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Ga^{69,71}$	activation	JNE,25,129(71)	Ryves
Ga	$\bar{\sigma}_s$	PRIVATE COMM.(67)	Vertebnyi
Ga^{71}	activation	ADP,12,225(63)	Alexander
Ga	diffraction	PR,131,2098(63)	Arnold
Ga	diffraction	KRI,8,785(63)	Konakhovich
Ga	diffraction	KRI,8,675(63)	Kuz'minov
Ga^{71}	activation	NSE,8,378(60)	Lyon
Ga	σ_t	PR,92,702(53)	Melkonian
$Ga^{69,71}$	local osci.	PR,88,412(52)	Pomerance
$Ga^{69,71}$	activation	PR,79,11(50)	Harris
Ga	pile osci.	PR,80,342(50)	Harris
Ga^{71}	activation	PR,72,888(47)	Seren
$Ga^{69,71}$		PR,59,102(41)	O'Neal

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Ga^{69}	$\sigma_\gamma\sigma_t\sigma_\gamma$(SI)	0.111-5.9	JINR-P3-4152(68)	Maletski
Ga^{71}	$\sigma_\gamma\sigma_t\sigma_\gamma$(SI)	0.096-5.1	JINR-P3-4152(68)	Maletski
Ga	σ_t	0.287-3.5	PL,10,86(64)	Julien
Ga^{71}	analysis	0.706	PR,111,288(58)	Cote
Ga^{69}	σ_t	0.111-0.710	PR,102,228(56)	Palmer
Ga^{71}	σ_t	0.095-0.770	PR,102,228(56)	Palmer
Ga	σ_t	0.120-0.310	PR,92,702(53)	Melkonian

$_{32}$Ge

THERMAL CROSS SECTIONS

σ_γ = 2.3±0.2 b
$\bar{\sigma}_s$ = 7.5±0.2 b
a_{coh} = 8.1858±0.0036 fm

RESONANCE PROPERTIES

I_γ = 6.1±1.0 b
R' = 6.9±1.0 fm

$^{70}_{32}$Ge

THERMAL CROSS SECTIONS

σ_γ = 0.28±0.07 b [20 ms ^{71}Ge^m]
σ_γ = 3.15±0.16 b [12 day ^{71}Ge^g]
$\bar{\sigma}_s$ = 8.8±0.8 b

RESONANCE PROPERTIES

I_γ[c] = 2.4±0.7 b
<D> = 1.330±0.210 keV
S_0 = 2.1±0.9

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 20.7 S_n = 7415.2±1.8 keV

E_0 (keV)	$g\Gamma_n$ (eV)	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
[a]-0.060±0.030			0.019 ±0.009
1.115±0.004	4.6 ± 1.0	0.160±0.025	0.138 ±0.030
1.469±0.005	0.70 ± 0.12	0.150±0.025	0.018 ±0.003
1.935±0.008	0.030± 0.006		0.00068± .00014
3.140±0.015	0.046± 0.010		0.00082± .00018
4.230±0.025	0.055± 0.025		0.00085± .00038
4.378±0.025	5.4 ± 0.8	0.185±0.040	0.082 ±0.014
5.570±0.035	29 ± 4		.39 ± .06
6.750±0.035	12 ± 3		.145 ± .04
8.635±0.045	45 ± 7		.48 ± .08
9.890±0.080	40 ±10		.40 ± .10
10.310±0.090	60 ±15		.59 ± .15
11.040±0.100	8.3 ± 4.7		0.079 ±0.045
11.780±0.100	22.0 ±10.0		0.202 ±0.092
13.200±0.100	80 ±15		.70 ± .13
18.440±0.150	66 ± 6		.49 ± .04
23.820±0.300	77 ± 8		.50 ± .05
25.880±0.300	100 ±10		.62 ± .06
27.600±0.350	150 ±20		.90 ± .12
28.600±0.400	55 ±20		.32 ± .11
36.100	161		.85
38.400	168		.86

[a] Maletski et al reported alternative parameters for the bound level.

THERMAL CROSS SECTIONS

σ_γ = 0.98±0.09 b
$\bar{\sigma}_s$ = 7.5±0.7 b

RESONANCE PROPERTIES

I_γ^c = 0.88±0.22 b
<D> = 1.550±0.270 keV
S_0 = 1.2±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 27.5 S_n = 6780.9±0.3 keV

E_0 (keV)	$g\Gamma_n$ (eV)	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
*-0.330 ±0.100			0.16 ±0.05
0.2520±0.0004	0.00034± 0.0001		0.000021± .00000
0.736 ±0.002	0.0025 ± 0.0008		0.000092± .00003
2.180 ±0.007	0.046 ± 0.009		0.00099 ± .00019
2.614 ±0.008	0.79 ± 0.39	0.135±0.030	0.0155 ±0.0076
2.743 ±0.008	0.40 ± 0.18	0.230±0.040	0.0076 ±0.0034
3.650 ±0.012	0.83 ± 0.43	0.120±0.030	0.0137 ±0.0071
4.560 ±0.017	13.0 ± 2.0		.19 ± .03
4.949 ±0.019	27.0 ± 3.0		.38 ± .04
8.980 ±0.050	41.0 ± 6.0		0.433 ±0.063
9.640 ±0.055	6.0 ± 1.0		.061 ± .010
11.170 ±0.060	20.0 ± 4.0		.189 ± .034
12.070 ±0.070	23 ± 7		.21 ± .06
19.080 ±0.130	115 ±30		.833 ± .217
29.400 ±0.300	33.2 ± 4.4		.194 ± .026
33.200	360		1.98
39.500	364		1.93

* Maletski et al reported alternative parameters for the bound level.

$^{73}_{32}$Ge

THERMAL CROSS SECTIONS

σ_γ = 15±2 b

RESONANCE PROPERTIES

I_γ^c = 65±6 b
<D> = 62±7 eV
S_0 = 1.5±0.4

RESONANCE PARAMETERS

I^π = 9/2⁺ %Abn = 7.7 S_n = 10200.9±0.8 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
*0.1020± .0002	1.30 ±0.12	0.192±0.030	0.129 ±0.012
*0.2040± .0004	0.23 ±0.02	0.210±0.030	0.0161 ±0.0014
0.2247±0.0004	0.45 ±0.04	0.198±0.030	0.030 ±0.003
0.3206±0.0007	0.23 ±0.04	0.190±0.030	0.0129 ±0.0002
0.3320±0.0007	1.36 ±0.12		0.0746 ±0.0066
0.3671±0.0006	0.72 ±0.06	0.200±0.030	0.0376 ±0.003
0.4082±0.0006	0.25 ±0.030	0.200±0.030	0.0124 ±0.0015
0.4903±0.0009	2.00 ±0.15	0.185±0.030	0.090 ±0.007
0.516 ±0.001	0.038±0.005		0.0017 ±0.0002
0.557 ±0.001	0.39 ±0.04	0.190±0.030	0.017 ±0.002
0.668 ±0.001	0.026±0.008		0.0010 ±0.0003
0.735 ±0.002	0.017±0.005		0.00063± .00018
0.752 ±0.002	0.020±0.006		0.00073± .00022
0.807 ±0.002	0.021±0.006		0.00074± .00021
0.849 ±0.002	0.14 ±0.02		0.0048 ±0.0007
0.919 ±0.002	0.15 ±0.02		0.0050 ±0.0007
1.028 ±0.002	0.09 ±0.02		0.0028 ±0.0006
1.056 ±0.002	0.23 ±0.06		0.0071 ±0.0018
1.145 ±0.002	2.10 ±0.60		0.062 ±0.018
1.218 ±0.003	1.3 ±0.2	0.210±0.030	0.037 ±0.006
1.313 ±0.003	1.3 ±0.2	0.210±0.030	0.036 ±0.006
1.353 ±0.003	0.29 ±0.05		0.0079 ±0.0014
1.526 ±0.003	1.2 ±0.2		0.031 ±0.005
1.650 ±0.004	2.5 ±0.2		0.062 ±0.005
1.802 ±0.004	1.6 ±0.2	0.190±0.030	0.038 ±0.005
1.925 ±0.005	0.33 ±0.2		0.0075 ±0.0046
1.934 ±0.005	0.5 ±0.2		0.012 ±0.005
1.950 ±0.005	0.8 ±0.3		0.018 ±0.007
2.011 ±0.006	4.0 ±0.4	0.185±0.030	0.089 ±0.009
2.256 ±0.006	1.7 ±0.2		0.036 ±0.004
2.286 ±0.006	3.2 ±0.3		0.067 ±0.006
2.434 ±0.008	0.6 ±0.2		0.012 ±0.004
2.558 ±0.009	2.1 ±0.3		0.042 ±0.006
2.676 ±0.010	1.3 ±0.2		0.025 ±0.004
2.940 ±0.011	2.6 ±1.0		0.048 ±0.006
4.040 ±0.015	8.4 ±1.0		0.132 ±0.016
4.238 ±0.017	6.0 ±0.9		0.092 ±0.014
4.440 ±0.019	5.5 ±1.0		0.083 ±0.015
4.823 ±0.022	1.4 ±0.6		0.020 ±0.009

E_0 (keV)	$2g\Gamma_n$ (eV)	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
5.200 ±0.025	3.0 ±0.9		0.042 ±0.012
5.357 ±0.025	11.0 ±2.0		0.150 ±0.027
5.746 ±0.030	5.5 ±1.1		0.073 ±0.015
6.200 ±0.040	2.7 ±1.3		0.034 ±0.017
6.320 ±0.040	2.3 ±1.0		0.029 ±0.013
6.585 ±0.045	11.0 ±2.0		0.136 ±0.025
7.770 ±0.050	16.5 ±2.5		0.187 ±0.029
8.530 ±0.060	36.0 ±3.0		0.390 ±0.032

[a] Spin is 4

THERMAL CROSS SECTIONS

σ_γ = 0.143±0.014 b [48 sec ^{75}Ge[a]]
σ_γ = 0.24±0.06 b [82 min ^{75}Ge[g]]
$\bar{\sigma}_s$ = 6.1±0.4 b

RESONANCE PROPERTIES

I_γ = 0.43±0.07 b
<D> = 3.900±0.770 keV
S_0 = 1.3±0.8

RESONANCE PARAMETERS

I^π = 0+ %Abn = 36.4 S_n = 6505.5±0.6 keV

E_0 (keV)	$g\Gamma_n$ (eV)	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
[a]-1.1018±0.300			0.910 ±0.250
2.846 ±0.008	8.0 ± 2.0	0.160±0.040	0.15 ±0.04
3.035 ±0.012	1.0 ± 0.6	0.230±0.040	0.018 ±0.011
4.170 ±0.025	0.064± 0.020		0.00099± .00031
4.990 ±0.030	90 ± 10		1.2 ± .14
12.030 ±0.070	24 ± 13		0.22 ±0.12
19.450 ±0.150	100 ± 25		.717 ± .17
21.910 ±0.200	40 ± 10		.27 ± .06
25.100 ±0.250	44 ± 21		0.28 ±0.13
42.800 ±0.500	500 ±110		2.42 ±0.53
61.04 ±0.900	810 ±280		3.28 ±1.13

[a] Maletski et al reported alternative parameters for the bound level.

$^{76}_{32}Ge$

THERMAL CROSS SECTIONS

σ_γ = 0.092±0.010 b [54 sec $^{77}Ge^m$]
σ_γ = 0.05±0.02 b

RESONANCE PROPERTIES

I_γ = 2.0±0.4 b
<D> = 4.200±0.835 keV
S_0 = 1.3±0.7

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 7.7 S_n = 6071.8±1.0 keV

E_0 (keV)	$g\Gamma_n$ (eV)	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
-1.740			1.1
0.550±0.001	0.35± 0.08	0.115±0.025	0.015±0.003
4.760±0.020	6.0 ± 2.0		.08 ± .02
13.940±0.090	20 ± 10		.18 ± .08
15.050±0.100	84 ± 11		0.68 ±0.09
21.040±0.200	41 ± 17		0.28 ±0.12
22.460±0.200	175 ± 25		1.16 ± .16
29.600±0.300	500 ±200		2.90 ±1.16
48.700±0.600	230 ±120		1.04 ±0.54

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ge	pendellosung	PRIVATE COMM.(73)	Shull
$Ge^{74,76}$	activation	CJP,50,1978(72)	Ricabarra
Ge,$Ge^{70,72,73,74}$	$\bar{\sigma}_s$	PRIVATE COMM.(71)	Vertebnyi
Ge,$Ge^{70,72,73,74}$	$\bar{\sigma}_s$	70HELSINKI,1,651(70)	Vertebnyi
$Ge^{70,74,76}$	activation	ZP,210,13(68)	Mannhart
Ge^{76}	isom. ratio	JIN,29,281(67)	Iyer
Ge^{70}	activation	ADP,12,255(63)	Alexander
$Ge^{74,76}$	activation	ZP,167,549(62)	Weigmann
$Ge^{70,74,76}$	activation	NSE,8,378(60)	Lyon
$Ge^{74,76}$	activation	PR,108,766(57)+	Der Mateosian
Ge	pile osci.	JPR,13,171(52)	Ailloud
$Ge^{70,72,73,74,76}$	pile osci.	PR,88,412(52)	Pomerance
Ge	local osci.	PR,83,641(51)	Pomerance
Ge	diffraction	PR,81,527(51)	Shull
Ge	pile osci.	PR,80,342(50)	Harris
$Ge^{70,74,76}$	activation	PR,72,888(47)	Seren
Ge	σ_t	PR,71,174(47)	Wu
Ge	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Ge^{73}	σ_γ(spectra)	0.103-0.557	BAP,14,104(69)+	Garber
Ge^{70}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	1.115-28.600	AE,24,173(68)	Maletski
Ge^{72}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	0.252-29.400	AE,24,173(68)	Maletski
Ge^{73}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	0.103-8.530	AE,24,173(68)	Maletski
Ge^{74}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	2.846-61.040	AE,24,173(68)	Maletski
Ge^{76}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	0.550-48.700	AE,24,173(68)	Maletski
Ge^{70}	σ_t	4.34-38.4	PRIVATE COMM.(66)	Good
Ge^{72}	σ_t	4.54-39.5	PRIVATE COMM.(66)	Good
Ge^{74}	σ_t	4.97-22.0	PRIVATE COMM.(66)	Good
Ge^{76}	σ_t	4.97-29.3	PRIVATE COMM.(66)	Good
Ge^{70}	σ_t	3.3-13.0	BAP,4,42(59)	Miller
Ge^{72}	σ_t	4.9-12.0	BAP,4,42(59)	Miller
Ge^{74}	σ_t	4.88-20.0	BAP,4,42(59)	Miller
Ge^{76}	σ_t	4.9-29.0	BAP,4,42(59)	Miller
Ge^{70}	σ_γ	0.111-1.457	NP,3,553(57)	Bowey
Ge^{73}	σ_γ	0.101-0.471	NP,3,553(57)	Bowey
Ge^{74}	σ_γ	0.352	NP,3,553(57)	Bowey
Ge^{76}	σ_γ	0.524-1.000	NP,3,553(57)	Bowey
Ge	σ_γ	0.095	PR,71,174(47)	Wu

$^{75}_{33}$As

THERMAL CROSS SECTIONS

σ_γ = 4.3±0.1 b
$\bar{\sigma}_s$ = 7±1 b
σ_t = 11.3±1.0 b
a_{coh} = 6.4±0.1 fm

RESONANCE PROPERTIES

I_γ = 60±4 b
<D> = 75±5 eV
S_0 = 1.7±0.3

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 100 S_n = 7328.2±1.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level					
47.0± 0.2	300 ± 30	44 ± 4		256 ± 40	6.4 ± 0.6
92.4± 0.3	270 ± 40	16.0 ± 2.0		254 ± 40	1.7 ± 0.2
252.7± 0.5	328 ± 60	57.8 ± 5.0		270 ± 70	3.6 ± 0.4
318.6± 0.5	770 ± 80	586 ± 50	2	300 ± 30	33 ± 3
326.7± 0.5	885 ± 80	405 ± 30	1	345 ± 60	22.5 ± 1.5
455.5± 0.6	370 ± 60	32 ± 8		340 ± 70	1.5 ± 0.2
476.9± 0.6	350 ± 50	10.5 ± 3.0		340 ±100	0.48± 0.10
533.4± 1.0	2980 ±200	3375 ± 200	2	280 ± 50	146 ± 9
664.9± 0.8	620 ± 70	320 ± 20		300 ± 70	12.3 ± 0.8
733.3± 0.8	1545 ±180	896 ± 90	1	350 ±200	32.3 ± 3.0
737.4± 0.8	2250 ±200	2445 ± 220	2	300 ±200	90 ± 8
874.6± 0.6		5.91± 1.18		(300)	0.20± 0.04
895.5± 0.8	490 ± 60	160 ± 15	1	280 ± 60	5.3 ± 0.5
929 ± 1	1180 ±100	1180 ± 75	2	235 ±120	39 ± 3
1110 ± 1	510 ± 50	135 ± 15	1	330 ± 50	4.1 ± 0.5
1299 ± 2	3250 ±300	2380 ± 215		325	66 ± 6
1353 ± 2	965 ±100	535 ± 55	1	255 ±120	14 ± 2
1443 ± 2	1650 ±150	1715 ± 140	2	280	45.1 ± 3.6
1479.3± 1.5		50 ± 15		(300)	1.3 ± 0.4
1683 ± 2	3500 ±300	4000 ± 400	2	300	98 ±10
1739.0± 2.0		13.3 ± 3.33		(300)	0.32± 0.08
1807 ± 3	1000 ±200	575 ± 90	1	235	13.5 ± 2.3
1845.6± 1.0		17.6 ± 2.6		(300)	0.40± 0.06
1904 ± 3	3210 ±250	3710 ± 300	2	240	85 ± 6
2021.1± 1.0		18.8 ± 3.6		(300)	0.42± 0.08
2049 ± 3	600 ±150	300 ± 75	1	200	6.8 ± 2.3
2190 ± 1.5		11.2 ± 3.7		(300)	0.24± 0.08
*2232 ± 1.5		5.7 ± 1.9		(300)	0.12± 0.04
2256 ± 1.5		16.2 ± 2.9		(300)	0.34± 0.06
2288 ± 1.5		23.8 ± 4.5		(300)	0.50± 0.10
2330 ± 1.5		10.6 ± 1.9		(300)	0.22± 0.04
2365 ± 1.5		88 ± 5		(300)	1.8 ± 0.10
2395 ± 1.5		17.6 ± 2.9		(300)	0.36± 0.06
*2403 ± 1.5		4.9 ± 2.0		(300)	0.10± 0.04
2470 ± 1.5		14.9 ± 5.0		(300)	0.30± 0.10

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
2511 ± 3	1730 ±200	1090 ± 113	1	280 ± 60	22 ± 2
2577 ± 1.5		15.2 ± 4.1		(300)	0.30± 0.08
2616 ± 3	2650 ±250	2940 ± 275	2	300	58 ± 5
2673 ± 2		11.4 ± 4.1		(300)	0.22± 0.08
2733 ± 4	4040 ±400	4550 ± 450	2	400	89 ± 9
2821 ± 4	3740 ±400	2590 ± 250	1	290	49 ± 5
2902 ± 2		30.2 ± 4.3		(300)	0.56± 0.08
2939 ± 2		48.8 ± 10.8		(300)	0.90± 0.20
3081 ± 2.5		53.3 ± 11.1		(300)	0.96± 0.20
3144 ± 5	1960 ±200	2100 ± 275	2	280	37.5 ± 5.0
3227 ± 2.5		437 ± 45		(300)	7.7 ± 0.8
3306 ± 2.5		14.9 ± 5.8		(300)	0.26± 0.10
3459 ± 6	3400 ±500	3840 ± 540	2	330	66 ± 9
3505 ± 6	5700 ±600	6890 ± 690	2	300	116 ±11
3712 ± 6	4550 ±500	5100 ± 510	2	230	84 ±10
3749 ± 3		98 ± 25		(300)	1.6 ± 0.4
*3777 ± 3		11 ± 5		(300)	0.18± 0.08
3822 ± 3		223 ± 25	1	(300)	3.6 ± 0.4
3852 ± 6	3100 ±300	3340 ± 340	2	250	54 ± 5
3933 ± 7	5300 ±500	5725 ± 560	2	300	59 ± 5
3998 ± 7	3270 ±400	2230 ± 225	1	300	35 ± 3
4096 ± 3.5		38 ± 13		(300)	0.6 ± 0.2
4146 ± 4		167 ± 51		(300)	2.6 ± 0.8
4253 ± 4		85 ± 20		(300)	1.3 ± 0.3
4289 ± 4		328 ± 52		(300)	5.0 ± 0.8
4358 ± 4		792 ± 132		(300)	12 ± 2
4378 ± 4		20 ± 7		(300)	0.30± 0.10
4442 ± 4		60 ± 13		(300)	0.9 ± 0.2
4470 ± 4		36 ± 13		(300)	0.54± 0.20
*4488 ± 4		12 ± 7		(300)	0.18± 0.10
4514 ± 4		1480 ± 270		(300)	22 ± 4
4576 ± 4		514 ± 108		(300)	7.6 ± 1.6
4669 ± 4		4100 ± 410		(300)	60 ± 6
4761 ± 4.5		3310 ± 415		(300)	48 ± 6
4875 ± 4.5		55 ± 13		(300)	0.8 ± 0.2
4905 ± 4.5		3640 ± 560		(300)	52 ± 8
5006 ± 5		3820 ± 570		(300)	54 ± 8
5043 ± 5		14 ± 14		(300)	0.2 ± 0.2
5090 ± 5		1430 ± 285		(300)	20 ± 4
5183 ± 5		35 ± 15		(300)	0.5 ± 0.2
5303 ± 5		44 ± 15		(300)	0.6 ± 0.2
5324 ± 5		51 ± 15		(300)	0.7 ± 0.2
5387 ± 5.5		1690 ± 290		(300)	23 ± 4
5446 ± 5.5		590 ± 150		(300)	8 ± 2
5466 ± 5.5		37 ± 15		(300)	0.5 ± 0.2
5573 ± 5.5		9260 ± 750		(300)	124 ±10
5610 ± 5.5		3745 ± 750		(300)	50 ±10
5709 ± 6		7555 ±1510		(300)	100 ±20
5755 ± 6		2730 ± 300		(300)	36 ± 4
5775 ± 6		38 ± 15		(300)	0.5 ± 0.2
5863 ± 6		2300 ± 310		(300)	30 ± 4
5998 ± 6		8210 ±1550		(300)	105 ±20

$^{75}_{33}$As

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
6070 ± 6.5		78 ± 31		(300)	1.0 ± 0.4
6178 ± 6.5		3300 ± 630		(300)	42 ± 8
6265 ± 6.5		48 ± 16		(300)	0.6 ± 0.2
6336 ± 6.5		400 ± 80		(300)	5.0 ± 1.0
6423 ± 7		4810 ± 640		(300)	60 ± 8
6450 ± 7		5140 ± 640		(300)	64 ± 8
*6506 ± 7		16 ± 16		(300)	0.2 ± 0.2
6549 ± 7		2100 ± 485		(300)	26 ± 6
6593 ± 7		50 ± 16		(300)	0.6 ± 0.2
6765 ± 7		74 ± 33		(300)	0.9 ± 0.4
6904 ± 7.5		220 ± 83		(300)	2.6 ± 1.0
6959 ± 7.5		5340 ± 670		(300)	64 ± 8
7071 ± 7.5		420 ± 85		(300)	5 ± 1
7121 ± 7.5		170 ± 170		(300)	2 ± 2
7254 ± 7.5		26 ± 9		(300)	0.3 ± 0.1
7297 ± 8		17 ± 9		(300)	0.2 ± 0.1
7370 ± 8		2575 ± 515		(300)	30 ± 6
7443 ± 8		1725 ± 345		(300)	20 ± 4
7479 ± 8		17 ± 9		(300)	0.2 ± 0.1
7596 ± 9		610 ± 140		(300)	7.0 ± 1.6
7627 ± 9		1750 ± 350		(300)	20 ± 4
7680 ± 9		525 ± 105		(300)	6.0 ± 1.2
7706 ± 9		175 ± 90		(300)	2.0 ± 1.0
7778 ± 9		1320 ± 260		(300)	15 ± 3
7875 ±10		125 ± 25		(300)	1.4 ± 0.3
7920 ±10		660 ± 90		(300)	7.4 ± 1.0
8026 ±10		27 ± 9		(300)	3.0 ± 1.0
8240 ±10		3450 ± 730		(300)	38 ± 8
8315 ±10		2735 ± 550		(300)	30 ± 6
8380 ±10		5860 ± 915		(300)	64 ±10
8449 ±10				(300)	0.2 ± 0.2
8508 ±10		2210 ± 370		(300)	24 ± 4
8556 ±11		220 ± 90		(300)	2.4 ± 1.0
8590 ±10		835 ± 185		(300)	9 ± 2
8650 ±11		74 ± 37		(300)	0.8 ± 0.4
8766 ±11		280 ± 90		(300)	3 ± 1
8823 ±11		71 ± 38		(300)	0.76± 0.40
8880 ±11		1410 ± 380		(300)	15 ± 4
9030 ±11		10830 ±1900		(300)	114 ±20
9135 ±12		57 ± 57		(300)	0.6 ± 0.6
9173 ±12		77 ± 38		(300)	0.8 ± 0.4
9215 ±12		1250 ± 290		(300)	13 ± 3
9375 ±12		775 ± 190		(300)	8 ± 2
9430 ±12		195 ± 100		(300)	2 ± 1
9520 ±13		4290 ± 975		(300)	44 ±10
9557 ±13		2350 ± 590		(300)	24 ± 6
9647 ±13		590 ± 200		(300)	6 ± 2
9686 ±13		1480 ± 390		(300)	15 ± 4

* Spurious or p-wave level

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
As^{75}	activation	JNE,25,129(71)	Ryves
As^{75}	pile osci.	AE-351(69)	Sokolowski
As^{75}	activation	DA/B,27,919(66)	Kappe
As^{75}	diffraction	PR,131,2098(63)	Arnold
As^{75}	σ_t	60VIENNA,177(60)	Dragomirescu
As^{75}	activation	NSE,8,378(60)	Lyon
As^{75}	local osci.	PR,83,641(51)	Pomerance
As^{75}	diffraction	PR,81,527(51)	Shull
As^{75}	$\bar{\sigma}_s$	PR,83,379(51)	Weiss
As^{75}	activation	PR,79,11(50)	Harris
As^{75}	activation	PR,72,888(47)	Seren
As^{75}	water bath	PR,58,554(40)	Lapointe
As^{75}	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
As	σ_t	47-3993	CEA-R-3385(68)	Julien
As	σ_t	252-9686	PR/B,136,177(64)	Garg
As	σ_t	319-3993	PL,10,86(64)	Julien
As	σ_t	47-533	JINR-1845,51(64)	Kalebin
As	σ_γ(SI)	47-896	PR/B,136,177(64)-	Rosen
As	σ_t	252-1723	CR,254,4009(62)	Julien
As	σ_t	47-746	PR,111,288(58)	Cote
As	σ_t	47-97	AE,5,69(58)	Vladimirskii

$_{34}$Se

THERMAL CROSS SECTIONS

σ_γ = 11.7±0.2 b
$\bar{\sigma}_s$ = 9.7±1.0 b
σ_t = 21.4±1.0 b
a_{coh} = 8.10±0.05 fm

RESONANCE PROPERTIES

I_γ^c = 13±2 b

$^{74}_{34}$Se

THERMAL CROSS SECTIONS

σ_γ = 51.8±1.2 b

RESONANCE PROPERTIES

I_γ^c = 565±40 b
<D> = 370±70 eV
S_0 = 1.3±0.8

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.9 S_n = 8023±5 keV

E_0 (eV)	$g\Gamma_n$ (meV)	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
27.1± 0.1	170 ± 6		210 ±20	32.7± 1.5
271.5± 1.0	4500 ± 200		300 ±45	273 ±12
1029.0± 3.6	2370 ± 380		300 ±45	73.9±11.9
1386 ± 6	1220 ± 90		320 ±50	32.8± 2.4
1630 ± 7	140 ± 40	[1]		3.5± 1.0
1746 ± 8	9860 ± 600		270 ±55	236.0±14.4
2303 ±24	1510 ± 440			33.6± 9.2
7216 ±68	20640 ±3900			243.0±45.9

THERMAL CROSS SECTIONS

σ_γ = 85±7 b
σ_γ = 21±1 b [17.5 sec ^{77}Se^m]

RESONANCE PROPERTIES

I_γ^c = 44±5 b
<D> = 700±150 eV
S_0 = 1.7±0.7

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 9.0 S_n = 7418.0±0.8 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
377.0± 1.0	300 ± 30	1/2	0	240 ±33	15.4 ± 1.6
862 ± 3	3530 ± 250			220 ±33	120.2 ± 8.5
920 ± 3	40 ± 8		[1]		1.3 ± 0.2
1210 ± 5	27 ± 5		[1]		0.78± 0.14
1355 ± 10	23 ± 4		[1]		0.62± 0.11
1480 ± 12	16 ± 4		[1]		0.42± 0.10
1646 ± 8	8 ± 4		[1]		0.20± 0.10
2120 ± 13	107 ± 15				2.3 ± 0.3
2575 ± 14	14240 ± 850			230 ±46	280.6 ± 16.8
3170 ± 20	49 ± 10		[1]		0.87± 0.18
3363 ± 21	14000 ± 900			250 ±50	241.4 ± 15.5
3940 ± 27	220 ± 50				5.5 ± 0.8
4313 ± 31	4000 ±2000			210 ±50	60.9 ± 30.5
5020 ± 39	<500				<7.1
5387 ± 48	30000 ±8500				409 ±116
6437 ± 57	18000 ±2000				224.4 ± 24.9
7148 ± 66	22800 ±3500				269.7 ± 41.4
8480 ±130	2700 ±1300				29.3 ± 14.2
10210 ±113	20900 ±2000				206.8 ± 19.8
11320 ±200	2430 ± 700				22.9 ± 0.7
13281 ±251	25200 ±9000				218.7 ± 78.1
24200	25200				379

$^{77}_{34}Se$

THERMAL CROSS SECTIONS

σ_γ = 42±4 b

RESONANCE PROPERTIES

I_γ = 34±4 b
<D> = 120±20 eV
S_0 = 1.3±0.3

RESONANCE PARAMETERS

I^π = 1/2⁻ %Abn = 7.5 S_n = 10497.0±1.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
112.0± 1.0	2.4 ± 0.2	1		700 ±200	.227± .019
151.6± 1.0	0.38± 0.12		[1]		0.031± 0.010
176.4± 1.0	0.74± 0.20		[1]		0.056± 0.016
211.6± 0.8	760 ± 40	0		350 ± 60	52.2 ± 2.8
290.6± 0.8	18.3 ± 1.5	1	0		1.07 ± .09
340.8± 1.0	180 ± 10	1	0	440 ± 65	9.75 ± .54
369.0± 0.8	2.4 ± 1.2		[1]		0.12 ± 0.06
442.0± 1.0	8.7 ± 1.4		[1]		.41 ± .07
482.0± 1.2	15.8 ± 1.5	1			.720± .068
517.0± 1.3	5.0 ± 1.0		[1]		0.22 ± 0.04
552.0± 1.4	8.6 ± 1.4		[1]		0.37 ± 0.07
690.0± 2.0	1190 ± 60	0		330 ± 50	45.3 ± 2.3
864.0± 2.8	920 ± 160				32.5 ± 5.6
970.0± 3.3	190 ± 60	[1]			6.1 ± 1.9
997.0± 3.5	3800 ± 230	0		450 ± 80	120.4 ± 7.3
1090 ± 4	150 ± 50				4.5 ± 1.5
1265 ± 4	1720 ± 160	1		460 ± 80	48.36 ± 4.50
1300 ± 5	15.2 ± 6.0		[1]		0.42 ± 0.17
1333 ± 5	18.0 ± 6.0		[1]		0.49 ± 0.16
1402 ± 6	200 ± 60				5.3 ± 1.6
1466 ± 6	28 ± 10				0.73 ± 0.26
1485 ± 6	480 ± 70	0		350 ±100	12.4 ± 1.8
1530 ± 7	11.6 ± 2.0		[1]		0.30 ± 0.05
1687 ± 8	1040 ± 200	1		520 ±150	25.3 ± 4.9
1795 ± 8	200 ± 100				4.7 ± 2.4
1860 ± 9	48 ± 14				1.1 ± 0.3
1880 ± 9	24 ± 8		[1]		0.55 ± 0.19
2040 ±10	500 ± 200				11.1 ± 4.4
2267 ±12	2300 ± 480	1		390 ± 60	48.3 ±10.1
2321 ±12	7000 ±2000	1		350 ± 50	145.3 ±41.5
2540 ±28	5000 ±1000	1		340 ± 50	99.2 ±19.8
2664 ±23	1720 ± 440	1		390 ± 60	33.3 ± 8.5
3034 ±27	1200 ± 400	1		600 ±250	21.8 ± 7.3
3197 ±20	4400 ± 600	1		440 ± 80	77.8 ±10.6
3342 ±21	2400 ± 500	0		360 ± 50	41.5 ± 8.7
3554 ±23	3700 ± 600	1		380 ± 60	62.1 ±10.1
3919 ±40	4000 ± 800	1		390 ± 60	63.9 ±12.8

THERMAL CROSS SECTIONS

σ_γ = 0.4±0.4 b
σ_γ = 0.33±0.04 b [3.9 min ^{79}Se^m]

RESONANCE PROPERTIES

I_γ = 4.7±0.6 b
<D> = 1000±270 eV
S_0 = 1.2±0.3

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 23.5 S_n = 6978±6 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
383.0± 1.0	325 ± 30	1/2	0	210 ±30	16.6 ± 1.5
850 ± 4	22 ± 4		[1]		0.75± 0.14
1350 ± 8	26 ± 5		[1]		0.71± 0.14
2027 ± 15	150 ± 30		[1]		3.3 ± 0.7
2397 ± 20	127 ± 25		[1]		2.6 ± 0.5
3227 ± 20	12300 ± 700			260 ±55	216.5 ±12.3
3852 ± 40	360 ± 180				5.8 ± 2.9
4626 ± 35	390 ± 170				5.7 ± 2.5
5673 ± 47	1800 ±1000			230 ±50	23.9 ±13.3
6171 ± 54	61400 ±3000				782 ±38
6857 ± 63	3500 ±1800			220 ±50	42.3 ±21.7
9250 ± 98	33000 ± 600				343 ± 6
11060 ±129	8000 ±6000				761 ±57
19100 ±292	30000 ±8000				217 ±58
20150 ±316	17000 ±5000				120 ±35
26900	108500				662
29400	67000				391
31200	46400				262
33000	62200				342
40500	150100				746

$^{80}_{34}Se$

THERMAL CROSS SECTIONS

σ_γ = 0.610±0.045 b
σ_γ = 0.080±0.010 b [57 min $^{81}Se^m$]
σ_γ = 0.530±0.040 b [18 min $^{81}Se^g$]

RESONANCE PROPERTIES

I_γ = 1.7±0.2 b
<D> = 1200±380 eV
S_0 = 1.6±0.6

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 50.0 S_n = 6701.2±1.2 keV

E_0 (eV)	$g\Gamma_n$ (meV)	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
1470 ± 10	50 ± 13	[1]		1.3± 0.3
1970 ± 19	50000 ± 2000			1126.5± 45.1
4270 ± 31	52000 ±13000			795.8±198.9
4720 ± 36	4800 ± 2400		250 ±100	69.9± 34.9
5100 ± 40	74000 ±19000			1036.2±266
5240 ± 43	<600	[1]		<8.3
5660 ± 46	7000 ± 4000		210 ± 55	93.0± 53.2
6120 ± 52	<700	[1]		<8.9
8150 ± 80	<900	[1]		<10
12632 ±156	26000 ± 8000			231.3± 71.2
18300	109800			812
20300 ±320	70600			488
23122 ±390	46000 ±15000			302.5± 98.7
29600	36250			211
39900	187000			937

$^{82}_{34}Se$

THERMAL CROSS SECTIONS

σ_γ = 0.045±0.003 b
σ_γ = 0.0058±0.0004 b [25 min $^{83}Se^m$]
σ_γ = 0.039±0.003 b [69 sec $^{83}Se^g$]

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 9.0 S_n = 5925±32 keV

E_0 (eV)	$g\Gamma_n$ (meV)	$g\Gamma_n^0$ (meV)
6580	44100	544
13800	114000	972
22700	72400	480
26550	69000	423

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Se	diffraction	ACJ,25,1233(71)	Krebs Larsen
Se	ratio	ACJ,22,827(68)	Andresen
$Se^{76,78,82}$	activation	ZP,210,13(68)	Mannhart
$Se^{78,80}$	ratio	CJP,46,2473(68)	Ricabarra
Se	ratio	PR,153,558(67)	Colominas
Se^{82}	isom. ratio	JIN,29,281(67)	Iyer
Se^{74}	activation	JIN,29,2853(67)	Sims
Se^{74}	activation	JNE,21,373(67)	Steinnes
$Se^{76,78}$	activation	NSE,22,373(65)	Kramer
Se^{80}	isom. ratio	NP,60,241(64)	Bishop
Se^{76}	activation	ADP,12,225(63)	Alexander
Se^{80}	isom. ratio	PR,129,769(63)	Keisch
$Se^{76,78}$	activation	ZP,167,549(62)	Weigmann
Se	pile osci.	61BUCHAR,623(61)	Bouzyk
Se	pulsed n	NSE,9,132(61)	Meadows
$Se^{76,78}$	activation	NP,20,183(60)	Hans
Se^{80}	isom.ratio	JIN,5,23(57)	Apers
Se	σ_t	AERE-N/R-1147(53)	Egelstaff
$Se^{74,76,77,78,80}$	pile osci.	PR,88,412(52)	Pomerance
Se	local osci.	PR,83,641(51)	Pomerance
Se	diffraction	PR,81,527(51)	Shull
Se	pile osci.	PPS/A,63,1175(50)	Colmer
Se	pile osci.	PR,80,342(50)	Harris
$Se^{80,82}$	activation	JCP,15,703(47)	Arnold
$Se^{74,80}$	activation	PR,72,888(47)	Seren
Se	water bath	PR,58,554(40)	Lapointe
Se	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Se	σ_t	211-688	NP/A,132,129(69)	Julien
Se^{74}	$\sigma_t\sigma_\gamma$	27-7216	YF,9,1119(69)	Maletski
Se^{76}	$\sigma_t\sigma_\gamma$	378-13281	YF,9,1119(69)	Maletski
Se^{77}	$\sigma_t\sigma_\gamma$	112-3919	YF,9,1119(69)	Maletski
Se^{78}	$\sigma_t\sigma_\gamma$	384-20150	YF,9,1119(69)	Maletski
Se^{80}	$\sigma_t\sigma_\gamma$	1470-23122	YF,9,1119(69)	Maletski
Se	σ_t	211-987	CEA-R-3385(68)	Julien
Se^{76}	σ_t	4960-24200	PRIVATE COMM.(66)	Good
Se^{78}	σ_t	5730-40500	PRIVATE COMM.(66)	Good
Se^{80}	σ_t	6580-26550	PRIVATE COMM.(66)	Good
Se^{74}	$\sigma_t\sigma_\gamma$	27-270	PR/B,136,703(64)	Cote
Se^{76}	$\sigma_t\sigma_\gamma$	375-5350	PR/B,136,703(64)	Cote
Se^{77}	$\sigma_t\sigma_\gamma$	112-2250	PR/B,136,703(64)	Cote
Se^{78}	$\sigma_t\sigma_\gamma$	380-3190	PR/B,136,703(64)	Cote
Se	σ_t	27-2230	CR,254,4009(62)	Julien
Se^{74}	σ_t	27-272	NP,14,120(59)	LeBlanc
Se^{76}	σ_t	860-2600	NP,14,120(59)	LeBlanc
Se^{77}	σ_t	209-998	NP,14,120(59)	LeBlanc
Se^{78}	σ_t	382	NP,14,120(59)	LeBlanc
Se^{80}	σ_t	4250-4950	PR,109,926(58)	Good

THERMAL CROSS SECTIONS

σ_γ = 6.8±0.1 b
$\bar{\sigma}_s$ = 6.1±0.2 b
σ_t = 12.9±0.2 b
a_{coh} = 6.76±0.04 fm

RESONANCE PROPERTIES

I_γ = 90±6 b
S_0 = 1.20±0.18

UNASSIGNED RESONANCES

E_0 (eV)	Γ (meV)	$4ag\Gamma_n$ (meV)	J	Γ_γ (meV)	$4ag\Gamma_n^0$ (meV)
158.0±0.2		0.60± 0.12		(300)	0.05 ± 0.01
192.7±0.3		4 ± 1	1	(300)	0.3 ± 0.1
210.4±0.4		0.6 ± 0.1		(300)	0.044± 0.008
255.2±0.4		1.9 ± 0.6		(300)	0.12 ± 0.04
336.8±0.3		1.8 ± 0.4		(300)	0.10 ± 0.02
369.1±0.4		2.7 ± 0.4		(300)	0.14 ± 0.02
464.3±0.4		1.3 ± 0.4		(300)	0.06 ± 0.02
467.9±0.6		58 ± 9		(300)	2.7 ± 0.4
483.5±0.6		70 ± 10		270 ±50	3.2 ± 0.4
490.5±0.4		1.8 ± 0.4		(300)	0.08 ± 0.02
560.3±0.8		15 ± 5		(300)	0.64 ± 0.20
564.8±0.8	775 ± 50	594 ± 63	2	300 ±60	25 ± 3
578.6±0.8	670 ± 60	450 ± 50	2	310 ±60	18.8 ± 1.9
604.2±0.8	790 ± 80	386 ± 40	1	275 ±50	15.8 ± 1.6
637.8±0.8	98 ± 10			(300)	3.9 ± 0.4
646.2±1.0	630 ± 60	438 ± 44	2	280 ±60	17.1 ± 1.7
668.8±1.0	1870 ±200	1913 ± 191	2	(300)	72.5 ± 7.3
749.3±1.1	780 ±100	330 ± 40	[1]	(300)	12 ± 1
788.0±1.2		760 ± 80		(300)	27 ± 3
831.2±1.2		58 ± 6		(300)	2.0 ± 0.2
849.5±1.3		50 ± 5		(300)	1.7 ± 0.2
870.0±1.4		9 ± 3		(300)	0.3 ± 0.1
892.3±1.4		51 ± 5		(300)	1.7 ± 0.2
930.8±1.6	820 ± 90	375 ± 40	[1]	(300)	12.3 ± 1.2
993.5±1.7		47 ± 5		(300)	1.5 ± 0.2
1042.5±1.8		48 ± 5		(300)	1.6 ± 0.2
1068.5±1.8		6.5 ± 2.6		(300)	0.20 ± 0.08
1187.0±1.1		42.7 ± 3.4		(300)	1.24 ± 0.20
1200.0±1.0	2600 ±220	2860 ± 275	2	(300)	82.5 ± 6.3
1208.5±1.1	4650 ±380	3260 ± 260	1	(300)	93.8 ± 7.5
1227.0±1.2		53 ± 5		(300)	1.5 ± 0.2
1275.0±1.2	3365 ±300	3790 ± 380	2	(300)	106 ±11
1311.0±1.3		58 ± 6		(300)	1.6 ± 0.2
1378.5±1.3		57 ± 9		(300)	1.7 ± 0.3
1440.5±1.4		10.6 ± 3.0		(300)	0.28 ± 0.08
1454.0±1.5	1600 ±200	915 ± 110	[1]	(270)	24 ± 3
1460.0±1.5	830 ±130	650 ± 65	[2]	(300)	17 ± 2
1530 ±1.6	2730 ±280	2975 ± 250	2	(300)	76 ± 6

$_{35}$Br

E_0 (eV)	Γ (meV)	$4ag\Gamma_n$ (meV)	J	Γ_γ (meV)	$4ag\Gamma_n^0$ (meV)
1546.5±1.6	3965 ±400	4520 ± 375	2	(300)	115 ± 9
1570.0±1.7		174 ± 35		(300)	4.4 ± 0.8
1589.0±1.7	1440 ±150	1350 ± 95	2	(300)	34 ± 3
1632.0±1.8				(300)	0.6 ± 0.2
1664.0±1.8				(300)	0.28 ± 0.08
1674.0±1.8				(300)	0.12 ± 0.04
1706.5±1.9		120 ± 15		(300)	2.9 ± 0.3
1720 ±2		580 ± 85		(300)	14 ± 2
1743.0±1.0		10 ± 5		(300)	0.24 ± 0.12
*1755.0±1.0		3 ± 3		(300)	0.08 ± 0.08
1770 ±2		525 ± 70		(300)	12.5 ± 2.0
*1802.0±1.1		3 ± 3		(300)	0.08 ± 0.08
1828 ±2	2690 ±300	2940 ± 310	2	340	68.8 ± 7.5
1872.5±2.0	2710 ±300	3140 ± 310	2	(300)	72.5 ± 7.5
1895 ±2		74 ± 20		(300)	1.7 ± 0.5
*1904.0±1.2		4 ± 4		(300)	0.08 ± 0.08
1948.0±1.2		9 ± 4		(300)	0.20 ± 0.08
1967 ±2		410 ± 60		(300)	9.2 ± 1.4
2030.0±1.3		104 ± 14		(300)	23 ± 3
2065.0±1.3		4 ± 4		(300)	0.08 ± 0.08
2079.5±1.3		910 ± 90		(300)	20 ± 2
2093.5±1.3		105 ± 90		(300)	23 ± 2
2139.5±1.4		16 ± 9		(300)	0.35 ± 0.2
2196.0±1.4		210 ± 93		(300)	4.4 ± 2.0
2206.0±1.4		1600 ± 190		(300)	34 ± 4
*2235.0±1.5		38 ± 4		(300)	0.80 ± 0.08
2247.5±1.5		160 ± 20		(300)	3.3 ± 0.4
2257.0±1.5		40 ± 10		(300)	0.8 ± 0.2
2283.0±1.5		52 ± 10		(300)	1.1 ± 0.2
2336.0±1.6		725 ± 100		(300)	15 ± 2
2366.0±1.6		330 ± 60		(300)	6.8 ± 1.2
2377.0±1.6		490 ± 100		(300)	10 ± 2
2395.0±1.6		10 ± 5		(300)	0.2 ± 0.1
2461.0±1.7		100 ± 40		(300)	2.0 ± 0.8
2465.0±1.7		300 ± 100		(300)	6 ± 2
2503.0±1.7		900 ± 200		(300)	18 ± 4
2514.0±1.8		2910 ± 600		(300)	58 ±12
*2535.0±1.8		10 ± 10		(300)	0.2 ± 0.2
2576.0±1.8		810 ± 100		(300)	16 ± 2
2593.0±1.8		710 ± 100		(300)	14 ± 2
2616.0±1.9		665 ± 100		(300)	13 ± 2
*2643.0±1.9		8 ± 4		(300)	0.16 ± 0.08
2668.0±1.9		8 ± 4		(300)	0.16 ± 0.08
2688.0±1.9		125 ± 20		(300)	2.4 ± 0.4
2707.0±2.0		625 ± 105		(300)	12 ± 2
2727.0±2.0		56 ± 10		(300)	1.08 ± 0.20
2757.0±2.0		130 ± 20		(300)	2.5 ± 0.4
2768.0±2.0		340 ± 65		(300)	6.4 ± 1.2
2813.0±2.1		14.8 ± 6.4		(300)	0.28 ± 0.12
*2826.0±2.1		6.4 ± 2.1		(300)	0.12 ± 0.04
*2846.0±2.1		6.4 ± 2.1		(300)	0.12 ± 0.04
2893.0±2.1		1290 ± 430		(300)	24 ± 8

E_0 (eV)	Γ (meV)	$4ag\Gamma_n$ (meV)	J	Γ_γ (meV)	$4ag\Gamma_n^0$ (meV)
2901.0±2.2		4310 ±1080		(300)	80 ±20
2924.0±2.2		290 ± 65		(300)	5.4 ± 1.2
2940.0±2.2		1190 ± 220		(300)	22 ± 4
2954.0±2.2		435 ± 220		(300)	8 ± 4
2967.0±2.2		220 ± 110		(300)	4 ± 2
3005.0±2.3		11 ± 4		(300)	0.20 ± 0.08
*3042.0±2.3		11 ± 11		(300)	0.2 ± 0.2
3053.0±2.3		155 ± 66		(300)	2.8 ± 1.2
3076.0±2.3		28 ± 9		(300)	0.50 ± 0.16
3093.0±2.4		16 ± 6		(300)	0.3 ± 0.1
3107.0±2.4		16 ± 6		(300)	0.3 ± 0.1
3117.0±2.4		310 ± 45		(300)	5.6 ± 0.8
3162.0±2.5		3370 ± 450		(300)	60 ± 8
3200.0±2.5		28 ± 11		(300)	0.5 ± 0.2
3218.0±2.5		1870 ± 340		(300)	33 ± 6
3232.0±2.5		62 ± 11		(300)	1.1 ± 0.2
3247.0±2.6		11 ± 5		(300)	0.20 ± 0.08
3303.0±2.6		14 ± 7		(300)	0.24 ± 0.12
3323.0±2.6		600 ± 90		(300)	10.4 ± 1.6
3341.0±2.7		1500 ± 230		(300)	26 ± 4
*3354.0±2.7		12 ± 12		(300)	0.2 ± 0.2
3381.0±2.7		21 ± 11		(300)	0.36 ± 0.2
3396.0±2.7		235 ± 50		(300)	4.0 ± 0.8
3430.0±2.8		40 ± 17		(300)	0.7 ± 0.3
3486.0±2.8		12 ± 5		(300)	0.20 ± 0.08
3503.0±2.8		118 ± 23		(300)	2.0 ± 0.4
3523.0±2.8		59 ± 23		(300)	1.0 ± 0.4
3563.0±2.9		12 ± 5		(300)	0.20 ± 0.08
3582.0±2.9		3350 ± 480		(300)	56 ± 8
3597.0±3.0		23 ± 11		(300)	0.4 ± 0.2
3610.0±3.0		120 ± 72		(300)	2.0 ± 1.2
3617.0±3.0		300 ± 120		(300)	5 ± 2
3662.0±3.1		12 ± 7		(300)	0.20 ± 0.12
3668.0±3.1		58 ± 24		(300)	0.96 ± 0.4
3713.0±3.1		915 ± 240		(300)	15 ± 4
3726.0±3.2		12 ± 6		(300)	0.2 ± 0.1
3737.0±3.2		36 ± 12		(300)	0.6 ± 0.2
3775.0±3.2		1540 ± 310		(300)	25 ± 5
*3809.0±3.3		31 ± 12		(300)	0.5 ± 0.2
3853.0±3.3		1550 ± 310		(300)	25 ± 5
3874.0±3.3		12 ± 6		(300)	0.2 ± 0.1
3888.0±3.4		310 ± 60		(300)	5 ± 1
3931.0±3.4		440 ± 125		(300)	7 ± 2

* Spurious or p-wave level

$^{79}_{35}$Br

THERMAL CROSS SECTIONS

σ_γ = 11.1±0.4 b
σ_γ = 2.6±0.2 b [4.5 hr ^{80}Br^m]
σ_γ = 8.5±0.3 b [18 min ^{80}Br^g]

RESONANCE PROPERTIES

I_γ = 132.5±10 b
I_γ = 34.5±4.0 b [4.5 hr ^{80}Br^m]
I_γ = 92±10 b [18 min ^{80}Br^g]

RESONANCE PARAMETERS

I^π = 3/2$^-$ %Abn = 50.69 S_n = 7883±4 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level					
35.8±0.1	368 ±40	54 ± 5	2	325 ±40	9.0±0.9
53.8±0.2	424 ±40	25.5± 1.5	1	390 ±40	3.5±0.2
189.5±0.2	413 ±40	62 ± 6	1	330 ±40	4.5±0.5
238.5±0.3	855 ±50	694 ±70	2	300 ±40	45 ±5
293.7±0.4	420 ±50	75 ± 8		340 ±60	4.4±0.4
318.5±0.5	900 ±90	725 ±75	2	320 ±50	40.6±4.1
394.5±0.4	460 ±80	135 ±14		370 ±80	6.8±0.8

$^{81}_{35}$Br

THERMAL CROSS SECTIONS

σ_γ = 2.69±0.09 b
σ_γ = 2.43±0.40 b [6.1 min ^{82}Br^m]
σ_γ = 0.26 b [36 hr ^{82}Br^g]

RESONANCE PROPERTIES

I_γ = 51±2 b

RESONANCE PARAMETERS

I^π = 3/2$^-$ %Abn = 49.31 S_n = 7601±8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
101.0±0.1	430 ±30	194 ±13	2	275 ±40	19.4±1.3
135.5±0.2	700 ±70	323 ±26	1	270 ±50	28 ±2
205.0±0.3	380 ±60	12.8± 1.3	[2]	370 ±60	0.9±0.1

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Br	diffraction	ACR/A,28,663(72)	Atoji
Br	Christiansen filter	PRIVATE COMM.(70)	Koester
Br^{81}	ratio	70HELSINKI,2,589(70)	Ricabarra
Br^{81}	ratio	JNE,24,35(70)	Ryves
Br	Christiansen filter	PRIVATE COMM.(68)	Nistler
Br^{81}	activation	PR/B,138,1(65)	Anders
Br^{79}	isom. ratio	NP,67,443(65)	Bacso
Br^{81}	activation	JIN,27,903(65)	Emery
Br^{79}	isom. ratio	PR,129,769(63)	Keisch
Br	pulsed n	NSE,9,132(61)	Meadows
Br^{81}	activation	NSE,8,378(60)	Lyon
Br	σ_t	AERE-N/R-1147(53)	Egelstaff
Br	$\bar{\sigma}_s$	PR,83,1123(51)+	Havens
Br	local osci.	PR,83,641(51)	Pomerance
Br	diffraction	PR,81,527(51)	Shull
Br	pile osci.	PPS/A,63,1175(50)	Colmer
Br	σ_t	NAT,166,825(50)	Egelstaff
Br	pile osci.	PR,80,342(50)	Harris
$Br^{79,81}$	ratio	PR,79,789(50)	Reynolds
Br^{79}	activation	PR,75,1781(49)+	Hughes
Br		PR,71,666(47)	Fermi
$Br^{79,81}$		PR,72,888(47)	Seren
Br	$\bar{\sigma}_s$	JPJ,25,481(43)	Kimura
Br	water bath	PR,58,554(40)	Lapointe
Br	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Br	σ_t	101-1968	CEA-R-3385(68)	Julien
Br	σ_t	101-1968	NP,66,433(65)	Julien
Br^{79}	$\sigma_t\bar{\sigma}_s$			
	$\sigma_\gamma\sigma_\gamma$(SI)	35.9-320	65ANTWERP,185(65)	Kim
Br^{81}	$\sigma_t\bar{\sigma}_s$			
	$\sigma_\gamma\sigma_\gamma$(SI)	101-136	65ANTWERP,185(65)	Kim
Br	σ_t	101-3931	PR/B,136,177(64)	Garg
Br^{79}	$\bar{\sigma}_s\sigma_\gamma\sigma_\gamma$(SI)	35.9-375	ZET,45,1294(63)	Zeliger
Br^{81}	$\bar{\sigma}_s\sigma_\gamma\sigma_\gamma$(SI)	101-136	ZET,45,1294(63)	Zeliger
Br^{79}	σ_t	35-317	NP,14,120(59)	LeBlanc
Br^{81}	σ_t	102-205	NP,14,120(59)	LeBlanc
Br	σ_γ(SI)	35.8-995	BAP,4,473(59)	Rosen
Br	σ_γ(SI)	35.8-995	CU(PNPL)-206,6(59)	Rosen
Br	σ_t	35.7-136.0	PR,83,1123(51)	Havens

$_{36}$Kr

THERMAL CROSS SECTIONS

σ_γ = 25.0±1.0 b
σ_s = 7.50±0.13 b
a_{coh} = 7.44±0.15 fm

RESONANCE PROPERTIES

I_γ^c = 53±7 b

$^{78}_{36}$Kr

THERMAL CROSS SECTIONS

σ_γ = 0.21±0.03 b (55 sec ^{79}Kr*)
σ_γ = 4.7±0.68 b (^{79}Kr*+g)

RESONANCE PROPERTIES

I_γ^c = 5.3±2.3 b

RESONANCE PARAMETERS

I^π = 0$^+$ | Z/An = 0.35 | S_n = 8368±11 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
*640 ±25	1500 ±300	55 ±12

* Isotopic assignment uncertain, see Kr-80

$^{80}_{36}$Kr

THERMAL CROSS SECTIONS

σ_γ = 14.0±1.5 b (^{81}Kr*+g)
σ_γ = 4.55±0.65 b (13 sec ^{81}Kr*)

RESONANCE PROPERTIES

I_γ = 56.1±5.6 b

RESONANCE PARAMETERS

I^π = 0$^+$ | Z/An = 2.25 | S_n = 7850±100 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
Bound level			
106 ± 2	336 ± 30	290 ±30	33 ±3
*640 ±25	1000 ±200	(200)	40 ±8

* Isotopic assignment uncertain

$^{82}_{36}Kr$

THERMAL CROSS SECTIONS

σ_γ = 45±15 b ($^{82}Kr^{*+*}$)
σ_γ = 20.0±3.5 b (1.86 hr $^{82}Kr^{*}$)

RESONANCE PROPERTIES

I_γ^c = 200±40 b

RESONANCE PARAMETERS

I^π = 0⁺ ZAbn = 11.6 S_n = 7467±6 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
39.8±0.5	91 ±12	14 ±2

$^{83}_{36}Kr$

THERMAL CROSS SECTIONS

σ_γ = 200±30 b

RESONANCE PROPERTIES

I_γ^c = 230±30 b

RESONANCE PARAMETERS

I^π = 9/2⁺ ZAbn = 11.5 S_n = 10518±5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level			
27.9±0.3	67 ±10	220 ±60	13 ±2
233 ±6	290 ±40	(200)	19 ±3

$^{84}_{36}Kr$

THERMAL CROSS SECTIONS

σ_γ = 0.130±0.014 b ($^{85}Kr^{m+g}$)
σ_γ = 0.090±0.013 b (4.4 hr $^{85}Kr^{m}$)
σ_γ = 0.042±0.004 b (10.73 yr $^{85}Kr^{g}$)

RESONANCE PROPERTIES

I_γ^s = 2.7±0.7 b

RESONANCE PARAMETERS

$J^\pi = 0^+$ $\qquad$ ΣA_{bn} = 57.0 $\qquad$ S_n = 7111±4 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
519 ±20	345 ±70	(200)	15 ±3
580 ±20	87 ±20		3.6±0.8

$^{85}_{36}Kr$

(10.73 yr)

THERMAL CROSS SECTIONS

σ_γ = 1.66±0.20 b

RESONANCE PROPERTIES

I_γ = 1.8±1.0 b

$^{86}_{36}Kr$

THERMAL CROSS SECTIONS

σ_γ = 0.060±0.020 b

RESONANCE PROPERTIES

I_γ^s = 0.03±0.03 b

$^{87}_{36}Kr$

THERMAL CROSS SECTIONS

σ_γ < 600 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Kr^{80}	activation	JET,15,643(72)	Barabanov
Kr^{85}	mass spectrometry	NSE,47,371(72)	Bemis
Kr^{80}	mass spectrometry	NSE,47,151(72)	Bradley
Kr	σ_t	NP/A,133,410(69)	Rorer
$Kr^{78,80,82,84}$	activation	NP/A,120,329(68)	Kondaiah
Kr	σ_s	PR,148,1303(66)*	Krohn
Kr^{82}	activation	NSE,21,114(65)	Ruby
$Kr^{80,84}$	activation	PRIVATE COMM.(63)	Eastwood
Kr	σ_t	JPR,24,21(63)	Genin
Kr^{83}	mass spectrometry	JIN,5,253(58)	Kennett
Kr	σ_t	JNE,6,113(57)	Cocking
Kr	mirror reflections	PR,102,1321(56)	Crouch
Kr^{78}		AF,5,191(52)	Bergstrom
Kr^{84}		RADCHM.ST.,2,642(51)	Hoagland
Kr		PR,80,20(50)	Harris
$Kr^{80,82}$	activation	PR,80,296(50)	MacNamara
Kr^{80}	activation	PR,79,886(50)	Reynolds
$Kr^{78,84}$		AECD-2274(48)	Way

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Kr^{80}	σ_t	106-640	PR,116,1516(59)	Mann
Kr^{82}	σ_t	39.8	PR,116,1516(59)	Mann
Kr^{83}	σ_t	27.9-233	PR,116,1516(59)	Mann
Kr^{84}	σ_t	519-580	PR,116,1516(59)	Mann
Kr	σ_t	28.3-41.1	JNE,6,113(57)	Cocking

$_{37}$Rb

THERMAL CROSS SECTIONS

σ_γ^c = 0.37±0.03 b
σ_t = 6.2±0.3 b
a_{coh} = 7.04±0.08 fm

RESONANCE PROPERTIES

I_γ^c = 6.0±0.5 b
S_0 = 1.2±0.3

$^{85}_{37}$Rb

THERMAL CROSS SECTIONS

σ_γ = 0.46±0.02 b [^{86}Rb^{m+g}]
σ_γ = 0.050±0.005 b [1.0 min ^{86}Rb^m]
σ_γ = 0.41±0.02 b [18.7 day ^{86}Rb^g]
a_{coh} = 8.3±0.1 fm

RESONANCE PROPERTIES

I_γ = 7.5±0.5 b
<D> = 100±20 eV
S_0 = 1.0±0.4

RESONANCE PARAMETERS

I^π = 5/2$^-$ %Abn = 72.17 S_n = 8650.4±1.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
*176.6± 0.3	0.86± 0.12				0.065± 0.009
*224.7± 0.3	1.14± 0.16				0.076± 0.011
*236.6± 0.4	10.8 ± 1.0				0.702± 0.065
*429.0± 1.0	2.6 ± 0.4				0.13 ± 0.02
*466.0± 1.2	1.6 ± 0.4				0.074± 0.019
477.0± 1.2	41.0 ± 4.0				1.87 ± 0.19
530.0± 1.4	1380 ± 60	2	0	220 ±20	69.6 ± 2.6
*546.0± 1.4	6.0 ± 2.0				0.26 ± 0.07
*598.0± 1.6	6.4 ± 0.8				0.26 ± 0.03
658 ± 2	315 ± 80				12.2 ± 3.1
807 ± 3	15 ± 2				0.53 ± 0.07
1012 ± 4	140 ± 40				4.4 ± 1.3
1046 ± 4	920 ± 140			94 ±14	28.5 ± 4.3
1210 ± 5	1680 ± 260			110 ±16	48.3 ± 7.5
1414 ± 6	6400 ± 600			100 ±15	170.2 ±16.0
1514 ± 7	140 ± 40				3.6 ± 1.0
1686 ± 10	680 ± 200			102 ±15	16.6 ± 4.9
*1943 ± 10	20 ± 10				0.45 ± 0.23
1996 ± 15	520 ± 180			100 ±15	11.6 ± 4.0
2110 ± 15	500 ± 200				10.9 ± 4.4
*2190 ± 20	20 ± 10				0.43 ± 0.21
*2310 ± 20	40 ± 12				0.83 ± 0.25

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
2420 ± 15	7600 ± 1200				154.5 ±24
*2550 ± 20	66 ± 20				1.3 ± 0.4
2610 ± 20	100 ± 40				2.0 ± 0.8
*2800 ± 25	40 ± 14				0.76 ± 0.27
3020 ± 15	5200 ± 1200				94.6 ±21.8
3235 ± 15	2800 ± 700				49.2 ±12.3
3360 ± 15	600 ± 200				10.4 ± 3.5
4060 ± 20	20000 ± 800				311.1 ±12.6
4250 ± 15	8400 ± 1600				128.9 ±24.5
4930 ± 30	12000 ± 2000				170.9 ±28.5
5180 ± 30	4600 ± 1600				63.9 ±22.2
5660 ± 25	6000 ± 1600				79.8 ±21.3
7250 ± 35	12000 ± 3000				140.9 ±35.3
8430 ± 70	32000 ± 6000				348.5 ±65.4
9310 ± 70	20000 ± 6000				207.3 ±62.2
11030 ±100	16000 ± 6000				152.3 ±57.1
12880 ±120	26000 ± 8000				229.1 ±70.5
15030 ±100	42000 ±10000				342.6 ±81.6
15560 ±110	16000 ± 6000				128.3 ±48.1
16690 ±120	18000 ± 6000				139.3 ±46.4
17170 ±120	22000 ± 8000				167.9 ±61.1

* Possibly p-wave resonances

* Note- There is a large discrepancy between measured and calculated reduced absorption resonance integrals, possibly due to unassigned low energy neutron resonances.

$^{87}_{37}$Rb

[4.7×10^{10} yr]

THERMAL CROSS SECTIONS

σ_γ = 0.12±0.03 b

RESONANCE PROPERTIES

I_γ^c = 2.0±0.5 b
<D> 1600±420 eV
S_0 = 1.6±0.9

RESONANCE PARAMETERS

I" = 3/2+ %Abn = 27.83 S_n = 6083±15 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
*269.5± 1.0	15.7± 1.5				.96± .09
378.0± 1.5	900 ± 80	2	0	95 ±13	46.3 ± 4.1
3840 ± 15	23200 ± 3000		0		374.4 ± 48.4
5120 ± 30	43200 ± 5000		0		603.7 ± 83.9
7580 ± 35	102000 ±14000	1	0		1172 ±161
8370 ± 40	10000 ± 2000		0		109 ± 22
8790 ± 45	274000 ±32000		0		2923 ±341
11160 ± 60	46000 ±10000		0		436 ± 95
14980 ±100	40000 ±12000		0		327 ± 98
23470 ±400	240000 ±60000		0		1567 ±392

* Possibly p-wave resonances

$^{88}_{37}$Rb

[17.7 min]

THERMAL CROSS SECTIONS

σ_γ = 1.0±0.2 b [15.4 min ^{89}Rb^g]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Rb^{85}	activation	JIN,34,2699(72)	Steinnes
Rb	diffraction	ACR/A,26,376(70)	Copley
Rb	diffraction	CR/B,270,56(70)	Meriel
Rb	diffraction	ACR/A,26,377(70)	Wang
Rb^{85}	activation	CJP,47,2031(69)	Ricabarra
Rb^{85}	isom. ratio	EN,14,228(67)	Foglio
Rb^{85}	activation	JIN,29,2853(67)	Sims
Rb	diffraction	JPR,25,565(64)	Pickart
Rb^{85}	activation	PR,129,769(63)	Keisch
Rb,Rb^{85}	diffraction	ANL-6797,393(63)+	Mueller
Rb^{85}	activation	NP,20,183(60)	Hans
Rb^{85}	activation	NSE,8,378(60)	Lyon
Rb^{85}	activation	PRIVATE COMM.(56)	Brookshank
Rb^{88}	σ_t	PR,99,610(55)+	Joki
Rb	local osci.	PR,83,641(51)	Pomerance
Rb	diffraction	PR,81,527(51)	Shull
Rb^{85}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Rb^{85}	$\sigma_t\sigma_\gamma$	176-17170	JINR-P3-4357(69)	Grebenyuk
Rb^{87}	$\sigma_t\sigma_\gamma$	270-23470	JINR-P3-4357(69)	Grebenyuk
Rb^{85}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	176-1690	NP,72,298(65)	Iliescu
Rb	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	176-3050	NP,72,298(65)	Iliescu
Rb^{85}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	176-1210	ZET,49,410(65)	Kim
Rb^{87}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	267-378	ZET,49,410(65)	Kim
Rb^{85}	σ_t	3300-6900	PR,109,926(58)	Good
Rb^{87}	σ_t	5000-8550	PR,109,926(58)	Good
Rb^{85}	σ_γ	520-1420	NP,3,553(57)	Bovey
Rb^{87}	σ_γ	370	NP,3,553(57)	Bovey

$_{38}$Sr

THERMAL CROSS SECTIONS

σ_γ = 1.21±0.06 b
σ_s = 10±1 b
σ_t = 11±1 b
a_{coh} = 6.88±0.13 fm

RESONANCE PROPERTIES

I_γ = 11±2 b
R' = 6.9±0.3 fm

$^{84}_{38}$Sr

THERMAL CROSS SECTIONS

σ_γ = 0.81±0.07 b
σ_γ = 0.55±0.04 b [70 min ^{85}Sr^m]
σ_γ = 0.26±0.06 b [64 day ^{85}Sr^g]

RESONANCE PROPERTIES

I_γ = 10.6±1.1 b
S_0 = 0.9±0.4

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 0.56 S_n = 8528±5 keV

E_0 (eV)	$g\Gamma_n$ (meV)	$g\Gamma_n^0$ (meV)
364.6± 0.8	1100 ± 100	57 ± 5
[a]488 ± 4	4.6± 0.6	0.21± 0.04
517 ± 4	8.0± 1.2	0.35± 0.05
635 ± 5	500 ± 400	20 ±15
712 ± 5	72 ± 12	2.7 ± 0.5
1600 ±20	440 ± 270	11 ± 7
1980 ±30	330 ± 120	7.5 ± 2.7
2250 ±35	700 ± 400	15 ±10
3000 ±17	4600 ± 500	85 ±10
3350 ±20	4400 ±1200	76 ±20

[a] Possibly p-wave resonances

THERMAL CROSS SECTIONS

σ_γ = 0.84±0.06 b [2.83 hr $^{87}Sr^m$]

RESONANCE PROPERTIES

I_γ^c = 4±1 b
<D> = 1.0±0.3 keV
S_0 = 0.5±0.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 9.9 S_n = 8428.3±0.8 keV

E_0 (eV)	$g\Gamma_n$ (meV)	$g\Gamma_n^0$ (meV)
*588.4± 0.4	6000 ± 300	247 ±12
1370.0± 0.5	56.0± 10.0	1.51± 0.27
2592 ± 1	75 ± 17	1.47± 0.33
3247 ± 1	3600 ± 400	63.2 ± 7.0
4496 ± 2	450 ± 75	6.7 ± 1.1
5130 ± 2	290 ± 50	4.05± 0.67
6440 ± 4	680 ± 125	8.47± 1.56
7944 ± 5	480 ± 90	5.39± 1.01
8276 ± 5	530 ± 110	5.83± 1.21
9356 ± 6	440 ± 85	4.55± 0.88
10161 ± 7	8500 ±1500	84.3 ±14.9
10345 ± 7	1300 ± 240	12.8 ± 2.4
10869 ± 8	1700 ± 320	16.3 ± 3.1
11475 ±14	14500 ±2500	135.4 ±23.3
11925 ± 9	156 ± 24	1.43± 0.22
13897 ±12	530 ± 75	4.50± 0.64
14980 ±13	9200 ±1700	75.2 ±13.9
15399 ±13	9100 ±1650	73.3 ±13.3
18374 ±30	37000 ±6000	273.0 ±44.3
21359 ±15	2500 ± 400	17.1 ± 2.7
22031 ±12	114 ± 25	0.77± 0.17
22394 ±13	184 ± 40	1.23± 0.27
22778 ±13	1590 ± 275	10.5 ± 1.8
23087 ±14	1010 ± 150	6.65± 1.0

* A radiation width of 0.284 eV would account for the thermal absorption cross section.

$^{87}_{38}Sr$

THERMAL CROSS SECTIONS

σ_γ = 16±3 b

RESONANCE PROPERTIES

I_γ^c = 120±12 b
R' = 6.9±0.3 fm
S_0 = 0.26±0.06

RESONANCE PARAMETERS

I^π = 9/2⁺ %Abr = 7.0 S_n = 11113.0±0.6 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
3.54±0.02	0.66± 0.09	4	0	205 ±20	0.35 ± 0.05
*35.27±0.04	0.06± 0.02				0.010± 0.003
*321.3 ±0.4	4.8 ± 0.8				0.27 ± 0.05
*543 ±1	3.5 ± 1.4				0.15 ± 0.06
648.3 ±0.9	600 ± 60				25.1 ± 3.1
675.9 ±0.5	60 ± 14				2.2 ± 0.5
741.8 ±2.2	360 ± 50				13.3 ± 1.8
746.9 ±0.6	32 ± 10				1.2 ± 0.4
*966.4 ±1	18 ± 4				0.58 ± 0.13
1184 ±1	14 ± 4				0.41 ± 0.12
*1259 ±1	22.0 ± 5.0				0.62 ± 0.14
1335 ±1	3500 ±300				95.6 ±12.0
1402 ±1	170 ± 24				4.54 ± 0.64
1700 ±3	<6.0				<0.15
1719 ±1	24 ± 4.0				0.58 ± 0.10
2013 ±3	24 ± 8				0.54 ± 0.18
2092 ±1	16 ± 4				0.35 ± 0.09
2112 ±1	450 ± 70				9.8 ± 1.5
2353 ±3	48 ± 8				0.99 ± 0.17
2439 ±1	340 ± 60				6.89 ± 1.22
2756 ±2	500 ± 64				9.52 ± 1.22
2978 ±6	4.0 ± 2.0				0.073± 0.037
3053 ±6	60 ± 10				1.09 ± 0.18
3658 ±2	560 ± 80				9.26 ± 1.32
4037 ±2	3100 ±400				48.8 ± 6.3
4766 ±2	2050 ±350				29.7 ± 5.1
4977 ±2	1960 ±300				27.8 ± 4.3
5196 ±3	880 ±140				12.2 ± 1.9
5503 ±3	1020 ±160				13.75 ± 2.16
5777 ±3	1480 ±240				19.5 ± 3.2
6060 ±3	4300 ±700				55.2 ± 9.0
6150 ±3	5400 ±940				68.9 ±12.0
6815 ±4	2100 ±350				25.4 ± 4.2
7167 ±4	760 ±140				9.0 ± 1.7
7505 ±4	420 ± 76				4.9 ± 0.9
8840 ±5	824 ±144				8.76 ± 1.53
9974 ±7	260 ± 44				2.6 ± 0.4

* Possibly p-wave resonances

THERMAL CROSS SECTIONS

σ_γ = 5.8±0.4 mb

RESONANCE PROPERTIES

I_γ^c = 0.05±0.02 b
R' = 6.9±0.3 fm
<D> = 14.4±4.3 keV
S_1 = 2.4±0.6

RESONANCE PARAMETERS

$I^\pi = 0^+$ | %Nbn = 82.6 | S_n = 6360.1±3.7 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
2.780±0.015	0.100± 0.020				0.018±0.003	
12.389±0.010	19 ± 4	(3/2)	1	181 ±27	0.21 ±0.04	8.5
13.852±0.020	240 ± 60	1/2	0	100 ±10	2.06 ±0.05	
23.574±0.025	82 ± 10	(1/2)	1	185 ±30		11.5±1.5
29.472±0.030	88 ± 15	(3/2)	1	150 ±25		9.2±1.6
54.536±0.040	61 ± 12	(3/2)	1	150 ±25		2.6±0.5
55.820±0.045	82 ± 15	(3/2)	1	135 ±20		3.4±0.6
88.320±0.090	145 ± 25		1			3.2±0.6
92.5 ±0.5	670 ±270	1/2	0		2.2 ±0.9	
96.25 ±0.5	320 ± 97		1			4.2±1.3
105.5 ±1.0	150 ± 60		0		0.5 ±0.2	
110 ±1	240 ± 70		1			2.7±0.8
122 ±1	1870 ±560	3/2	1			17.3±5.2
142 ±1	180 ±130		0		0.5 ±0.3	
151 ±1	850 ±340		1			6.2±2.5
153.5 ±1	290 ±150		1			2.4±1.2
171 ±1	470 ±230		1			2.9±1.4
196 ±1	1300 ±390		1			7.2±2.2
200.5 ±1	310 ±220		1			1.9±1.3
212.5 ±1	790 ±160		1			4.6±0.9
230	1000	3/2	1			6.5
232	1000	1/2	0		2.1	
248	2000	3/2	1			12.0
260	500	1/2	0		0.98	
295	6000	3/2	1			29.4
304	3000	3/2	1			14.2
328	20000	3/2	1			87.0

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (meV)	$g\Gamma_\gamma^0$ (eV)	$g\Gamma_\gamma^1$ (eV)
340	18000	3/2	1			67.0
366	1000	1/2	1			3.9
387	6000	3/2	1			21.9
403	8000	1/2	1			28.0
410	100	3/2	1			0.3
423	2000	3/2	1			6.6
431	400	3/2	1			1.3
503	5000	3/2	1			13.9
505.5	800	1/2	1			2.2
508.5	2000	1/2	1			5.5
511.8	1000	3/2	1			2.7
515.0	500	1/2	1			1.4
521.5	45000	5/2	2			
536.5	14000	3/2	1			36.6
537.0	8000	3/2	1			20.0
543.0	6000	3/2	1			15.5
546.0	2000	3/2	1			5.1
553.5	2000	1/2	1			5.1
569.5	12000	3/2	1			29.6
581.0	3400	3/2	1			8.2
589.5	24000	3/2	1			5.7
615.5	2000	1/2	1			4.6
660.5	5000	3/2	1			10.7
666.0	6000	3/2	1			12.8
680.0	6000	3/2	1			12.5
700.0	1000	5/2	2			2.0

$^{89}_{38}Sr$

[50.5 day]

THERMAL CROSS SECTIONS

σ_γ = 0.42±0.04 b

$^{90}_{38}Sr$

[29 yr]

THERMAL CROSS SECTIONS

σ_γ = 0.9±0.5 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Sr^{84}	activation	JIN,34,2699(72)	Steinnes
Sr	diffraction	ACA/A,27,622(71)	Cooper
Sr^{84}	activation	70HELSINKI,2,589(70)	Ricabarra
Sr	diffraction	ACA/B,25,787(69)	Loopstra
$Sr^{84,86}$	activation	ZP,210,13(68)	Mannhart
$Sr^{84,86}$	isom. ratio	EN,14,228(67)	Foglio
Sr^{84}	isom. ratio	FKI,14,85(66)	Kardon
Sr^{90}	activation	APA,23,223(66)	Zeisel
$Sr^{84,86}$	activation	NSE,22,373(65)	Kramer
$Sr^{84,86}$	isom. ratio	64PARIS,2,703(64)	Gulyas
$Sr^{84,86}$	activation	NP,20,183(60)	Hans
$Sr^{84,86}$	activation	NSE,8,378(60)	Lyon
Sr^{89}	activation	PIC-2,16,54(58)	Eastwood
Sr^{88}	activation	CJC,36,731(58)	Roy
Sr^{89}	activation	CJP,35,1215(57)	Roy
$Sr^{84,88}$	ratio	NP,1,420(56)	Asdente
Sr^{84}	activation	PPS/A,65,958(52)	Harrison
Sr	local osci.	PR,83,641(51)	Pomerance
Sr	diffraction	PR,81,527(51)	Shull
Sr	pile osci.	PPS/A,63,1175(50)	Colmer
Sr	reflection	PR,71,915(47)	Fermi
$Sr^{86,88}$	activation	PR,72,888(47)	Seren
Sr	absorption	PR,69,41[illegible]46)	Coltman
Sr	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Sr	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Sr^{88}	σ_γ	12.4-57.1	BAP,18,591(73)+	Winters
Sr^{88}	σ_t	505500-700000	BAP,16,495(71)	Divadeenam
Sr^{88}	σ_t	232000-431000	BAP,16,495(71)	Pineo
Sr^{86}	σ_t	588.-10345.	PRIVATE COMM.(71)	Rahn
Sr^{87}	σ_t	3.53-7353.	PRIVATE COMM.(71)	Rahn
Sr^{88}	σ_t	12389.-68320.	PRIVATE COMM.(71)	Rahn
Sr^{87}	σ_γ(spectra)	thermal	69STUDSVIK,35(69)	Michaelis
Sr^{87}	σ_γ	thermal	NP/A,113,134(68)	Irigaray
Sr^{87}	σ_γ(spectra)	thermal	ZP,194,373(66)	Michaelis
Sr^{84}	$\sigma_t\sigma_\gamma$	364.6-3350.	EON,2,183(65)	Adamchuk
Sr^{86}	$\sigma_t\sigma_\gamma$	590.-18800.	EON,2,183(65)	Adamchuk
Sr^{87}	$\sigma_t\sigma_\gamma$	3.56-3700.	EON,2,183(65)	Adamchuk
Sr^{88}	$\sigma_t\sigma_\gamma$	2780.-23800.	EON,2,183(65)	Adamchuk
Sr^{86}	σ_t	12750.	AP,14,387(61)	Bilpuch
Sr^{88}	σ_t	14500-212500	AP,14,387(61)	Bilpuch
Sr^{86}	σ_t	3000.-11300.	PR,109,926(58)	Good
Sr^{88}	σ_t	13600.	PR,109,926(58)	Good
Sr^{87}	σ_t	3.56	PR,108,353(57)	Stolovy

THERMAL CROSS SECTIONS

σ_T = 1.28±0.02 b
σ_T = 1.0±0.2 mb (3.2 hr $^{90}Y^m$)
σ_s = 7.60±0.06 b
σ_i = 0.88±0.06 b
a_{coh} = 7.78±0.03 fm

RESONANCE PROPERTIES

I_T = 1.0±0.2 b
R' = 6.7±0.1 fm
<D> = 1.2±0.2 keV
S_0 = 0.32±0.11
S_1 = $4.4^{+2.0}_{-1.2}$

RESONANCE PARAMETERS

I^π = 1/2$^-$ %Abn = 100 S_n = 6860.0±1.4 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
-0.300		1	0	0.26	
2.598±0.008	1.46 ± 0.36	[1]	[0]	0.0286±0.0070	
2.608±0.008	1.50 ± 0.26		[1]		3.23
3.380±0.008	0.56 ± 0.08		1		0.82
4.776±0.008	0.082± 0.012		1		0.073
5.710±0.010	0.30 ± 0.06		1		0.400
7.496±0.018	31.6 ± 2.0	0	0	0.364 ±0.023	
9.410±0.025	5.0 ± 0.6		1		1.530
9.728±0.026	2.04 ± 0.24	1	0	0.206 ±0.024	
10.72 ±0.03	0.56 ± 0.10				0.150
11.57 ±0.04	5.8 ± 2.0		[1]		1.360
11.58 ±0.04	44.0 ± 3.2	0	0	0.408 ±0.030	
12.99 ±0.04	12.0 ± 1.2	1	1		2.360
13.79 ±0.05	2.6 ± 0.4	[1]	0	0.0222±0.0034	
14.21 ±0.05	4.4 ± 0.6		1		0.760
14.52 ±0.05	0.76 ± 0.20		1		0.130
15.19 ±0.05	42.8 ± 2.0	1	0	0.348 ±0.016	
20.27 ±0.08	8.4 ± 0.8	1	1		0.860
23.00 ±0.10	51.0 ± 6.0	[1]	1		4.330
23.62 ±0.10	4.6 ± 1.0		1		0.380
24.12 ±0.11	39.4 ± 6.0	[1]	1		3.100
24.56 ±0.11	70.4 ± 8.0	[1]	1		5.450
26.38 ±0.12	25.8 ± 2.2	0	0	0.160 ±0.014	
26.85 ±0.12	3.6 ± 0.5		0	0.022 ±0.003	
28.11 ±0.13	10.6 ± 2.0				0.670
29.26 ±0.14	124 ±12	[1]	1		7.440
29.53 ±0.14	136 ±14	1	0	0.790 ±0.081	
30.05 ±0.15	64 ± 8	[1]	1		3.700
42.10					
53.00					
53.70					
55.10					
56.10					

$^{89}_{39}Y$

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
62.40					
65.30					
68.40					
70.30					
76.80					

$^{90}_{39}Y$

(64.0 hr)

THERMAL CROSS SECTIONS

σ_γ < 6.5 b

$^{91}_{39}Y$

(58.6 day)

THERMAL CROSS SECTIONS

σ_γ = 1.4±0.3 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Y^{89}	activation	JNE,25,129(71)	Ryves
Y^{89}	diffraction	ACA,19,679(65)-	Fert
Y^{89}	diffraction	ACA,19,679(65)	Paton
Y^{89}	diffraction	ACA,19,679(65)-	Villain
Y^{89}	$\sigma_t \bar{\sigma}_t$	NYO-GEN-72-28,64(64)	Rustad
Y^{89}	diffraction	KRI,7,948(62)	Kuz'minov
Y^{89}	diffraction	JCP,35,1950(61)	Atoji
Y^{89}	activation	PR,123,903(61)	Heath
Y^{91}	activation	CJP,38,1690(60)	Milton
Y^{89}	diffraction	ACA,10,787(57)	Prince
Y^{89}	activation	PRIVATE COMM.(56)	Lyon
Y^{90}	activation	JCP,23,2108(55)	Smith
Y^{89}	pile osci.	JPR,12,584(51)	Benoist
Y^{89}	local osci.	PR,83,641(51)	Pomerance
Y^{89}	activation	PR,72,888(47)	Seren
Y^{89}	$\bar{\sigma}_t$	PRS/A,162,127(37)	Goldhaber
Y^{89}	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Y^{89}	σ_t	2.598-30.05	NP/A,123,561(69)	Morgenstern
Y^{89}	σ_t	0.68-76.8	JPR,24,994(63)	Bianchi
Y^{89}	σ_t	2.590-25.420	PL,3,67(62)	Julien
Y^{89}	σ_t	2.5-13.0	AP,14,387(61)	Biipuch
Y^{89}	σ_t	2.5-17.0	PR,109,926(58)	Good
Y^{89}	σ_t	0.002-2.0	PR,110,692(58)	Seth

$_{40}Zr$

THERMAL CROSS SECTIONS

σ_γ = 0.185±0.003 b
$\bar{\sigma}_s$ = 6.40±0.07 b
a_{coh} = 7.0±0.1 fm

RESONANCE PROPERTIES

I_γ = 1.10±0.15 b
R' = 7.1±0.4 fm

$^{90}_{40}Zr$

THERMAL CROSS SECTIONS

σ_γ = 0.10±0.07 b

RESONANCE PROPERTIES

I_γ = 0.20±0.03 b
R' = 7.1±0.4 fm
<D> = 3.0±1.0 keV
S_0 = 1.4±0.5
S_1 = 4.6±0.5

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 51.46 S_n = 7202.6±2.7 keV

E_0 (eV)	$g\Gamma_n$ (eV)	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
3848 ± 10	11 ± 2	0	0.30±0.05	0.18 ±0.02
3988 ± 10	0.16 ± 0.03	[1]	(0.3)	0.003 ±0.001
7249 ± 22	8.4 ± 0.9	[1]	0.40±0.08	0.10 ±0.01
7572 ± 24	0.78 ± 0.05		0.32±0.05	0.009 ±0.001
8823 ± 30	7.3 ± 0.7	[1]	0.50±0.08	0.078 ±0.008
9565 ± 34	0.086± 0.006		(0.3)	0.0009±0.0001
11490 ± 44	0.090± 0.008		(0.3)	0.0008±0.0001
12416 ± 50	0.27 ± 0.04		(0.3)	0.0024±0.0004
13310 ± 60	70 ±10	0	0.25±0.05	0.605 ±0.087
17230 ± 100	210 ±15	0	0.21±0.05	1.60 ±0.11
34700 ± 100	89			0.84
40100 ± 100	94			0.47
41600	362			1.79
42400 ± 200	342			1.68
44100 ±1000	320			1.03
56000	126			0.54
59000	310			1.29
68000	563			2.20

$^{91}_{40}Zr$

THERMAL CROSS SECTIONS

σ_γ = 1.03±0.52 b

RESONANCE PROPERTIES

I_γ = 6.5±0.8 b
R' = 7.1±0.4 fm
<D> = 250±60 eV
S_0 = 0.9±0.3
S_1 = 5.0±0.8

RESONANCE PARAMETERS

I^π = 5/2⁺ %Abn = 11.23 S_n = 8635.1±1.4 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$2g\Gamma_n^1$ (meV)
Bound level		2				
181.8± 0.2	10.2± 0.8	3	0	120 ± 40	0.76± 0.06	
240.0± 0.2	3.0± 0.5	2	1	300 ± 50	0.19± 0.03	388
292.0± 0.3	635 ± 40	2	0	150 ± 30	36.6 ± 2.3	
448.0± 1.0	4.8± 0.4	2	1	(300)	0.23± 0.02	215
680.0± 0.6	950 ± 70	3	0	150 ± 30	36.4 ± 2.7	
890 ± 1	45 ± 4	3	1	200 ±100	1.5 ± 0.1	827
1530 ± 1	8600 ± 280	2	0	210 ± 10	220 ± 7	
1947 ± 3	350 ± 30		1		7.9 ± 1.8	2000
1990 ± 2	35 ± 6				7.8 ± 1.3	
2005 ± 2	530 ± 40		1	210 ± 20	11.8 ± 0.9	2895
2370 ± 4	253 ± 40			(300)	5.2 ± 0.8	
2461 ± 4	3416 ± 660	[2]	0	160 ± 30	69 ±13	
2718 ± 4	1085 ± 935	[3]	0	230 ± 40	208 ±18	
2758 ± 5	233 ± 33	[2]	1	(300)	4.4 ± 0.6	790
3158 ± 6	1400 ± 350	[3]	1	320 ± 50	24.9 ± 6.2	3900
3595 ± 7	292 ± 47	[3]		(300)	4.9 ± 0.8	
3640 ± 8	315 ± 47	[3]		(300)	5.2 ± 0.8	
3854 ± 9	280 ± 47	[3]		(300)	4.5 ± 0.8	
3991 ± 9	14350 ±2000	[3]		210 ± 30	227 ±32	
4276 ±10	238 ± 35			(300)	3.6 ± 0.5	

THERMAL CROSS SECTIONS

σ_γ = 0.26±0.08 b

RESONANCE PROPERTIES

I_γ = 0.54±0.12 b
R' = 7.1±0.4 fm
<D> = 1.5±0.5 keV
S_0 = 1.6±0.6
S_1 = 6.5±1.0

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 17.11 S_n = 6758±4 keV

E_0 (eV)	$g\Gamma_n$ (eV)	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
2004 ± 2	0.29± 0.3	1	(0.3)	0.0062±0.0010
2725 ± 5	23 ± 2	0	0.15±0.03	0.443 ±0.039
4160 ± 10	4.5 ± 0.5	1	0.50±0.05	0.070 ±0.008
4760 ± 20	12 ± 2	0	0.26±0.04	0.174 ±0.029
5023 ± 12	2.3 ± 0.3	1	0.24±0.04	0.032 ±0.004
6625 ± 18	0.21± 0.04		(0.3)	0.003 ±0.001
6890 ± 20	72 ± 8	0	0.60±0.08	0.870 ±0.098
8822 ± 28	8.1 ± 0.7		0.27±0.04	0.086 ±0.007
9108 ± 28	6.8 ± 0.3		0.23±0.03	0.071 ±0.006
9791 ± 33	0.21± 0.03			0.0021±0.0003
12100	25			0.23
14500	38			0.32
17200	38			0.30
23100	121			0.81
34300	217			1.19
39200	208			1.07
44700	186			0.90
47000 ±400	600 ±200			2.7 ±0.8

$^{93}_{40}Zr$

[9.5×10^5 yr]

THERMAL CROSS SECTIONS

$1.3 < \sigma_\gamma < 4$ b

RESONANCE PROPERTIES

$I_\gamma \sim 33$ b

RESONANCE PARAMETERS

$I^\pi = 5/2^+$ $S_n = 8191 \pm 5$ keV

E_0 (eV)	$2g\Gamma_n$ (meV)	$2g\Gamma_n^0$ (meV)
110 ±2	270 ±30	26 ±3

THERMAL CROSS SECTIONS

σ_γ = 0.056±0.004 b

RESONANCE PROPERTIES

I_γ = 0.30±0.03 b
R' = 7.1±0.4 fm
<D> = 1.7±0.3 keV
S_0 = 1.4±0.5
S_1 = 4.6±0.5

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 17.40 S_n = 6475±5 keV

E_0 (eV)	$g\Gamma_n$ (eV)	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)
2263 ± 3	0.75 ± 0.11		0.135±0.05	0.015 ±0.002
2728 ± 5	0.0030± 0.0003		(0.30)	0.00006±0.0000
4904 ± 11	0.28 ± 0.05	[1]	(0.30)	0.004 ±0.001
5800 ± 14	22 ± 6	[1]	0.65 ±0.05	0.290 ±0.79
7065 ± 20	25 ± 5	0	0.30 ±0.05	0.33 ±0.06
7462 ± 20	0.23 ± 0.04	[1]	(0.30)	0.003 ±0.001
10126 ± 34	0.26 ± 0.04		(0.30)	0.0026 ±0.0004
12006 ± 37	0.30 ± 0.03		(0.30)	0.0027 ±0.0003
12600 ±100	21 ± 6		0.26 ±0.05	0.19 ±0.05
12798 ± 57	0.26 ± 0.05		(0.30)	0.0023 ±0.0004
14229 ± 70	0.27 ± 0.05		(0.30)	0.0022 ±0.0004
17700 ±200	16			0.12
17950 ±200	54 ± 8			0.21
19750 ±300	110 ±10			0.79 ±0.07
20200	85			0.61
23100	50			0.32
23700	43.5			0.28
25100	57			0.36
29000	57			0.34
29800	57			0.34
30200	78			0.45
31800	134			0.75
33800	130			0.71
36300	69			0.36
40000	145			0.73
41600	267			1.29

$^{96}_{40}Zr$

THERMAL CROSS SECTIONS

σ_γ = 0.017±0.003 b

RESONANCE PROPERTIES

I_γ = 5.0±0.4 b
S_0 = 1.0±0.6

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 2.80 S_n = 5571±3 keV

E_0 (eV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
302 ± 1	0.19±0.03	1/2	1	0.250±0.020	0.011±0.002	17.9
3845 ± 40	6 ±2				0.097±0.032	
4120 ± 30	13 ±1				0.19 ±0.03	
4610 ± 10	6 ±2				0.08 ±0.04	
5500 ± 50	15.7 ±3.0				0.211±0.050	
5970 ± 90	4				0.05	
15450 ±100						
22760	46				0.3	
29400	402				2.39	
34500	70				0.4	
36100	93				0.5	
37200	43				0.23	
38900	96				0.49	
40700	180				0.91	
45800	86				0.5	
51600	60				0.25	
54200	1170				5.11	
58300	558				2.35	

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Zr^{94,96}$	activation	NSE,46,314(71)	Fulmer
$Zr^{94,96}$	activation	CJP,48,2362(70)	Ricabarra
Zr		NIM,86,83(70)	Malik
Zr	σ_γ (0.025 ev)	68WASH,2,857(68)	Lopez
Zr	pile osci.	66PARIS,1,479(66)	Carre
Zr	diffraction	ANL-6797,393(63)	Mueller
Zr	σ_t	NSE,11,298(61)	Joki
Zr	pile osci.	JNE,12,32(60)	Tattersall
$Zr^{94,96}$	activation	NSE,8,378(60)	Lyon
Zr	pile osci.	AERE-R/M-100(57)	Cummins
Zr^{93}	pile osci.	ORNL-1789,50(55)	Pomerance
$Zr^{90,91,92,94,96}$	pile osci.	PR,88,412(52)	Pomerance
Zr	pile osci.	PR,83,641(51)	Pomerance
Zr	diffraction	PR,83,88(51)	Pomerance
Zr	diffraction	PR,81,527(51)	Shull
Zr	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Zr	σ_γ (spectra)	182-1530	BAP,17,16(72)	Mughabghab
Zr	σ_γ (spectra)	182-1530	BAP,17,18(72)	Mughabghab
Zr^{90}	$\sigma_\gamma\sigma_t$	3848-17268	NSE,37,137(69)	Bartolome
Zr^{91}	$\sigma_\gamma\sigma_t$	182-4266	NSE,37,137(69)	Bartolome
Zr^{92}	$\sigma_\gamma\sigma_t$	2004-9791	NSE,37,137(69)	Bartolome
Zr^{94}	$\sigma_\gamma\sigma_t$	2263-14229	NSE,37,137(69)	Bartolome
Zr	σ_t	182-2008	NP/A,132,129(69)	Julien
Zr	σ_t	182-2008	NP/A,123,561(69)	Morgenstern
Zr	σ_t	182-885	BAP,14,104(69)	Rimawi
Zr^{90}	σ_t	3800-68000	PR,165,1329(68)	Good
Zr^{92}	σ_t	2700-52000	PR,165,1329(68)	Good
Zr^{94}	σ_t	5700-43700	PR,165,1329(68)	Good
Zr^{96}	σ_t	2680-58300	PR,165,1329(68)	Good
Zr	$\sigma_\gamma\sigma_t$	182-3890	68WASH,2,857(68)	Lopez
Zr	σ_t	182-293	PL,14,123(65)	Muradyan
Zr,$Zr^{90,91,94}$	σ_γ	1-50000	AE,19,294(65)	Kapchigashev
Zr^{90}	σ_t	3912-17850	NP,53,667(64)	Moskalev
Zr^{91}	σ_t	182-5600	NP,53,667(64)	Moskalev
Zr^{92}	σ_t	1860-6880	NP,53,667(64)	Moskalev
Zr^{94}	σ_t	2273-19860	NP,53,667(64)	Moskalev
Zr^{96}	σ_t	303-5510	NP,53,667(64)	Moskalev
Zr^{90}	σ_t	3880-17800	ORNL-3425,32(63)	Block
Zr^{91}	σ_t	182-5600	ORNL-3425,32(63)	Block
Zr^{92}	σ_t	2700-47200	ORNL-3425,32(63)	Block
Zr^{94}	σ_t	2250-24000	ORNL-3425,32(63)	Block
Zr^{96}	σ_t	301-15400	ORNL-3425,32(63)	Block
Zr^{91}	σ_γ (spectra)	182-2050	PR,131,2143(63)	Jackson
Zr	σ_t	182-3812	CR,254,4009(62)	Julien
Zr	σ_t	182-18007	BAP,6,69(61)	Olsen
Zr	σ_t	182-1490	JPR,22,719(61)	Corge
Zr	σ_γ (spectra)	thermal	BAP,6,237(61)	Bartholomew
Zr^{93}	σ_t	110	ORNL-2610,22(58)	Block

$^{93}_{41}Nb$

THERMAL CROSS SECTIONS

σ_γ = 1.15±0.05 b
a_{coh} = 7.11±0.04 fm

RESONANCE PROPERTIES

I_γ = 8.5±0.5 b
R' = 7.0±0.2 fm
S_0 = 0.36±0.06
S_1 = 5.16±0.24

RESONANCE PARAMETERS

I^π = 9/2⁺ %Abn = 100 S_n = 7228.9±1.5 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
35.8±0.1	180 ± 30	0.11 ± 0.01	5	1	180 ±30		110
42.3±0.1	175 ± 30	0.088± 0.008	4	1	175 ±30		72
94.3±0.1	175 ± 30	0.35 ± 0.04		1	175 ±30		85
105.8±0.2	145 ± 30	0.45 ± 0.02	4	0	145 ±50	0.044± 0.002	
119.2±0.2	125 ± 15	4.0 ± 0.2	[4]	0	125 ±15	0.37 ± 0.02	
192.2±0.2		0.5 ± 0.3					
193.8±0.2	161 ± 12	36 ± 4	[4]	0	125 ±15	2.6 ± 0.3	
243.7±0.2	162 ± 20	2.2 ± 0.2	[5]	1	160 ±20		125
319.0±0.2	222 ± 40	1.8 ± 0.2	5	1	220 ±50		68
335.5±0.2	149 ± 20	17.0 ± 1.0	4	0	130 ±20	0.93 ± 0.09	
362.6±0.3		0.27 ± 0.08					
365.0±0.3		0.50 ± 0.15					
378.4±0.3	302 ± 40	110 ± 10	[4]	0	180 ±40	5.7 ± 0.6	
392.5±0.3	203 ± 30	2.4 ± 0.2		1	200 ±30		64
460.3±0.3	170 ± 35	7.9 ± 0.6		0	162 ±35	0.37 ± 0.02	
500.6±0.4	230 ± 50	4.8 ± 0.6		1	225 ±50		88
599.3±0.4	145 ± 40	1.2 ± 0.2		[0]		0.05 ± 0.03	
604.4±0.4	160 ± 40	3.4 ± 0.3		0		0.14 ± 0.01	
617.7±0.4	150 ± 40	1.1 ± 0.2					
640.8±0.5	150 ± 40	5.3 ± 0.5				0.21 ± 0.02	
672.0±0.5	220 ± 40	8.7 ± 0.8		1			108
678.2±0.5	135 ± 30	2.0 ± 0.2		1	135 ±30		24
721.3±0.5	250 ± 50	14.1 ± 1.5		1			158
741.4±0.6	300 ± 25	186 ± 15	[5]	0	129 ±16	6.8 ± 0.6	
757.3±0.6	250 ± 50	2.0 ± 0.4		1			22
912.3±0.8	200 ± 60	3.8 ± 0.4	4	0		0.13 ± 0.01	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
934.7±0.8	580 ± 30	397 ± 30	4	0	140 ±20	13.0 ± 1.3	
952.7±0.8	262 ± 80	12.1 ± 1.3		1			127
1009.0±0.9	700 ± 60	560 ± 50		0	138 ±14	17.6 ± 1.6	
1016.4±0.9	280 ± 70	25.1 ± 3.0		1			166
1107.7±1.0	250 ± 50	9.0 ± 0.9					
1127.2±1.1	250 ± 50	18 ± 2					
1147.7±1.1	305 ± 35	182 ± 25	5	0	140 ±17	5.37 ± 0.74	
1175.3±1.1	476 ± 40	300 ± 30	4	0	143 ±16	9.0 ± 0.9	
1193.9±1.1	210 ± 50	39 ± 5		0		1.13 ± 0.11	
1228.9±1.2	195 ± 50	39 ± 4		0		1.11 ± 0.11	
1243.0±1.2	264 ± 50	14.0 ± 1.4		1			69
1283.6±1.3	245 ± 50	10 ± 1		1			53
1350.4±1.4	285 ± 50	32.8 ± 1.6		1			144
1353.9±1.4	260 ± 50	11 ± 3		1			47
1393.1±1.4	344 ± 35	181 ± 27	4	0	144 ±20		
1452.0±1.5	1176 ± 80	858 ± 77	4				
1466.8±1.6	288 ± 60	38 ± 6		1			112
1529.3±1.7	280 ± 60	13.9 ± 2.1					
1539.9±1.7	280 ± 60	27 ± 4					
1556.0±1.7	266 ± 60	15 ± 2					
1576.2±1.7	730 ±100	199 ± 30		0			
1616.0±1.8	270 ± 60	30 ± 6					
1653.8±1.9	220 ± 50	45 ± 7		0			
1712 ±2	170 ± 40	53 ± 10		1			162
1767 ±2	180 ± 40	16 ± 5					
1810 ±2	195 ± 30	89 ± 13					
1832 ±2	1026 ±150	715 ± 70	[4]	0			
1981 ±2	250 ± 60	8 ± 2					
1990 ±2	130 ± 30	21 ± 2	[4]	0			
2021 ±2	840 ±130	715 ± 70	5	0		15.9 ± 1.6	
2068 ±2	300 ± 40	60 ± 10					
2074 ±2	324 ± 50	173 ± 25		0			
2117 ±2	300	41 ± 6		[1]			91
2146 ±3	330 ± 60	55 ± 20		[1]			120
2154 ±3	410 ± 60	290 ± 70	5	0		6.2 ± 1.5	
2229 ±3	230 ±100	175 ± 25		0		3.7 ± 0.5	
2310 ±3		2.9 ± 2.7					
2335 ±3		87 ± 9					
2341 ±3		465 ± 50					
2361 ±3		39 ± 4					
2392 ±3		5.9 ± 1.8					

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
2419 ±3	2400 ±700	2060 ±300				42 ± 6	
2451 ±3		25 ± 10					
2463 ±3		95 ± 25					
2509 ±3		34 ± 10					
2545 ±3		50 ± 10					
2576 ±3		35 ± 10					
2637 ±3	2950 ±900	2310 ±300		0		45 ± 6	
2686 ±3		45 ± 15					
2709 ±3		35 ± 5					
2832 ±3		18 ± 6					
2924 ±3	370 ±100	195 ± 30		0		3.6 ± 0.5	
2950 ±3	510 ±150	370 ± 55		0		6.8 ± 1.0	
2984 ±3		13 ± 13					
3224 ±3		23 ± 12					
3254 ±3		21 ± 12					
3272 ±4		45 ± 15					
3281 ±4		22 ± 11					
3355 ±4		230 ± 60		0		4.0 ± 1.0	
3373 ±4		55 ± 26					
3392 ±4	900 ±300	990 ±115		0			
3406 ±4		10 ± 5					
3425 ±4		8 ± 4					
3522 ±4	970 ±300	950 ±120		0		16 ± 2	
3587 ±4		45 ± 20					
3607 ±4		80 ± 20					
3669 ±4		180 ± 35					
3760 ±4	750 ±220	430 ± 40		0		7.0 ± 0.7	
3839 ±4		130 ± 30					
3925 ±4		100 ± 30					
3940 ±4		80 ± 30					
3974 ±4		580 ± 90					
3985 ±4		100 ± 30					
4021 ±4		60 ± 30					
4036 ±4		100 ± 30					
4066 ±4	1750 ±500	890 ± 90		0		14 ± 1	
4120.0±4.0						0.26 ± 0.06	17
4138.0±4.0						0.40 ± 0.20	26
4190.0±4.0						0.10 ± 0.10	6
4228.0±4.0						0.20 ± 0.10	13
4252.0±4.0						0.20 ± 0.10	13
4291.0±4.0						0.60 ± 0.20	38

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
4320.0±4.0						0.16 ± 0.10	10
4346.0±4.0						0.40 ± 0.20	25
4365.0±4.0						0.10 ± 0.10	6
4380.0±4.0						0.10 ± 0.10	6
4401.0±4.0						0.20 ± 0.10	12
4449.0±4.0						0.30 ± 0.20	18
4480.0±4.0						0.04 ± 0.04	2
4539.0±4.0						0.20 ± 0.20	12
4553.0±4.0						4.60 ± 1.00	
4595.0±4.0						32.00 ± 6.00	
4606.0±4.0						0.20 ± 0.20	12
4647.0±4.0						0.20 ± 0.10	12
4728.0±5.0						0.20 ± 0.10	11
4740.0±5.0						0.30 ± 0.20	17
4780.0±5.0						0.10 ± 0.10	6
4807.0±5.0						1.00 ± 0.10	61
4825.0±5.0						1.08 ± 0.20	60
4840.0±5.0						0.10 ± 0.10	6
4868.0±5.0						0.10 ± 0.10	6
4885.0±5.0						0.06 ± 0.06	3
4910.0±5.0						0.10 ± 0.10	6
4932.0±5.0						0.30 ± 0.10	16
4955.0±5.0						0.10 ± 0.10	5
5043.0±5.0						2.40 ± 0.60	
5063.0±5.0						1.60 ± 0.40	
5085.0±5.0						0.30 ± 0.10	
5105.0±5.0						0.20 ± 0.10	
5150.0±5.0						46.00 ±10.00	
5165.0±5.0						0.40 ± 0.40	
5178.0±5.0						0.20 ± 0.20	
5229.0±5.0						0.40 ± 0.20	
5265.0±5.0						0.10 ± 0.10	
5292.0±5.0						1.40 ± 0.20	
5335.0±5.0						0.20 ± 0.20	
5387.0±5.0						0.20 ± 0.20	
5465.0±6.0						1.50 ± 0.40	
5480.0±6.0						0.20 ± 0.20	
5509.0±6.0						1.00 ± 0.20	
5543.0±6.0						3.80 ± 0.80	
5571.0±6.0						7.00 ± 1.40	
5600.0±6.0						0.20 ± 0.10	

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
5652.0±6.0						4.00 ± 1.00	
5687.0±6.0						24.00 ± 6.00	
5716.0±6.0						0.20 ± 0.20	
5735.0±6.0						0.40 ± 0.20	
5788.0±6.0						4.60 ± 1.00	
5830.0±6.0						1.00 ± 0.40	
5855.0±6.0						10.00 ± 3.00	
5874.0±6.0						0.24 ± 0.00	
5898.0±6.0						12.00 ± 4.00	
5936.0±6.0						0.10 ± 0.10	
5999.0±6.0						44.00 ±10.00	
6044.0±7.0						8.00 ± 2.00	
6069.0±7.0						0.60 ± 0.20	
6108.0±7.0						10.00 ± 1.60	
6145.0±7.0						0.20 ± 0.20	
6168.0±7.0						2.80 ± 0.60	
6208.0±7.0						1.60 ± 0.40	
6221.0±7.0						1.80 ± 0.40	
6275.0±7.0						0.70 ± 0.20	
6350.0±7.0						0.30 ± 0.10	
6406.0±7.0						30.00 ± 6.00	
6445.0±7.0						0.60 ± 0.20	
6498.0±7.0						11.00 ± 2.00	
6535.0±7.0						3.00 ± 0.60	
6565.0±7.0						1.30 ± 0.40	
6630.0±7.0						12.00 ± 2.00	
6711.0±8.0						3.00 ± 0.60	
6734.0±8.0						2.80 ± 0.60	
6780.0±8.0						0.90 ± 0.30	
6795.0±8.0						9.00 ± 2.00	
6841.0±8.0						0.60 ± 0.20	
6860.0±8.0						0.20 ± 0.20	
6880.0±8.0						0.40 ± 0.20	
6904.0±8.0						7.00 ± 2.00	
6927.0±8.0						3.00 ± 1.00	
7039.0±8.0						8.00 ± 1.60	
7071.0±8.0						0.50 ± 0.20	
7129.0±8.0						0.70 ± 0.20	
7237.0±9.0						24.00 ± 6.00	
7322.0±9.0						2.20 ± 0.60	

$^{94}_{41}Nb$

[2.0×10^4 yr]

THERMAL CROSS SECTIONS

σ_γ = 13.6±1.5 b

RESONANCE PROPERTIES

I_γ = 125±8 b

RESONANCE PARAMETERS

$I^\pi = 6^+$ S_n = 8495.9±3.2 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
11.63±0.05	5.86±0.68	162 ±20	1.72±0.20
22.63±0.20	0.95±0.10	213 ±25	0.20±0.02

$^{95}_{41}Nb$

[35.1 day]

THERMAL CROSS SECTIONS

σ_γ < 7 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Nb^{93}	Christiansen filters	ZN,26A,391(71)	Koester
Nb^{94}	activation	PRIVATE COMM.(69)	Schuman
$Nb^{93,94}$	activation	ORNL-4306,2(68)	Druschel
Nb^{95}	activation	ORNL-3488,9(63)	Halperin
$Nb^{93,94}$	activation	IDO-16760,13(61)	Schuman
$Nb^{93,94}$	pile osci.	JNE,12,32(60)	Tattersall
Nb^{93}	pile osci.	AERE-R/R-2516(58)	Jowitt
Nb^{94}	activation	PR,92,369(53)	Douglas
Nb^{94}	pile osci.	PR,83,641(51)	Pomerance
Nb^{93}	diffraction	PR,81,527(51)	Shull
Nb^{94}	pile osci.	PR,80,342(50)	Harris
Nb^{94}	pile osci.	PPS/A,63,1175(50)	Colmer
Nb^{94}	pile react.	PR,72,16(47)	Anderson
Nb^{93}	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Nb^{93}	σ_γ(spectra)	35.-336.	PR/C,3,2054(71)	Chrien
Nb^{94}	σ_t	10.-50.	IN-1317,3(69)	Serpa
Nb^{93}	σ_γ(spectra)	35.-119.	PR,174,1421(68)	Prestwich
Nb^{93}	σ_γ	35.-1400.	NP/A,93,340(67)	Lopez
Nb^{93}	σ_γ rot.sample σ_γ(SI)	35.-1228.	65ANTWERP,183(65)	Muradyan
Nb^{93}	$\sigma_t \sigma_\gamma \bar{\sigma}_s$ σ_γ(SI)	35.-400.	NP,72,298(65)	Iliescu
Nb^{93}	$\sigma_t \sigma_\gamma \bar{\sigma}_s$	94.-378.	ZET,49,410(65)	Kim
Nb^{93}	σ_t	35.-4000.	NP,70,497(65)	Poittevin
Nb^{93}	σ_t	35.-7322.	PR/B,137,547(65)	
Nb^{93}	σ_t	35.-194.	PL,11,378+488(63)	Jackson
Nb^{93}	σ_t		PR,131,2153(63)	Jackson
Nb^{93}	σ_γ(SI)	35.-194.	BRP,5,32(60)	Desjardins
Nb^{93}	σ_γ(SI)	94.-1255.	PRIVATE COMM.(59)	Rosen
Nb^{93}	σ_t	35.-744.	PR,109,1258(58)	Saplakoglu
Nb^{93}	σ_t	35.-244.	PRIVATE COMM.(55)	Pilcher
Nb^{93}	$\sigma_t \sigma_\gamma$	195.	55GENEVA,4,110(55)	Rae

$_{42}$Mo

THERMAL CROSS SECTIONS

σ_γ = 2.65±0.08 b
$\bar{\sigma}_s$ = 5.8±0.2 b
a_{coh} = 6.9 fm

RESONANCE PROPERTIES

I_γ = 22±2 b
R' = 6.8±0.2 fm
S_0 = 0.6±0.2
S_1 = 5.8±1.0

UNASSIGNED RESONANCES

E_0 (eV)	$ag\Gamma_n^0$ (meV)	E_0 (eV)	$ag\Gamma_n^0$ (meV)
2166.50±1.40	0.20± 0.05	3393.0 ±3.0	0.38± 0.15
2299.20±1.50	0.14± 0.05	3489.9 ±3.0	0.35± 0.15
2438.00±1.65	0.28± 0.10	3504.0 ±3.0	0.57± 0.20
2580.70±1.80	0.80± 0.30	3623.0 ±3.0	0.60± 0.20
2602.30±1.80	0.14± 0.04	3650.5 ±3.0	0.50± 0.10
3074.00±2.00	0.25± 0.08	3726.0 ±3.0	1.38± 0.40
3209.00±2.50	0.25± 0.09	4138.0 ±4.0	0.53± 0.15
3282.0 ±2.5	24.0 ±10.0	4178.0 ±4.0	0.34± 0.10
3339.8 ±2.5	0.28± 0.10	4930.0 ±5.0	1.40± 0.40
3369.0 ±3.0	0.19± 0.07		

$^{92}_{42}$Mo

THERMAL CROSS SECTIONS

σ_γ ~ 45 mb

RESONANCE PROPERTIES

I_γ = 0.52±0.11 b
R' = 6.4±0.8 fm
S_0 = 0.65±0.26
S_1 = 3.3±1.1

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 15.84 S_n = 8072±2.9 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	Γ_n^0 (meV)	$g\Gamma_n^1$ (eV)
347.0± 0.2	7.9± 0.6	1/2	0		0.42± 0.03	
1868.8± 1.1	47 ± 10	3/2	1			0.29
2322.6± 1.6	50 ± 6	3/2	1			0.22
3060.0± 2.0	75 ± 10	[1/2]	1			0.22
3169.0± 2.5	7800 ± 600	1/2	0	215 ± 20	138 ±12	
4286.0± 4.0	1050 ± 200	3/2	1	220 ± 50		1.85

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (eV)
5568 ± 5	500 ± 50	3/2	1	300 ± 50		0.60
6024 ± 5	580 ± 150	3/2	1			0.62
6470 ± 6	1100 ± 100	1/2	1	108 ± 10		
6800 ± 7	580 ± 50	1/2	0	180 ± 30	7.0 ± 1.2	
7120 ± 7	520 ± 100	1/2	0	190 ± 30	6.2 ± 1.2	
8789 ± 9	2500 ± 500	3/2	1	170 ± 20	26.7 ± 5.3	1.51
8893 ± 9	3500 ± 300	[1/2]	1	220 ± 30		2.08
9127 ±10	1600 ± 300	[1/2]	1	230 ± 40		0.88
10546 ±15	460 ± 70	[3/2]	1	370 ±100		0.21
11079 ±15	360 ± 60	[3/2]	1	205 ± 30		0.16
11494 ±15	11000 ±1500	1/2	0	162 ± 15	103 ±14	
12800	220 ± 30	3/2	1			0.076
13700	32000 ±3000	1/2	0	132 ± 20	273 ±27	
14100	5200 ± 400	1/2	1	155 ± 16		1.57
14500	220 ± 40	3/2	1			0.63
15670	6000 ±1400	1/2	1	172 ± 20		1.55
15720	1900 ± 700	[3/2]	1	160 ± 40		0.49
16500	62500 ±6000	1/2	0	166 ± 17	486 ±50	
17300	250 ± 70	3/2	1	375 ±150		0.06
18000	800 ± 300	[3/2]	[1]	165 ± 40		0.17
18100	4000 ± 150					
19200	6000 ±1500	[3/2]	1	180 ± 20		1.15
20300	490 ± 200	1/2	0	160 ± 40		
20600	500 ± 220	1/2		150 ± 30		
20700	140 ± 60					
21100	31000 ±3000	1/2	0	177 ± 20	210 ±20	
21700	270 ± 50					
23900	15200 ±1500	[3/2]	1	355 ± 40		2.11
25500	8400 ± 800	[3/2]	[1]	160 ± 15		1.06
25800	36500 ±4000	1/2	0	166 ± 17	230 ±30	
*26200	73000 ±5000					
*28000	13000 ± 600					
28700	26000 ±1900					
29800	37000 ±3600	1/2	0	199 ± 20	210 ±20	
30100	630 ± 320					
30300	5600 ± 800	[1/2]	1	127 ± 16	127 ±16	
31100	57000 ±3000	1/2	0	260 ± 30	260 ±30	

* Possibly complex

THERMAL CROSS SECTIONS

σ_γ^c = 16 mb

RESONANCE PROPERTIES

I_γ = 0.57±0.12 b
R' = 6.5±1.3 fm
S_0 = 0.8±0.4
S_1 = 5.4±1.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 9.04 S_n = 7375.1±2.2 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n\Gamma_\gamma/\Gamma$ (meV)
108.8±0.2	0.16± 0.02				0.015± 0.002	0.16± 0.02
1051.7±0.8	6.1 ± 0.6				0.19 ± 0.02	6.0 ± 0.6
1541.8±0.9	1100 ± 300			140 ±20	28 ± 8	125 ±12
1660.4±1.1	12.4 ± 1.7				0.30 ± 0.04	11.7 ± 1.5
2178.4±1.4	383 ± 135	[3/2]	[1]	260 ±30	8.2 ± 2.9	220 ±22
3159.2±3.0						155 ±18
3572.2±3.0						195 ±19
3599.0±3.0	1130 ± 660			167 ±30	18.8 ±11.0	145 ±13
4362.7±4.0	508 ± 145	[3/2]	[1]	190 ±30	7.7 ± 2.2	260 ±24
4616.4±4.5	511 ± 73			192 ±19	7.7 ± 2.2	140 ±14
4916.7±5.0	1090 ± 310			200 ±30	15.5 ± 4.4	168 ±14
5124.0±5.0						175 ±17
5383.0±5.0	15300 ±2000				209 ±30	

THERMAL CROSS SECTIONS

σ_γ = 14.5±0.5 b

RESONANCE PROPERTIES

I_γ = 105±7 b
R' = 7.1±1.4 fm
S_0 = 0.35±0.07
S_1 = 7±2

RESONANCE PARAMETERS

I^π = 5/2⁺ %Abn = 15.72 S_n = 9154.2±0.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$2g\Gamma_n^1$ (meV)
Bound level						
44.7±0.2	200 ± 10	3	0	150 ± 10	30.0 ±1.5	
110.4±0.2	0.16± 0.02	1	1	310 ± 80	0.0153±0.002	
117.8±0.2	0.15± 0.02	2		200 ±120	0.014 ±0.002	68
159.5±0.2	14.1 ± 1.0	3	0	145 ± 20	1.26 ±0.08	
217.9±0.2	1.3 ± 0.1		1		0.088 ±0.006	200
245.8±0.2	0.50± 0.05				0.032 ±0.003	
263.7±0.2	1.4 ± 0.2				0.086 ±0.012	
331.3±0.3	3.4 ± 0.5		[1]		1.9 ±0.3	280
358.5±0.3	300 ± 60	3	0	145 ± 20	15.8 ±3.2	
418.2±0.2	1.0 ± 0.1				0.49 ±0.05	
469.7±0.4	11 ± 1		[1]		0.51 ±0.05	532
554.4±0.4	110 ± 20	2	0	170 ± 50	4.7 ±0.9	
595.7±0.5	0.8 ± 0.2				0.03 ±0.01	
630.0±0.5	20 ± 3		[1]		0.80 ±0.12	622
661.6±0.5	18.0 ± 1.5	3	0		0.70 ±0.06	
680.7±0.6	830 ± 50	3	0	145 ± 15	31.8 ±1.9	
702.8±0.6	2.9 ± 0.3				0.11 ±0.01	
708.3±0.6	13.4 ± 0.8				0.50 ±0.03	
745.5±0.6	5 ± 1		1		0.18 ±0.04	120
769.8±0.7	24 ± 3	3	0		0.97 ±0.12	
898.4±0.8	250 ± 30	2	0	175 ± 20	8.3 ±1.0	
932.1±0.8	3.5 ± 0.3				0.12 ±0.01	
956.5±0.8	1.5 ± 0.7				0.05 ±0.02	
980.7±0.8	37 ± 6	2			1.2 ±0.2	
1011.1±0.9	6.3 ± 0.5		[1]		0.18 ±0.02	88
1025.0±0.9	110 ± 20	3	0		3.4 ±0.6	
1035.7±0.9	13.2 ± 1.0				0.41 ±0.03	
1059.2±0.9	9.2 ± 0.8				0.28 ±0.03	
1122.5±1.1	4.0 ± 0.6				0.12 ±0.02	
1144.6±1.1	250 ± 50	2	0		7.4 ±1.5	
1170.5±1.2	20.6 ± 1.8				0.60 ±0.05	
1203.7±1.2	210 ± 20	3	0	(150)	6.1 ±0.6	
1296.9±1.3	11 ± 1				0.30 ±0.03	
1341.2±1.4	94 ± 16				2.6 ±0.4	
1360.6±1.4	6.0 ± 0.8				0.16 ±0.02	
1386.7±1.4	11.6 ± 1.0				0.31 ±0.03	
1419.0±1.4	620 ± 70		0	150 ± 15	16.4 ±1.9	

$^{95}_{42}$Mo

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$2g\Gamma_n^1$ (meV)
1437.0±1.4	15.6 ± 1.4				0.41 ±0.04	
1495.6±1.5					*80 ±9	
1570.0±1.6	12 ± 1				0.30 ±0.03	
1576.8±1.6	104 ± 1.0				0.26 ±0.03	
1590.0±1.6	300 ±100			220 ± 50	7.5 ±2.5	
1678.0±1.7	100 ± 25				2.4 ±0.6	
1704.1±1.7	82 ± 6				2.0 ±0.2	
1767.0±1.8					*70 ±6	
1788.0±1.8	62 ± 10				1.5 ±0.2	
1841.7±1.8	39 ± 5				0.91 ±0.12	
1853.3±1.8	6.4 ± 0.8				0.15 ±0.02	
1925.1±1.9	36 ± 5				0.82 ±0.11	
1950.5±1.9	393 ±110			145 ± 20	8.9 ±2.5	
1961.3±1.9	29 ± 3			(150)	0.66 ±0.07	
2047.0±2.0	250 ±100			195 ± 75	5.5 ±2.3	
2114.2±2.0	65 ± 10				1.4 ±0.2	
2131.0±2.0	290 ± 65			250 ± 60	6.3 ±1.4	
2142.0±2.0	36 ± 4				0.78 ±0.09	

* $g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

σ_γ = 1.0±0.6 b

RESONANCE PROPERTIES

I_γ^c = 20±5 b
R' = 6.6±1.3 fm
S_0 = 0.70±0.26
S_1 = 4.5±1.0

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 16.53 S_n = 6816.1±1.7 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n\Gamma_\gamma/\Gamma$ (meV)
113.4±0.1	0.45± 0.05	3/2	1		*185	0.45± 0.04
131.4±0.1	290 ± 20			100 ±25	25.3 ± 1.8	66 ± 4
419.0±0.2	6.0 ± 0.4				0.29 ± 0.02	5.8 ± 0.4
968.4±0.8	2.7 ± 0.4				0.086± 0.013	2.7 ± 0.4
1267.0±0.8	2.2 ± 0.3				0.062± 0.008	2.2 ± 0.3
1496.5±0.8	9.9 ± 1.0				0.26 ± 0.03	9.4 ± 0.7
2080.6±1.1	7.4 ± 1.1				0.16 ± 0.02	7.1 ± 1.0
2363.2±1.6	4000 ± 300	1/2	0	164 ±15	82.3 ± 6.2	158 ±15
2484.2±1.7	35 ± 7				0.70 ± 0.14	27.0 ± 2.0
2779.7±2.0						45 ± 4
3282.3±2.5	9000 ±2000	1/2	0	186 ±27	157 ±35	182 ±27
3572.2±3.0	3440 ± 725	1/2	0	105 ± 8		102 ± 8
3757.7±3.0	371 ± 148			156 ±61	6.1 ± 2.4	110 ± 9
4319.8±4.0	334 ± 120			96 ±19	5.1 ± 1.8	75 ± 7
4412.1±4.0						87 ± 8
4558.5±5.0	67 ± 7			(100)	1.0 ± 0.1	40 ± 4
4941.9±5.0	20.2 ± 4.9				0.28 ± 0.07	18.0 ± 3.9
5374						
5402						
5611						195 ±19
5784						68 ± 6
6032						155 ±18
6560						220 ±26
7051						108 ±11

* $g\Gamma_n^1$

$^{97}_{42}$Mo

THERMAL CROSS SECTIONS

σ_γ = 2.2±0.7 b

RESONANCE PROPERTIES

I_γ = 13±3 b
R' = 6.6±1.3 fm
S_0 = 0.34±0.06
S_1 = 8.0±2.5

RESONANCE PARAMETERS

I^π = 5/2$^+$ %Abn = 9.46 S_n = 8642.6±0.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
70.93±0.03	16.5 ± 1.5	2	0	130 ±30	1.96 ±0.18
79.55±0.04	0.11± 0.02			120 ±60	0.012±0.001
109.58±0.05	0.22± 0.08				0.021±0.008
126.89±0.06	0.20± 0.08				0.018±0.07
136.37±0.08	1.2 ± 0.1				0.10 ±0.01
210.0 ±0.1	0.7 ± 0.2		[1]		0.048±0.014
227.4 ±0.1	2.4 ± 0.2	3			0.159±0.013
233.3 ±0.1	0.7 ± 0.01				0.046±0.007
248.0 ±0.1	1.8 ± 0.2				0.11 ±0.01
268.1 ±0.1	17.0 ± 1.5	3	0		1.04 ±0.09
285.9 ±0.1	60 ± 6	2	0		3.55 ±0.36
311.9 ±0.2	10.0 ± 1.5	3	0		0.57 ±0.09
321.1 ±0.2	1.9 ± 0.2				0.11 ±0.01
352.5 ±0.2	9.0 ± 1.0				0.48 ±0.05
380.7 ±0.2	7.0 ± 1.0				0.35 ±0.05
397.0 ±0.2	75 ± 8	3	0		3.7 ±0.4
475.3 ±0.3	1.7 ± 0.2				0.080±0.008
505.4 ±0.3	52 ± 5				2.31 ±0.23
528.3 ±0.3	1.5 ± 0.2				0.065±0.007
533.8 ±0.4	4.4 ± 0.4				0.19 ±0.02
548.3 ±0.4	4.6 ± 0.5				0.20 ±0.02
558.3 ±0.4	600 ± 50	3	0	130 ±15	25.4 ±2.1
564.1 ±0.4	2.6 ± 1.3				0.11 ±0.05
568.0 ±0.4	6.6 ± 0.8				0.28 ±0.03
572.0 ±0.4	5.6 ± 0.8				0.23 ±0.03
578.5 ±0.4	1.7 ± 0.2				0.07 ±0.01
653.2 ±0.5	2.7 ± 0.3				0.10 ±0.01
676.1 ±0.5	385 ± 50			131 ±16	14.8 ±1.9
694.7 ±0.5	12.4 ± 0.8				0.47 ±0.03
700.7 ±0.6	9.2 ± 0.6				0.35 ±0.02
786.4 ±0.6	384 ±118				13.7 ±4.2
809.2 ±0.7	4.0 ± 0.5				0.14 ±0.02
862.6 ±0.7	48 ± 10	2			1.63 ±0.34
905.7 ±0.8	9.8 ± 0.8				0.33 ±0.03
975.1 ±0.8	14.0 ± 1.2				0.45 ±0.04
1008.4 ±0.9	62 ± 10				1.95 ±0.31
1108.5 ±1.0	280 ± 34			114 ±10	8.5 ±1.1
1134.0 ±1.1	50 ± 12	2			1.48 ±0.35

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1176.7 ±1.1	75 ± 10				2.18 ±0.42
1194.2 ±1.1	9.4 ± 1.0				0.27 ±0.03
1250.0 ±1.2	540 ±190	3	0	150 ±20	15.2 ±5.3
1270.4 ±1.3	50 ± 10				1.40 ±0.28
1293.5 ±1.3	40.2 ± 6.4				1.11 ±0.18
1318.0 ±1.3	57.4 ± 13.2				1.58 ±0.36
1333.5 ±1.3	54.0 ± 11.6				1.48 ±0.32
1364.6 ±0.7	60 ± 12				1.63 ±0.33
1375.4 ±0.7	11.2 ± 1.6				0.30 ±0.04
1398.0 ±0.8	14.0 ± 1.4				0.37 ±0.04
1425.3 ±0.8	41 ± 4				1.09 ±0.11
1453.1 ±0.8	18.8 ± 2.4				0.49 ±0.06
1485.0 ±0.9	11.6 ± 1.4				0.30 ±0.04
1534.7 ±0.9	415 ±160			150 ±32	10.6 ±4.2
1596.6 ±0.9	57 ± 10				1.43 ±0.25
1628.4 ±0.9	6.9 ± 0.7				0.17 ±0.02
1699.0 ±1.0	42 ± 4				1.02 ±0.10
1713.2 ±1.0	90 ± 15				2.2 ±0.4
1740.7 ±1.0	36.6 ± 5.4				0.88 ±0.12
1795.0 ±1.1	52.8 ± 11.2				1.25 ±0.26
1835.9 ±1.1	13.6 ± 1.6				0.32 ±0.04
1867.5 ±1.1	18 ± 9				0.42 ±0.21
1871.9 ±1.1	18 ± 9				0.42 ±0.21
1903.8 ±1.1	78 ± 17				1.8 ±0.4
1931.5 ±1.2	48 ± 5				1.1 ±0.1
1940.8 ±1.2	50 ± 5				1.1 ±0.1

$^{98}_{42}$Mo

THERMAL CROSS SECTIONS

σ_γ = 0.130±0.006 b

RESONANCE PROPERTIES

I_γ = 6.2±0.3 b
R' = 7.0±1.4 fm
S_0 = 0.7±0.2
S_1 = 7.0±1.0

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 23.78 S_n = 5928±3 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
12.1± 0.1	0.060± 0.004	3/2	1	125 ±20	0.017± 0.001	690
401.8± 0.2	3.2 ± 0.2	3/2	1		0.15 ± 0.01	180
429.3± 0.2	70 ± 6	1/2	1	160 ±15	3.4 ± 0.3	3880
467.4± 0.3	600 ± 60	1/2	0	110 ±10	27.8 ± 2.3	
612.5± 0.4	65 ± 6	1/2	1	145 ±15	2.42 ± 0.24	1940
818.1± 0.7	160 ± 25	3/2	1	90 ±10	5.6 ± 0.9	3360
1122.5± 1.0	20.5 ± 6.0	3/2	1		0.61 ± 0.18	267
1526.5± 1.0	800 ± 100	1/2	0	75 ± 7	20.5 ± 2.5	
1922.0± 1.2	23.3 ± 6.9				0.53 ± 0.02	
2021.2± 1.2	2.5 ± 0.2				0.055± 0.005	
2176.6± 1.4	145 ± 50	1/2	1	145 ±15	3.1 ± 1.1	700
2461.7± 1.7	120 ± 60	[1/2]		105 ±20	2.4 ± 1.2	
2549.0± 1.8	1300 ± 200	1/2	0	70 ± 8	25.7 ± 4.0	
2615 ± 2	30 ± 5	3/2	1		0.59 ± 0.10	100
2947 ± 2	24 ± 2	[1/2]	1		0.44 ± 0.04	74
3264 ± 3	90 ± 30	[1/2]	1		1.58 ± 0.53	240
3293 ± 3	4800 ± 800	1/2	0	80 ± 8	84 ±14	
3797 ± 3	315 ± 100	3/2		90 ±10	5.1 ± 1.6	663
4013 ± 4	220 ± 25	3/2	1	80 ±10	3.47 ± 0.40	428
4482 ± 5	309 ± 140	1/2	0	93 ±32	4.6 ± 2.1	
4574 ± 5	540 ± 196	3/2	1	110 ±35	8.0 ± 2.9	864
4843 ± 5	1023 ± 292	3/2	1	100 ±12	14.7 ± 4.2	1500
5276 ± 6	247 ± 58	3/2	1	130 ±30	3.4 ± 0.8	320
9052 ±12	47850 ±4000	1/2	0		50.3 ± 4.2	

THERMAL CROSS SECTIONS

σ_γ = 0.199±0.003 b

RESONANCE PROPERTIES

I_γ = 3.75±0.15 b
R' = 6.5±1.3 fm
S_0 = 0.30±0.11
S_1 = 5.0±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 9.63 S_n = 5391±19 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
97.4 ±0.1	0.38± 0.03		1		0.039± 0.003	200
363.8 ±0.2	800 ±100	1/2	0	68 ± 7	41.94 ± 5.2	
507.1 ±0.1	4.3 ± 0.4				0.19 ± 0.02	
535.8 ±0.1	4.1 ± 0.4			103 ±10	0.18 ± 0.02	
785.68±0.1	5.6 ± 0.5				0.20 ± 0.02	
1069.1 ±0.1	350 ± 70	1/2	1	103 ±10	10.7 ± 2.1	4915
1260.7 ±0.2	300 ± 70	1/2	1	90 ±10	8.5 ± 0.9	3310
1403.8						*33 ±3
1697.0 ±1.0	1000 ±100	1/2	1	118 ± 9	24.3 ± 2.4	7040
1764.8 ±1.0	20 ± 5.8				0.48 ± 0.14	
1937.2 ±1.2	1250 ±200	1/2	0	55 ± 9	28.4 ± 4.5	
2061.7 ±1.5	6.3 ± 0.8				0.14 ± 0.02	
2420.0 ±1.7	414 ±155		[1]	118 ±25	8.3 ± 3.1	
2630.5 ±1.9	213 ±106			76 ±20	4.2 ± 2.1	
2663.8 ±2.0						*11.0±1.1
2950.0 ±2.0	57 ± 29				1.04 ± 0.52	
3006.0 ±2.0	3000 ±600	1/2	0	51 ± 5	54.7 ±10.9	
3065.0 ±2.0	145 ± 46			65 ±17	2.8 ± 1.0	
3261.5 ±2.5	331 ±114			83 ±20	5.8 ±20	
3539.3 ±3.0						*79 ±8
3601.7 ±3.0						*59 ±6
4151.0 ±4.0	20.1 ± 5.9				0.31 ± 0.09	
4506 ±5	211 ± 70			97 ±30	3.1 ± 1.0	
4543.1 ±5						*75 ±7
4727 ±5	202 ±108			59 ±30	2.9 ± 1.6	

* $g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Mo	diffraction	ACR,A28,357(72)-	Bacon
Mo^{100}	activation	CJP,47,2031(69)	Ricabarra
Mo^{98}	activation	PRIVATE COMM.(68)	Fabry
Mo^{98}	activation	JIN,29,2853(67)	Sims
Mo	pile osci.	66PARIS,479(66)	Carre
Mo^{98}	activation	PRIVATE COMM.(61)	Sher
Mo^{98}	activation	JNE,14,53(61)	Dahlberg
Mo^{98}	activation	JIN,21,1(61)	Cabell
Mo^{98}	activation	NSE,8,378(60)	Lyon
Mo^{100}	activation	JNE,12,172(60)	Cabell
Mo^{98}	activation	PR,91,1423(53)+	Hughes
$Mo^{92,95-96,100}$	pile osci.	PR,88,412(52)	Pomerance
Mo	diffraction	PR,81,527(51)	Shull
Mo	pile osci.	PR,83,641(51)	Pomerance
Mo	pile osci.	NAT,166,825(50)	Lockett
Mo	pile osci.	PR,80,342(50)	Harris
Mo	σ_t	NAT,166,825(50)	Egelstaff
Mo	pile osci.	PPS/A,63,1175(50)	Colmer
$Mo^{92,98,100}$	activation	PR,72,888(47)	Seren
Mo	absorption	PR,69,411(46)	Coltman
Mo	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Mo^{92}	σ_γ(spectra)	0.347-31.1	PRIVATE COMM.(72)	Wasson
Mo^{92}	σ_γ	3.06-31.1	PRIVATE COMM.(72)	Wasson
Mo^{92}	σ_t	0.347-31.1	PRIVATE COMM.(72)	Wasson
Mo^{100}	σ_γ	0.097-4.727	71KNOX,749(71)	Weigmann
Mo^{98}	σ_γ	0.012-5.261	71KNOX,749(71)	Weigmann
Mo^{97}	σ_γ	0.071-1.941	71KNOX,749(71)	Weigmann
Mo^{96}	σ_γ	0.113-7.051	71KNOX,749(71)	Weigmann
Mo^{95}	σ_γ	0.045-2.141	71KNOX,749(71)	Weigmann
Mo^{94}	σ_γ	0.108-5.124	71KNOX,749(71)	Weigmann
Mo^{92}	σ_γ	0.347-11.49	71KNOX,749(71)	Weigmann
Mo^{98}	σ_γ(spectra)	0.012-0.818	71KNOX,804(71)	Mughabghab
Mo^{98}	σ_γ(spectra)	0.012-0.818	71KNOX,808(71)	Mughabghab
Mo^{98}	σ_γ(spectra)	0.012-4.842	71ALBANY(71)	Chrien
Mo^{98}	σ_γ(spectra)	0.012-4.842	71ALBANY(71)	Cole
Mo^{98}	σ_γ(spectra)	0.12-1.5	PRL,26,1118(71)	Mughabghab
Mo^{92}	σ_γ(spectra)	0.347-5.5	PRL,26,1118(71)	Mughabghab
Mo^{92}	σ_t	8.5-58.1	PRIVATE COMM.(69)	Divadeenam
Mo	σ_t	0.045-0.159	NP/A,132,129(69)	Julien
Mo^{97}	σ_t	0.071-1.535	PR,179,1148(69)	Shwe
Mo^{95}	σ_t	0.045-1.420	PR,179,1148(69)	Shwe
Mo	σ_t	0.012-1.5	PR,179,1148(69)	Shwe
Mo^{98}	σ_γ(spectra)	0.012-0.450	BAP,13,721(68)	Mughabghab
Mo	σ_t	0.071-5.043	PR,166,1234(68)	Wynchank
Mo	σ_γ	0.010-25.0	NP/A,104,513(67)	Weigmann
Mo^{95}	σ_γ	0.045-1.145	NP/A,104,586(67)	Coceva
Mo^{97}	σ_γ	0.071-1.25	NP/A,104,586(67)	Coceva
Mo^{96}	σ_γ(spectra)	0.113-.250	BAP,12,1199(67)	Mughabghab
Mo^{95}	σ_γ(spectra)	0.045-.250	BAP,12,1199(67)	Mughabghab
Mo^{100}	σ_t	0.364-3.007	AERE-PR/NP-10,8(67)	Newstead
Mo^{98}	σ_t	0.429-9.053	AERE-PR/NP-10,8(67)	Newstead
Mo^{98}	σ_t	0.012	PRIVATE COMM.(66)	Cote
Mo	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	0.012-0.161	ZET,49,410(65)	Kim
Mo^{100}	$\sigma_t\sigma_\gamma$	0.099-1.94	ZET,44,1187(63)	Pevzner
Mo^{98}	$\sigma_t\sigma_\gamma$	0.012-9.0	ZET,44,1187(63)	Pevzner
Mo^{97}	$\sigma_t\sigma_\gamma$	0.071-2.00	ZET,44,1187(63)	Pevzner
Mo^{96}	$\sigma_t\sigma_\gamma$	0.113-3.66	ZET,44,1187(63)	Pevzner
Mo^{95}	$\sigma_t\sigma_\gamma$	0.045-7.4	ZET,44,1187(63)	Pevzner
Mo^{94}	$\sigma_t\sigma_\gamma$	1.52-5.38	ZET,44,1187(63)	Pevzner
Mo^{92}	$\sigma_t\sigma_\gamma$	0.347-16.6	ZET,44,1187(63)	Pevzner
Mo	σ_t	0.012	PRIVATE COMM.(62)	Bollinger
Mo	σ_t	0.045-2.0	CR,254,4287(62)	Corge
Mo^{95}	σ_γ(spectra)	0.045-.700	PR,127,1687(62)	Jackson
Mo	σ_t	0.045-0.134	AE,5,55(56)	Radkevich
Mo^{100}	σ_t	0.367	PR,99,10(55)	Harvey
Mo^{98}	σ_t	0.480	PR,99,10(55)	Harvey
Mo^{97}	σ_t	0.071-0.058	PR,99,10(55)	Harvey
Mo^{96}	σ_t	0.133	PR,99,10(55)	Harvey
Mo^{95}	σ_t	0.045-0.700	PR,99,10(55)	Harvey
Mo	σ_t	0.045-0.510	PR,99,10(55)	Harvey

$^{98}_{43}Tc$

[1.5×10^6 yr]

THERMAL CROSS SECTIONS

σ_γ = 2.6±1.3 b

$^{99}_{43}Tc$

[2.13×10^5 yr]

THERMAL CROSS SECTIONS

σ_γ = 19±2 b
a_{coh} = 6.8±0.3 fm

RESONANCE PROPERTIES

I_γ = 340±20 b
R' = 6.0±0.5 fm
S_0 = 0.44±0.14
S_1 = 4.6±1.4

RESONANCE PARAMETERS

I^π = 9/2$^+$ S_n = 6600±60 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
5.64±0.05	2.2±0.5	260 ± 6	0.9 ±0.2
20.3 ±0.2	5.5±1.0	260 ±10	1.21±0.2
39.9 ±0.3	1.2±0.2		0.19±0.03
57.0 ±0.5	3.0±0.8		0.4 ±0.1
111.8 ±0.9	14 ±2		1.3 ±0.2
124.6 ±1.0	4.5±1.1		0.4 ±0.1
164.0 ±1.0	64 ±6		5.0 ±0.5
182.8 ±1.5	66 ±5		4.9 ±0.4
192.6 ±1.5	46 ±3		3.3 ±0.2
242.1 ±2.0	50 ±3		3.2 ±0.2
280.0 ±2.0	17 ±2		1.0 ±0.1

Note… resonance parameters give 182 b for the absorption resonance integral

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Tc^{99}	σ_t	NSE,41,188(70)	Watanabe
Tc^{99}	diffraction	ANL-6797,393(63)	Mueller
Tc^{99}	pile osci.	JNE,12,32(60)	Tattersall
Tc^{99}	σ_t	NRDC-103(58)	Hay
Tc^{98}	activation	PR,110,427(58)	Anders
Tc^{99}	pile osci.	ORNL-1975,31(55)	Pomerance

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Tc^{99}	σ_γ	5.6-20.3	KFK-1270,1(70)	Chou
Tc^{99}	σ_t	0.-280.	NSE,41,188(70)	Watanabe
Tc^{99}	σ_t	5.6	SBGENEVA,16,44(58)	Pattenden
Tc^{99}	σ_t	5.6-245.	BAP,3,364(58)+	Slaughter

$_{44}$Ru

THERMAL CROSS SECTIONS

σ_γ = 2.56±0 13 b
a_{coh} = 7.3±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 42±4 b
S_0 = 0.24±0.10

UNASSIGNED RESONANCES

E_0 (eV)	$2ag\Gamma_n$ (meV)	E_0 (eV)	$2ag\Gamma_n$ (meV)
34.19± 0.14		318.49± 0.50	
36.56± 0.13		359.8 ± 0.7	~20
65.66± 0.17		383.3 ± 1.0	
74.70± 0.20		397.3 ± 0.8	
105.06± 0.35		430.7 ± 0.8	
136.37± 0.25		446.6 ± 0.6	
137.33± 0.20		449.6 ± 0.7	
148.92± 0.20		465.0 ± 0.7	
204.26± 0.30		474.2 ± 0.7	
212.05± 0.30	<0.1	514 ± 3	70 ±20
220.73± 0.35		576 ± 3	60 ±10
248.41± 0.40		797 ±10	<15
254.74± 0.40		870 ±10	<25
260.3 ± 0.6		918 ±10	<10
273.52± 0.45		971 ±10	<100
302.64± 0.50		1145 ±15	<15
306.28± 0.50		1461 ±20	<100
308.48± 0.50			

$^{96}_{44}$Ru

THERMAL CROSS SECTIONS

σ_γ = 0.25±0.03 b

RESONANCE PROPERTIES

I_γ = 6.6±0.2 b

$^{98}_{44}$Ru

THERMAL CROSS SECTIONS

σ_γ = 8±2 b

$^{99}_{44}Ru$

THERMAL CROSS SECTIONS

σ_γ = 5.0±0.5 b

RESONANCE PROPERTIES

I_γ = 195±50 b
S_0 = 0.25±0.13

RESONANCE PARAMETERS

I^π = 5/2⁺ %Abn = 12.72 S_n = 9673.5±1.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
10.05±0.03	185 ±10	3.3± 0.9	3	182 ± 10	1.1 ±0.3
25.22±0.08		8.5± 0.3	3	158 ± 15	1.7 ±0.6
57.11±0.12		13.0± 1.0	3	160 ± 30	1.7 ±0.1
81.62±0.13		4.1± 0.2	2	165 ± 30	0.45±0.02
104.09±0.18		60 ± 3	3	150 ± 20	5.9 ±0.3
154.30±0.25		55 ±12	3	186 ±100	4.4 ±1.0
198.86±0.30			2		
218.39±0.30		32 ± 6	3		2.2 ±0.4
262.70±0.35		9.7± 1.2	3		0.60±0.07
334.6 ±0.6			2		
342.17±0.50			2		
401.6 ±0.6		21 ± 2	3		1.05±0.11
509.7 ±0.7			3		

$^{100}_{44}Ru$

THERMAL CROSS SECTIONS

σ_γ = 5.8±0.6 b

RESONANCE PROPERTIES

I_γ = 11.2±1.1 b

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 12.62 S_n = 6805±4 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
230.5±1.5	27 ±3	(165)	1.78±0.18

$^{101}_{44}Ru$

THERMAL CROSS SECTIONS

σ_γ = 3.1±0.9 b

RESONANCE PROPERTIES

I_γ = 85±12 b
S_0 = 0.56±0.15

RESONANCE PARAMETERS

I^π = 5/2⁺ %Abn = 17.07 S_n = 9216.1±1.9 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
15.9 ±0.1	185 ±15	5.8± 0.6	3	180 ±15	1.45±0.15
42.28±0.12	185 ±20	12 ± 1	3	175 ±20	1.85±0.15
52.13±0.13	190 ±40	1.6± 0.2		190 ±40	0.21±0.02
61.81±0.13	200 ±30	4.2± 0.3	2	195 ±30	0.53±0.04
66.82±0.14	208 ±10	40 ± 5	2	160 ±11	4.9 ±0.6
100.1±0.17	155 ±50	6.3± 0.8	3	150 ±50	0.63±0.08
112.5±0.20	200 ±20	8.1± 1.0	2	192 ±20	0.76±0.09
141.1±0.20		2.5± 0.5	3		0.21±0.04
157.0±0.25		11 ± 1	2		0.88±0.09
197.2±0.25		55 ±30	3		3.9 ±2.1
243.9±0.30		28 ± 5	3		1.8 ±0.3
251.4±0.35		2.6± 1.0	2		0.16±0.06
311.0±0.45			2		
313.6±0.45		95 ±15	3		5.36±0.85
325.1±0.45		~1	3		~0.06
325.1±0.45			3		
336.8±0.50			2		
346.2±0.50		~130	2		~7.0
378.3±0.6		210 ±27	3		10.8 ±1.39
381.4±0.6					
411.6±0.6			2		
426.8±0.6			2		
432.8±0.6		105 ±30	3		5.05±1.44
456.8±0.6			2		
462.2±0.6		210 ±40	3		9.8 ±1.9
485.2±0.6		20 ± 5	2		0.91±0.14
538.7±0.7			2		
540 ±3		130 ±30			5.59±1.29
625 ±3		100 ±10			4.0 ±1.0
670 ±4		250 ±50			9.66±1.93

$^{102}_{44}Ru$

THERMAL CROSS SECTIONS

σ_γ = 1.30±0.15 b

RESONANCE PROPERTIES

I_γ = 4.1±0.4 b
S_0 = $0.06^{+0.16}_{-0.04}$

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 31.61 S_n = 6225±6 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
165.29± 0.25	0.6± 0.1	0.05±0.01
415.2 ± 0.6	12.5± 2.0	0.61±0.10
1296 ±10	600 ±150	16.6 ±4.2

Note- The resonance at 200 ev was reassigned by Priesmeyer to Ru-101. The resonance parameters then contribute 0.7 b to the absorption resonance integral.

$^{104}_{44}Ru$

THERMAL CROSS SECTIONS

σ_γ = 0.47±0.20 b

RESONANCE PROPERTIES

I_γ = 4.6±1.0 b
S_0 = $0.11^{+0.12}_{-0.04}$

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 18.58 S_n = 5908±8 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
224.4±0.3	40 ± 5	2.7± 0.3
371.6±0.6	36 ± 10	1.9± 0.5
630 ±3	700 ±300	27.8±12.0
1055 ±5	800 ±200	24.6± 6.1

$^{105}_{44}Ru$ [4.44 hr]

THERMAL CROSS SECTIONS

σ_γ = 0.20±0.02 b

$^{106}_{44}Ru$

[369 day]

THERMAL CROSS SECTIONS

σ_γ = 0.146±0.045 b

RESONANCE PROPERTIES

I_γ = 2.6±0.6 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Ru^{96,104}$	activation	70HELSINKI,589(70)	Ricabarra
Ru^{102}	activation	NST,6,587(69)	Ishikawa
Ru^{102}	activation	CJP,47,2031(69)	Ricabarra
Ru^{102}	activation	ORNL-3832,6(65)	Lantz
$Ru^{96,99,100,101}$	activation	ORNL-3832,4(65)	Halperin
Ru^{106}	activation	NSE,21,20(65)	Werner
Ru^{106}	activation	ORNL-3679,15(64)	Lantz
Ru^{104}	activation	ORNL-3679,11(64)	Lantz
Ru^{101}	mass analys.	ORNL-3679,12(64)	Halperin
Ru^{98}	activation	ORNL-3679,12(64)	Halperin
Ru^{105}	activation	NC,17,687(60)	Sharma
Ru	diffraction	JAP,30,1323(59)	Sidhu
$Ru^{96,102}$	activation	JIN,7,194(58)	Katcoff
Ru	pile osci.	PR,83,641(51)	Pomerance
Ru	pile osci.	PR,80,342(50)	Harris
Ru^{104}	activation	PR,76,189(49)	Sunyar
Ru^{104}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Ru	σ_γ	1.-200.	PRIVATE COMM.(72)	Rimawi
Ru^{104}	σ_t	226.5-1055.	71KNOX,688(71)	Priesmeyer
Ru^{102}	σ_t	166.-1296.	71KNOX,688(71)	Priesmeyer
Ru^{101}	σ_t	15.9-670.	71KNOX,688(71)	Priesmeyer
Ru^{100}	σ_t	230.5	71KNOX,688(71)	Priesmeyer
Ru^{99}	σ_t	10.1-403.	71KNOX,688(71)	Priesmeyer
Ru	σ_γ	25.2-553.0	NP/A,117,586(68)	Coceva
Ru	$\sigma_t \sigma_\gamma \bar{\sigma}_s$	10.-141.	65ANTWERP,185(65)	Kim
Ru	σ_t	10.-350.	NP,42,676(63)	Bolotin

THERMAL CROSS SECTIONS

σ_γ = 150±5 b
σ_γ = 11±1 b [4.35 min ^{104}Rh*]
σ_γ = 139±7 b [42 sec ^{104}Rh9]
a_{coh} = 5.91±0.04 fm

RESONANCE PROPERTIES

I_γ = 1100±50 b
R' = 6.56±0.06 fm
<D> = 12±1 eV
S_0 = 0.54±0.07
S_1 = 6.0±1.5

RESONANCE PARAMETERS

I^π = 1/2$^-$ %Abn = 100 S_n = 6999.3±0.31 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1.257±0.002	156 ± 4	0.77 ± 0.02	1	0	155 ± 5	0.59 ±0.01
34.4 ±0.1	149 ± 20	0.024 ± 0.004		[1]	149 ± 20	0.039 ±0.007
44.5 ±1		0.0055± 0.001		[1]		0.00082±0.0002
46.7 ±0.1	155 ± 20	0.77 ± 0.03	[0]	[0]	154 ± 20	0.113 ±0.004
51.85		0.002 ± 0.001				0.00028±0.0001
68.3 ±0.2	180 ± 20	0.30 ± 0.01		[0]	180 ± 20	0.036 ±0.001
83.5 ±0.3	157 ± 70	0.012 ± 0.004		[1]	157 ± 70	0.0013 ±0.004
95.7 ±0.3	170 ± 20	3.5 ± 0.2	0	0	163 ± 15	0.357 ±0.020
98.7 ±0.1	180 ± 20	0.11 ± 0.02		[1]	180 ± 20	0.011 ±0.002
108.8 ±0.1	100 ± 80	0.020 ± 0.005		[1]	100 ± 80	0.0020 ±0.0005
110.8 ±0.4	169 ± 20	0.24 ± 0.02		[1]	169 ± 20	0.024 ±0.002
114.0 ±0.4	175 ± 20	0.17 ± 0.03		[1]	175 ± 20	0.0159 ±0.0028
125.5 ±0.4	177 ± 20	10.5 ± 1.5	1	0	170 ± 15	0.938 ±0.134
154.3 ±0.5	320 ± 50	100 ± 10	0	0	170 ± 20	8.06 ±0.81
179.4 ±0.6	17' ± 20	0.27 ± 0.02		[1]	174 ± 20	0.020 ±0.002
187.0 ±0.5	194 ± 20	50 ± 5	1	0	161 ± 20	3.65 ±0.37
199.7 ±0.2	600 ±300	0.095 ± 0.02		[1]	600 ±300	0.0067 ±0.0014
205.1 ±0.6	180 ± 60	0.150 ± 0.03		[1]	180 ± 60	0.0105 ±0.0021
251.4 ±0.6		0.230 ± 0.023				0.0145 ±0.0015
253.8 ±1.7	200 ± 30	50 ± 5	1	0	174 ± 30	3.13 ±0.31
263.2 ±0.5	220 ± 50	2.0 ± 0.6		[1]	218 ± 50	0.123 ±0.037
264.2 ±0.8		0.82 ± 0.17		[1]		0.050 ±0.10
272.2 ±0.8	220 ± 20	90 ± 9	1	0	160 ± 20	5.46 ±0.55

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
289.8 ±0.8	176 ± 40	30 ± 5			146 ± 40	1.76 ±0.29
312.5 ±1.0	220 ±110	0.35 ± 0.15		[1]	220 ±110	0.020 ±0.008
316.5 ±1.0		0.06 ± 0.02				0.0034 ±0.0011
319.5 ±0.9	250 ± 40	135 ± 15	1	0	160 ± 17	7.55 ±0.84
321.8 ±1.0		1.95 ± .43				0.109 ±0.024
327.7 ±0.9	185 ± 60	1.1 ± 0.2			184 ± 60	0.061 ±0.011
354.0 ±1.0		0.20 ± 0.05		[1]		0.011 ±0.003
362.7 ±0.9		0.7 ± 0.2				0.037 ±0.011
366.1 ±0.9	135 ± 25	3.3 ± 0.2			132 ± 25	0.17 ±0.01
373.9 ±0.9	165 ± 80	0.75 ± 0.15		[1]	164 ± 80	0.039 ±0.008
376.7 ±1.0		0.22 ± 0.04				0.011 ±0.002
388.5 ±1.0		0.39 ± 0.10		[1]		0.020 ±0.005
406 ±1	195 ± 30	20 ± 6	1	0	175 ± 30	0.99 ±0.30
427.95		0.185 ± 0.026				0.0089 ±0.0012
433.08		2.08 ± 0.27				0.100 ±0.013
435 ±1	384 ± 50	285 ± 40	1	0	194 ± 20	13.7 ±1.9
444 ±1		0.45 ± 0.10		[1]		0.021 ±0.005
447 ±1		0.3 ± 0.1		[1]		0.014 ±0.005
450 ±1	151 ± 50	6.0 ± 0.4			145 ± 50	0.283 ±0.019
473 ±1		1.8 ± 0.4		1		0.083 ±0.018
486 ±1		2.0 ± 0.2				0.091 ±0.009
489.56		0.31 ± 0.05				0.014 ±0.002
492 ±1	166 ± 50	4.5 ± 0.4			161 ± 50	0.20 ±0.02
504 ±1		0.9 ± 0.1		[1]		0.040 ±0.005
526 ±1		1.3 ± 0.1				0.057 ±0.004
547.25		0.17 ± 0.05				0.0073 ±0.0022
555 ±1	268 ± 30	130 ± 30	1	0	174 ± 20	5.52 ±1.27
581 ±2	155 ± 40	4.2 ± 0.4		[1]	151 ± 40	0.17 ±0.02
602.94		0.60 ± 0.09				0.024 ±0.004
605 ±1		4.0 ± 0.3				0.16 ±0.01
608.1		0.31 ± 0.07				0.0126 ±0.0028
620.3	390 ±120	9.4 ± 1.0			380 ±120	0.38 ±0.04
645.09		1.67 ± 0.47				0.066 ±0.018
646 ±2	230 ± 35	99 ± 20	1	0	158 ± 18	3.89 ±0.79
663 ±2	195 ± 45	10 ± 1			185 ± 45	0.39 ±0.04
676 ±2	130 ± 70	4 ± 1			126 ± 70	0.15 ±0.04
683 ±3	120 ± 65	5.7 ± 0.5			114 ± 65	0.22 ±0.02
692 ±2	247 ± 40	124 ± 9	1	0	164 ± 30	4.71 ±0.34
699.15		2.5 ± 0.5				0.095 ±0.019
701 ±2	470 ± 45	440 ± 40	1	0	155 ± 20	16.6 ±1.5
727 ±2		1.0 ± 0.5				0.037 ±0.019

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
741 ±2		3.2 ± 0.5				0.12 ±0.02
746 ±3		3.17				0.12
757 ±3		1.4 ± 0.2				0.051 ±0.007
760 ±2		4.2 ± 0.8				0.15 ±0.03
782 ±3	218 ± 35	31 ± 6		[0]	187 ± 35	1.1 ±0.2
797 ±3	268 ±100	5.2 ± 1.0			262 ±100	0.18 ±0.04
828.10 ±3		0.35 ± 0.18				0.012 ±0.006
831 ±3		4.6 ± 0.6				0.16 ±0.02
845 ±3	323 ± 40	230 ± 40	1	0	170 ± 20	7.91 ±1.37
867 ±3		0.8 ± 0.3				0.027 ±0.010
885 ±3		0.8 ± 0.2				0.027 ±0.007
895 ±3	142 ± 80	14.0 ± 1.3			129 ± 80	0.47 ±0.04
913 ±3	289 ± 25	72 ± 10	0	0	145 ± 20	2.38 ±0.33
929 ±3	207 ± 25	82 ± 20	[1]		152 ± 25	2.69 ±0.66
954 ±3	276 ± 50	36 ± 10	[0]	0	204 ± 50	1.17 ±0.32
990 ±3		1.2 ± 0.3				0.038 ±0.010
1002 ±3		2.04 ± 0.31				0.064 ±0.010
1008 ±3		0.50 ± 0.35				0.016 ±0.011
1025 ±3		4.45 ± 0.45				0.139 ±0.014
1028.4		3.66 ± 0.37				0.114 ±0.011
1066.4		0.60 ± 0.36				0.019 ±0.011
1073 ±3		1.2				0.03
1077.1 ±3.0	190 ± 80	16.9 ± 12			173 ± 80	0.51 ±0.36
1082.8		1.28 ± 0.28				0.039 ±0.009
1093.4 ±3		1.06 ± 0.29				0.032 ±0.009
1100.0 ±3		1.54 ± 0.31				0.046 ±0.009
1110 ±3	200 ± 40	43.4 ± 22.0			157 ± 40	1.30 ±0.65
1122.6		0.80 ± 0.32				0.024 ±0.010
1152 ±3		1.93 ± 0.58				0.05 ±0.02
1155 ±3	346 ± 40	153 ± 75	[1]	[0]	243 ± 50	4.5 ±2.2
1171						
1192 ±4	228 ± 55	50.6 ± 32.9				1.46 ±0.95
1197 ±3	524 ± 40	300 ±165			224 ± 60	8.67 ±4.77
1201.9		5.45 ± 1.09				0.157 ±0.03
1205.4		1.7 ± 0.56				0.049 ±0.016
1212.4 ±3		4.37 ± 0.61				0.126 ±0.018
1245 ±3		7.5 ± 6.0				0.21 ±0.17
1261.5		1.70 ± 0.34				0.048 ±0.010
1270 ±5	600 ± 50	600 ±200	[1]	[0]	185 ± 30	16.8 ±5.6
1276.5		5 ± 4				0.14 ±0.10
1278.8		9.4 ± 1.9				0.26 ±0.05

E_0 (eV)		Γ (meV)	$2g\Gamma_n$ (meV)		J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	
1287.0			5.0	± 0.8				0.14	±0.02
1306	±3	249 ± 30	142	± 78	[1]	[0]	154 ± 35	3.94	±2.17
1326	±4	230 ± 60	57	± 40			173 ± 50	1.57	±1.10
1355.1			3.4	± 0.6				0.092	±0.016
1365	±3	240 ± 50	84	± 50	[1]	[0]	184 ± 50	2.27	±1.36
1380.8			5.03	± 0.70				0.135	±0.019
1393.6	±4		6.17	± 0.74				0.165	±0.020
1408	±4	280 ± 95	47	± 38				1.25	±1.00
1410.9			4.8	± 1.0				.12	±0.025
1433.7	±4	100 ± 95	16.3	± 1.63				0.43	±0.04
1453.7			4.95	± 0.69				0.130	±0.018
1464.5			1.17	± 0.47				0.0306	±0.0122
1483.5	±4		16.3	± 1.96				0.423	±0.051
1487.1	±4	270 ±135	57	± 11				1.48	±0.28
1513.6			1.4	± 0.6				0.036	±0.001
1531.9	±6		15.1	± 1.4				0.38	±0.001
1542	±5	630 ± 70	254	±140	0	0	122 ± 60	6.46	±3.55
1552.6			9.1	± 1.3				0.23	±0.03
1562	±4		22.8	± 11.4				0.57	±0.29
1568	±4	270 ± 45	198	±130	[1]	[0]	138 ± 40	5.0	±3.3
1614.3	±4		3.8	± 0.8				0.09	±0.02
1620	±4	463 ± 35	414	±185	[1]	[0]	187 ± 40	10.3	±4.6
1650.2			2.4	± 0.7				0.059	±0.018
1665.6	±4		5.5	± 0.9				0.13	±0.022
1671	±4	253 ± 65	86.5					2.12	±1.48
1697	±4	570 ± 35	437	±200	[1]	[0]	279 ± 40	10.6	±4.8
1712.5			2.5	± 1.0				0.060	±0.024
1735	±4		27.3	± 27.3				0.655	±0.655
1751.5			2.15	± 0.86				0.051	±0.020
1763	±4	204 ±130	31.1	± 31.1				0.74	±0.74
1784.5			5.3	± 1.0				0.125	±0.024
1794	±4	280 ± 70	127	±102	[1]	[0]	195 ± 72	2.99	±2.39
1806.0			2.1	± 1.1				0.049	±0.025
1820	±4	762 ± 50	668	±335	[1]	[0]	316 ± 60	15.6	±7.8
1832	±6		1.3	± 1.4				0.042	±0.034
1837.2			8.7	± 1.9				0.203	±0.045
1843.4		120	90	± 9	1	0	60	2.10	±0.21
1849.2			4.6	± 1.4				0.107	±0.032
1885.2			3.5	± 1.1				0.081	±0.024
1892.4			3.6	± 1.1				0.083	±0.025
1905.1			35	± 4.0		0		0.80	±0.09

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1920.4		7.0 ± 1.3				0.16 ±0.03
1941.8		12.1 ± 1.7				0.275 ±0.39
1954.2		8.6 ± 1.4				0.19 ±0.03
1967.3		5.2 ± 1.1				0.118 ±0.026
1982.9	821 ± 82		[0]	0	285 ± 90	6.02 ±3.31
1996.7		4.6 ± 1.4				0.103 ±0.031
2010.2	128	29 ± 4		0		0.65 ±0.08
2021.9		2.9 ± 1.4				0.064 ±0.030
2034.5		2 ± 1				0.044 ±0.026
2039.9		7.1 ± 1.3				0.157 ±0.028
2060.2	440 ± 92	98 ± 74	[0]	0	244 ± 38	2.16 ±1.62
2082.5		8.3 ± 1.4				0.182 ±0.031
2085.9		35.1 ± 3.5				0.768 ±0.077
2102.4	203 ±162	38.0 ± 4.7				0.851 ±0.102
2115.8	574 ± 75	232 ±162	[0]	0		5.04 ±3.53
2151.7		5.1 ± 1.5				0.110 ±0.033
2161.9		27.5 ± 3.3				0.59 ±0.07
2179.8	97	59.5 ± 7.7		0		1.27 ±0.17
2195.2	260 ± 68	182 ±146	1	0	139 ± 70	3.88 ±3.10
2244.5		20 ± 3				0.42 ±0.63
2249.0		13.4 ± 2.4				0.29 ±0.05
2260.2	338 ±150	76.5 ± 9.2		0		1.61 ±0.19
2278.5		2.66 ± 1.43				0.056 ±0.030
2296.7	660 ± 53	580 ±320	1	0	273 ± 60	12.1 ±6.66
2315.8	322 ±180	75.7 ± 9.8		0		1.57 ±0.20
2333.1		91.6 ± 9.2				1.90 ±0.19
2355.6		10.9 ± 2.3				0.224 ±0.047
2365.9		28.7 ± 4.3				0.59 ±0.09
2380.0	280 ±182	90 ± 12			190	1.84 ±0.24
2395.8		16.3 ± 3.3				0.333 ±0.067
2410.1	535	28 ± 5				0.570 ±0.103
2416.8	480 ±168	191 ± 21		0		3.89 ±0.43
2434.1	900 ±270	90 ± 12				1.82 ±0.24
2461.4	530 ± 80	385 ±327	1	0	273 ± 87	7.76 ±6.60
2479.3		3.2 ± 2.2				0.064 ±0.045
2510.9		7.1 ± 2.4				0.142 ±0.048
2516.8		16.7 ± 3.5				0.335 ±0.070
2530.1		11.0 ± 2.9				0.219 ±0.057
2536.3		24.2 ± 4.6				0.480 ±0.091
2549.5		28.4 ± 5.1				0.562 ±0.101
2596.8	504	49.2 ± 7.3				0.965 ±0.145

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)		J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	
2606.0	565 ± 85	613	±490	1	0	157 ± 86	12.0	±9.6
2630.4	414 ±104	330	± 30	1	0	194 ±107	6.43	±0.579
2656.9		22.8	± 6.2				0.44	±0.12
2661.4		19.7	± 5.7				0.38	±0.11
2668.9	1900 ±855	84	± 10				1.63	±0.20
2695.6		13.6	± 3.9				0.262	±0.076
2701.5		41.0	± 8.2				0.789	±0.158
2721.7	306 ±174	137	± 21				2.63	±0.39
2731.1		62	± 14				1.19	±0.26
2740.8		30	± 7				0.57	±0.13
2763.4		17	± 4				0.32	±0.08
2787.0		9	± 4				0.17	±0.07
2793.3	216 ± 97	260	± 26	1	0		4.92	±0.49
2816.5		3	± 1.8				0.056	±0.033
2843.1		8.8	± 3.5				0.165	±0.066
2850.4		24	± 6				0.450	±0.108
2858.1	620 ±250	174	± 24		0		3.25	±0.46
2871.8		10	± 6				0.187	±0.112
2881.7	510 ±305	100	± 16		0		1.86	±0.30
2887.5		11	± 5				0.215	±0.095
2891.5		6	± 4				0.117	±0.070
2902.4		12	± 4				0.232	±0.077
2916.8		19	± 4				0.361	±0.079
2952.8	2300 ±805	90	± 10				1.66	±0.18
2968.0		25	± 8				0.458	±0.137
2973.0		48	± 9				0.880	±0.167
2983.9		79	± 25				1.45	±0.46
2998.8	530 ±190	185	± 24		0		3.38	±0.43
3030.4	455 ±140	255	± 26	(1)	0	285 ±137	4.63	±0.46
3049.6		43	± 8				0.778	±0.148
3063.7		87	± 14				1.57	±0.27
3075.3		10	± 4				0.180	±0.072
3084.3	330 ±100	340	± 34	1	0		6.12	±0.61
3113.0		5	± 3				0.089	±0.045
3131.6	640 ± 96	575	±460	1	0		10.27	±8.22
3140.5		22	± 7				0.392	±0.118
3156.2		38	± 9				0.676	±0.162
3168.6	260	99	± 20				1.75	±0.35
3191.7		30	± 8				0.531	±0.133
3198.3		12	± 5				0.212	±0.085
3212.3		7	± 3				0.123	±0.055

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
3227.5		20 ± 6				0.352 ±0.099
3257.7		9 ± 4				0.157 ±0.071
3264.0		10 ± 5				0.175 ±0.079
3272.9	885 ±195	293 ± 29		0		5.12 ±0.51
3286.2		7 ± 4				0.122 ±0.061
3305.0	535 ±305	141 ± 24		0		2.45 ±0.42
3323.2		95 ± 16				1.64 ±0.29
3330.0		5 ± 4				0.086 ±0.060
3354.1		75 ± 14				1.29 ±0.25
3361.0		14 ± 5				0.24 ±0.09
3396.2	1730	754 ±530	(0)	0		12.9 ±9.0
3413.7		25 ± 10				0.427 ±0.171
3439.7		50 ± 10				0.852 ±0.171
3461.0		15 ± 5				0.258 ±0.090
3468.6		34 ± 7				0.577 ±0.127
3492.0	700 ±225	233 ± 30		0		3.94 ±0.51
3512.5	570 ±115	500 ± 45	1	0		8.43 ±0.76
3537.7		9 ± 4				0.151 ±0.068
3553.7	620	622 ±500	1	0	207 ±114	10.43 ±8.34
3597.2	550 ±220	245 ± 34		0		4.08 ±0.57
3646.2	800 ±215	374 ± 45		0		6.19 ±0.74
3664.5		22 ± 9				0.36 ±0.14
3687.5	1260 ±240	590 ± 59		0		9.71 ±0.97
3713.6		49 ± 15				0.804 ±0.241
3727.3		20 ± 8				0.327 ±0.131
3752.4		89 ± 20				1.45 ±0.33
3772.2		65 ± 20				1.058 ±0.317
3779.0		10 ± 8				0.162 ±0.130
3786.7		100 ± 23				1.62 ±0.37
3798.2		20 ± 8				0.324 ±0.130
3837.0		20 ± 8				0.322 ±0.129
3853.8	1200 ±600	240 ± 38				3.86 ±0.62
3874.2		110 ± 28				1.76 ±0.44
3884.3		133 ± 29				2.13 ±0.47
3908.9		115 ± 33				1.83 ±0.53
3926.5		20 ± 12				0.319 ±0.19
3927.0		40 ± 20				0.637 ±0.319
3947.1		330 ± 59				5.25 ±0.95
3965.7		73 ± 26				1.16 ±0.41
3982.7		20 ± 12				0.31 ±0.19
3994.0		80 ± 28				1.26 ±0.44

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
4014.6		64 ± 24				1.01 ±0.38
4040.3		30 ± 14				0.47 ±0.21
4059.4	1940 ±640	400 ± 72		0		6.27 ±1.13
4079.9	670 ±180	950 ±124	1	0		14.8 ±1.9
4105.2		61 ± 29				0.95 ±0.45
4127.5		30 ± 14				0.46 ±0.21
4140.3	830 ±190	1200 ±156	1	0		18.6 ±2.4

$^{104g}_{45}Rh$ [42 sec]

THERMAL CROSS SECTIONS

σ_γ = 40±30 b

$^{104m}_{45}Rh$ [4.35 min]

THERMAL CROSS SECTIONS

σ_γ = 800±100 b

$^{105}_{45}Rh$ [35.5 hr]

THERMAL CROSS SECTIONS

σ_γ = 16000±1500 b
σ_γ = 4700.±1200. b [2.2 hr $^{106}Rh^m$]
σ_γ = 11250±1500 b [30 sec $^{106}Rh^g$]

RESONANCE PROPERTIES

I_γ = 15800±1500 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Rh^{105}	activation	NSE,29,147(67)	Glendenin
Rh^{105}	mass separation	ORNL-3994,2(66)	Halperin
Rh^{103}	activation	CJP,44,1985(66)	Walker
Rh^{103}	diffraction	ACR,18,906(65)	Sidhu
Rh^{103}	isom. ratio	NP,41,316(64)	Bishop
Rh^{105}	activation	NSE,20,298(64)	Glendenin
Rh^{105}	activation	ORNL-3679,12(64)	Lantz
Rh^{103}	diffraction	PR/A,134,1547(64)	Shirane
Rh^{103}	activation	NP,41,316(63)	Csikai
Rh^{105}	activation	ANL-6797,388(63)	Glendenin
Rh^{103}	isom. ratio	PR,129,769(63)	Keisch
Rh^{103}	diffraction	NEUTRON DIFF.(62)	Bacon
Rh^{105}	activation	JIN,24,1009(62)	Cuninghame
Rh^{103}	pile osci.	JAERI-1009(60)	Fuketa
Rh^{104}	activation	PR-CM-15,10(58)	Roy
Rh^{103}	activation	AERE-R/R-2333(57)	Cummins
Rh^{103}	mirror reflection	PRIVATE COMM.(52)	Reynolds
Rh^{103}	activation	PR,83,641(51)	Pomerance
Rh^{103}	activation	PR,80,342(50)	Harris
Rh^{103}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Rh^{103}	σ_γ	1.3-988.	PRIVATE COMM.(70)	Carlson
Rh^{103}	σ_γ(SI)	1.3	KP,15,271(70)	Fleck
Rh^{103}	$\sigma_t \bar{\sigma}_s$	1.3-4140.	NP/A,143,130(70)	Ribon
Rh^{103}	σ_γ(spectra)	1.3-907.	PR/C,2,1793(70)	Rimawi
Rh^{103}	$\bar{\sigma}_s$	1.54-555.	NP/A,138,556(69)	King
Rh^{103}	$\bar{\sigma}_s$	1.3-702.	CEA-R-3360(67)	Trochon
Rh^{103}	$\bar{\sigma}_s$	1.3-701.	CR,262,1507(66)	Trochon
Rh^{103}	σ_t	1.3-757.	6SANTWERP,165(65)	Ribon
Rh^{103}	σ_t	34.4-290.	PRIVATE COMM.(64)	Pattenden
Rh^{103}	σ_t	1.3-795.	JPR,24,987(63)	Ribon
Rh^{103}	$\sigma_t \bar{\sigma}_s \sigma_\gamma$(SI)	34.4-321.	ZET,45,1743(63)	Wang
Rh^{103}	σ_t	34.4-648.	ZET,45,1743(63)	Wang
Rh^{103}	σ_γ	134.-290.	AEC-TR-5734,52(62)	Kim
Rh^{103}	σ_t	34.4-113.8	AERE-PR/NP-2,27(62)	Pattenden
Rh^{103}	σ_t	34.4-648.	AEC-TR-5734,48(62)	Wang
Rh^{103}	σ_γ	94.7-633.	61SACLAY,439(61)	Moxon
Rh^{103}	σ_t	34.4-84.5	JPR,22,708(61)	Ribon
Rh^{103}	σ_t	328.-1899.	BIS,60(60)	Julien
Rh^{103}	σ_t	43.8-326.	PRIVATE COMM.(59)	Chrien
Rh^{103}	σ_t	46.5-186.	PRIVATE COMM.(58)	Firk
Rh^{103}	σ_t	1.3	AERE-NP/M-87(58)	Pattenden
Rh^{104}	activation		PR-CM,14,12(58)	Roy
Rh^{103}	σ_t	1.3	PR,94,1215(54)	Landon
Rh^{103}	σ_γ	1.3	CJP,31,432(53)	Brockhouse
Rh^{103}	σ_t	1.3	PR,91,53(53)	Sailor

THERMAL CROSS SECTIONS

σ_γ = 6.9±0.4 b
$\bar{\sigma}_s$ = 5.0±0.3 b
a_{coh} = 6.3±0.2 fm

RESONANCE PROPERTIES

I_γ = 90±5 b
S_0 = 0.4±0.1
S_1 = 5.0±1.0

UNASSIGNED RESONANCES

E_0 (eV)	$ag\Gamma_n$ (meV)	$ag\Gamma_n^0$ (meV)
27.8 ±0.2	0.0010±0.0003	0.00019± .00006
42.8 ±0.3	0.0065±0.0020	0.0010 ±0.0003
44.8 ±0.5		
63.46±0.15	0.010 ±0.003	0.0013 ±0.0004
72.53±0.12		
80.59±0.15		
83.16±0.20		
101.16±0.20		
109.70±0.15		
*112.77±0.13		
117.01±0.16		
130.54±0.20		
136.53±0.20		
*146.45±0.19		
147.98±0.29		
156.91±0.21		
170.80±0.30		
176.79±0.30		
*182.6 ±0.6		
*190.73±0.25		
215.72±0.35		
222.97±0.35		
*262.90±0.30		
266.83±0.35		
*282.1 ±0.6		
294.80±0.40		
300.36±0.40		
303.18±0.35		
339.83±0.50		
*347.1 ±0.6		
349.2 ±0.6		
384.8 ±0.6		
392.8 ±0.6		
394.8 ±0.6		
*407.0 ±0.7		
411.6 ±0.6		
421.2 ±0.6		
427.4 ±0.6		

$_{46}$Pd

E_0 (eV)	$ag\Gamma_n$ (meV)	$ag\Gamma_n^0$ (meV)
462.8 ±0.7		
480.7 ±1.0		
492.4 ±0.8		
498.9 ±0.8		
511.5 ±0.8		
513.1 ±0.8		
*522.3 ±0.7		
*544.8 ±0.9		
*553.2 ±0.8		
563.9 ±0.8		
610.9 ±0.9		
628.8 ±1.0		
*635.9 ±1.0		
638.9 ±1.4		
642.9 ±1.0		
645.7 ±1.0		
659.5 ±1.1		
671.3 ±1.1		
675.4 ±1.4		
679.2 ±1.2		
717.4 ±1.0		
733.9 ±1.0		
737.8 ±1.2		
740.0 ±1.1		
750.4 ±1.0		
798.4 ±1.1		
802.9 ±1.4		

* Even-Even isotope

$^{102}_{46}$Pd

THERMAL CROSS SECTIONS

σ_γ = 4.8±1.5 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.96 S_n = 7608±28 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
186 ±5	270 ±22	(200)	19.8±1.6

$^{104}_{46}Pd$

RESONANCE PARAMETERS

$I^n = 0^+$ %Abn = 10.97 S_n = 7094.1±7.0 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
186 ±5	270 ±22	(200)	19.8±1.6

$^{105}_{46}Pd$

THERMAL CROSS SECTIONS

σ_γ^c = 14 b

RESONANCE PROPERTIES

I_γ = 90±10 b
S_0 = 0.35±0.20

RESONANCE PARAMETERS

$I^n = 5/2^+$ %Abn = 22.23 S_n = 9562.8±1.1 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level				
11.80±0.05	0.22±0.02	3	149 ±10	0.064±0.007
13.2 ±0.1	2.60±0.03	2	170 ±10	0.715±0.007
25.3 ±0.1	3.50±0.05	3	147 ± 7	0.777±0.008
30.2 ±0.2	0.30±0.07	2	160 ±27	0.054±0.012
38.4 ±0.4	0.34±0.02	3		0.055±0.003
55.7 ±0.4	8.4 ±0.4	3	151 ±20	1.13 ±0.05
68.8 ±0.4	2.1 ±0.4	3		0.26 ±0.05
78.3 ±0.4	14 ±3	2		1.6 ±0.3
86.8 ±0.2	18.7 ±3.5	3		1.9 ±0.2
104.04±0.14		3		
126.29±0.14	3.64±0.94	3		0.32 ±0.08
141.18±0.15	9.7 ±1.8	2		0.82 ±0.14
150.06±0.16		2		
154.70±0.15		3		
158.74±0.16		2		
168.29±0.22		3		
184.02±0.25		2		
202.58±0.25		2		
226.99±0.25		3		
252.20±0.50		2		
252.60±0.40		3		
260.13±0.30		2		
287.04±0.35		3		
305.40±0.35		2		
313.64±0.35		2		
327.86±0.40		3		
347.1 ±0.6		3		
354.40±0.45		3		

$^{105}_{46}Pd$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
370.54±0.45		2		
377.36±0.45		2		
389.2 ±0.5		3		
401.7 ±0.5		3		
418.5 ±0.6				
431.1 ±0.6		2		
449.6 ±0.6		3		
466.7 ±0.6		2		
482.3 ±0.7				
532.2 ±0.7		3		
546.2 ±0.8		3		
568.0 ±0.8		2		
578.7 ±0.8		3		
591.0 ±0.8		3		
593.3 ±0.8		2		
605.1 ±0.8		3		
617.1 ±0.8				
621.0 ±0.8		3		
663.0 ±1.0		2		
682.4 ±1.0		3		
696.8 ±1.0		3		
700.4 ±1.0		2		
712.1 ±1.0		3		
713.9 ±1.5				
724.4 ±1.0		3		
757.2 ±1.0		3		
780.4 ±1.0		3		
789.3 ±1.1		2		
794.3 ±1.1		3		
807.8 ±1.1		2		

$^{106}_{46}Pd$

THERMAL CROSS SECTIONS

σ_γ = 0.013±0.002 b [22 sec $^{107}Pd^m$]
σ_γ = 0.292±0.029 b [7X10^6 yr $^{107}Pd^g$]

RESONANCE PROPERTIES

I_γ = 5.73±0.57 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 27.33 S_n = 6542±7 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
282.1±0.6	536 ±34	32 ±2

$^{108}_{46}Pd$

THERMAL CROSS SECTIONS

σ_γ = 12±2 b [13.5 hr $^{109}Pd^g$]
σ_γ = 0.20±0.04 b [4.7 min $^{109}Pd^m$]

RESONANCE PROPERTIES

I_γ^c = 250±30 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 26.71 S_n = 6154±1 keV

E_0 (eV)	Γ_n (meV)	J	ℓ	Γ_γ (meV)	Γ_n^0 (meV)
2.96±0.01	.00504± .00005	3/2	1	90 ±2	.00293± .00003
33.2±0.17	117 ± 8				20.3 ±1.4
91.6±0.5	207 ±15				21.6 ±1.6

$^{110}_{46}Pd$

THERMAL CROSS SECTIONS

σ_γ = 0.020±0.015 b [5.5 hr $^{111}Pd^m$]
σ_γ = 0.20±0.06 b [22 min $^{111}Pd^g$]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Pd^{106,108}$	activation	NSE,31,545(68)	Tilbury
Pd^{108}	isom. ratio	NP,60,241(64)	Bishop
Pd^{106}	mass separation	ORNL-3679,10(64)	Lantz
Pd^{110}	activation	NP,41,372(63)	Mangal
Pd^{110}	isom. ratio	JIN,25,1(63)	Namboodiri
Pd^{108}	activation	NSE,8,378(60)	Lyon
$Pd^{108,110}$	activation	NP,12,261(59)	Sehgal
Pd^{108}	activation	ZN,13A,820(58)	Meister
Pd^{110}	isom. ratio	DOK,2,154(57)	Dzantiev
Pd^{102}	activation	PR,90,410(53)	Meinke
Pd	pile osci.	PR,83,643(51)	Pomerance
Pd	diffraction	PR,81,527(51)	Shull
Pd	scattering	PR,83,379(51)	Weiss
Pd	pile osci.	PPS/A,63,1175(50)	Colmer
Pd	pile osci.	PR,80,342(50)	Harris
$Pd^{108,110}$	activation	PR,72,888(47)	Seren
Pd	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pd^{108}	σ_γ(spectra)	2.96	72BUD,216(72)	Mughabghab
Pd	σ_t	11.-142.	BTI,109,19(72)	Yamamuro
Pd	σ_γ(spectra)	11.-313.	PR/C,1,1501(70)	Wetzel
Pd	σ_γ	55.-808.	NP/A,117,586(68)	Coceva
Pd	σ_t	0.-10.	NSE,30,145(67)	Teich
$Pd^{105,106}$	σ_t	10.-92.	65ANTWERP,72(65)	Coceva
Pd	$\sigma_t \sigma_\gamma$	11.-152.	PL,16,159(65)	Coceva
Pd	σ_γ	13.-389.	64PARIS,2,673(64)	Bollinger
Pd	σ_t	1.5-40.	NWS,50,397(63)	Richter
$Pd^{105,106}$	σ_t		PRIVATE COMM.(59)	Chrien
Pd	σ_t	10.-891.	AE,1,55(56)	Radkevich

THERMAL CROSS SECTIONS

σ_γ = 63.6±0.6 b
a_{coh} = 6.1±0.2 fm

RESONANCE PROPERTIES

I_γ = 747±20 b
S_0 = 0.48±0.04
S_1 = 2.5±1.5

UNASSIGNED RESONANCES

E_0 (eV)	$4ag\Gamma_n^0$ (meV)	E_0 (eV)	$4ag\Gamma_n^0$ (meV)
764.00±0.59	0.13±0.04	*1394.0 ±0.7	0.02±0.02
779.94±0.61	0.80±0.16	1398.5 ±0.7	0.48±0.04
792.65±0.62	0.20±0.08	*1402.0 ±0.7	0.02±0.02
822.00±0.65	0.16±0.06	1410.0 ±0.7	0.08±0.04
844.04±0.68	0.24±0.06	1414.5 ±0.7	10.00±2.00
848.78±0.69	1.00±0.20	1423.0 ±0.7	0.18±0.04
872.34±0.72	0.64±0.12	*1433.0 ±0.8	0.04±0.04
878.75±0.72	0.52±0.12	1438.5 ±0.8	1.28±0.20
908.82±0.76	0.52±0.12	1446.5 ±0.8	2.00±0.20
923.29±0.78	0.32±0.04	1461.0 ±0.8	1.44±0.16
981.40±0.85	0.02±0.02	1473.5 ±0.8	0.63±0.08
1016.91±0.90	0.52±0.08	1483.0 ±0.8	1.28±0.12
1027.69±0.92	0.01±0.01	1496.0 ±0.8	0.56±0.08
1036.79±0.93	0.84±0.16	1504.0 ±0.8	0.48±0.08
1067.71±0.97	3.20±0.40	1511.0 ±0.8	3.60±0.40
1078.33±0.98	0.07±0.02	1519.0 ±0.8	0.36±0.08
1087.00±1.00	0.04±0.04	1529.5 ±0.8	0.28±0.08
1092.00±1.00	0.05±0.02	1534.5 ±0.8	0.12±0.08
1102.00±1.00	0.05±0.02	*1542.0 ±0.8	0.24±0.08
1159.45±1.10	0.14±0.04	1553.0 ±0.9	0.04±0.04
1173.60±1.12	0.24±0.04	1561.0 ±0.9	0.24±0.08
1199.50±1.15	0.40±0.40	1566.0 ±0.9	0.04±0.04
1226.00±0.6	0.20±0.04	1568.5 ±0.9	0.44±0.08
1254.2 ±0.6	1.00±0.20	1577.0 ±0.9	0.02±0.02
1270.8 ±0.6	0.24±0.20	1586.0 ±0.9	10.40±2.00
1276.4 ±0.6	0.76±0.08	1613.5 ±0.9	0.08±0.04
1283.3 ±0.6	0.20±0.04	1621.0 ±0.9	0.80±0.20
1283.3 ±0.6	0.20±0.04	1626.5 ±0.9	3.20±0.60
1299.3 ±0.7	3.20±0.24	1634.0 ±0.9	0.08±0.08
1303.1 ±0.7	0.16±0.04	1638.0 ±0.9	0.60±0.20
1310.3 ±0.7	0.72±0.08	1642.0 ±0.9	2.80±0.60
*1332.0 ±0.7	0.04±0.04	1655.5 ±0.9	0.12±0.04
1341.0 ±0.7	0.12±0.04	1677.0 ±1.0	3.00±0.60
1346.5 ±0.7	0.92±0.12	1686.0 ±1.0	0.04±0.04
1352.0 ±0.7	0.32±0.08	1695.0 ±1.0	0.16±0.04
1363.0 ±0.7	0.08±0.04	1705.0 ±1.0	0.32±0.20
1371.0 ±0.7	0.60±0.20	1713.0 ±1.0	0.20±0.04
1373.0 ±0.7	0.60±0.20	1718.0 ±1.0	3.60±0.80
1382.5 ±9.6	2.20±0.20	1726.0 ±1.0	1.40±0.20

$_{47}$Ag

E_0 (eV)	$4\pi g\Gamma_n^0$ (meV)	E_0 (eV)	$4\pi g\Gamma_n^0$ (meV)
1740.0 ±1.0	0.08±0.08	2216.0 ±1.0	0.12±0.12
1745.0 ±1.0	0.20±0.08	2225.0 ±1.0	0.20±0.20
1754.0 ±1.0	0.48±0.04	2244.0 ±1.0	0.08±0.08
1767.0 ±1.0	0.12±0.04	2253.0 ±1.0	0.60±0.20
1772.0 ±1.0	0.04±0.02	2262.0 ±1.0	0.08±0.08
1776.5 ±1.0	0.72±0.16	2269.0 ±2.0	0.08±0.08
*1793.0 ±1.1	0.08±0.08	2273.0 ±2.0	0.24±0.08
1806.0 ±1.1	0.72±0.08	2290.0 ±2.0	0.08±0.08
1818.0 ±1.1	0.12±0.08	2300.0 ±2.0	0.20±0.08
1831.0 ±1.1	0.80±0.20	2311.0 ±2.0	3.80±0.80
1835.0 ±1.1	0.92±0.20	2317.0 ±2.0	2.00±0.40
1841.5 ±1.1	0.20±0.08	2326.0 ±2.0	2.00±0.40
1853.0 ±1.1	1.60±0.24	2338.0 ±2.0	0.40±0.00
1863.5 ±1.1	0.08±0.08	2349.0 ±2.0	1.24±0.12
1870.0 ±1.1	0.12±0.04	2369.0 ±2.0	0.60±0.20
1874.5 ±1.1	0.20±0.04	2378.0 ±2.0	0.12±0.12
1881.5 ±1.1	0.40±0.16	2390.0 ±2.0	14.00±2.00
1904.5 ±1.2	8.00±2.00	2431.0 ±2.00	2.20±0.40
1913.0 ±1.2	8.80±2.00	2441.0 ±2.0	0.40±0.20
1925.0 ±1.2	0.28±0.08	2454.0 ±2.0	1.80±0.20
1934.5 ±1.2	8.00±2.00	2464.0 ±2.0	0.40±0.20
1937.0 ±1.2	12.00±4.00	2470.0 ±2.0	0.20±0.12
1945.0 ±1.2	0.08±0.04	2479.0 ±2.0	0.20±0.12
1957.0 ±1.2	1.32±0.12	2495.0 ±2.0	1.60±0.40
1968.0 ±1.2	2.52±0.28	2505.0 ±2.0	7.20±1.20
1987.0 ±1.2	3.20±0.40	2522.0 ±2.0	2.80±0.60
*1993.0 ±1.2	0.04±0.02	2536.0 ±2.0	0.80±0.40
*2000.0 ±1.2	0.04±0.04	2543.0 ±2.0	0.08±0.08
2022.0 ±1.0	2.00±0.60	2554.0 ±2.0	0.64±0.20
2026.0 ±1.0	0.80±0.40	2558.0 ±2.0	0.40±0.20
2036.0 ±1.0	0.20±0.08	2574.0 ±2.0	6.40±1.60
2045.0 ±1.0	8.00±2.00	2595.0 ±2.0	0.08±0.08
2059.0 ±1.0	0.08±0.08	2608.0 ±2.0	1.00±0.20
2067.0 ±1.0	0.16±0.08	2617.0 ±2.0	0.48±0.16
2072.0 ±1.0	0.40±0.20	2628.0 ±2.0	0.20±0.20
2080.0 ±1.0	0.08±0.08	2636.0 ±2.0	0.80±0.20
2090.0 ±1.0	3.60±0.80	2645.0 ±2.0	0.12±0.12
2093.0 ±1.0	1.20±0.20	2658.0 ±2.0	10.00±2.00
2099.0 ±1.0	0.08±0.08	2677.0 ±2.0	1.00±0.20
2103.0 ±1.0	0.64±0.08	2683.0 ±2.0	1.20±0.40
2110.0 ±1.0	0.64±0.08	2698.0 ±2.0	0.96±0.20
2114.0 ±1.0	0.16±0.08	2711.0 ±2.0	2.80±0.40
2128.0 ±1.0	7.20±1.60	2724.0 ±2.0	1.60±0.40
2139.0 ±1.0	0.56±0.20	2731.0 ±2.0	0.24±0.12
2150.0 ±1.0	1.52±0.32	2739.0 ±2.0	0.08±0.08
2155.0 ±1.0	0.16±0.08	2749.0 ±2.0	0.80±0.20
2163.0 ±1.0	0.24±0.16	2753.0 ±2.0	0.80±0.20
2167.0 ±1.0	0.60±0.20	2767.0 ±2.0	0.08±0.08
2174.0 ±1.0	7.20±1.60	2777.0 ±2.0	6.40±1.20
2185.0 ±1.0	0.08±0.08	2791.0 ±2.0	0.08±0.00
2190.0 ±1.0	0.24±0.00	2805.0 ±2.0	0.60±0.20
2197.0 ±1.0	0.16±0.08	2813.0 ±2.0	0.20±0.20

E_0 (eV)	$4g\Gamma_n^0$ (meV)	E_0 (eV)	$4g\Gamma_n^0$ (meV)
2824.0 ±2.0	2.80±0.60	3365.0 ±3.0	5.20±1.20
2831.0 ±2.0	2.80±0.60	3378.0 ±3.0	0.60±0.20
2846.0 ±2.0	4.40±0.80	3391.0 ±3.0	2.00±0.40
2860.0 ±2.0	0.08±0.08	3405.0 ±3.0	0.40±0.20
2869.0 ±2.0	1.60±0.40	3423.0 ±3.0	1.20±0.40
2875.0 ±2.0	0.08±0.08	3432.0 ±3.0	0.60±0.20
2887.0 ±2.0	0.08±0.08	3444.0 ±3.0	0.08±0.08
2901.0 ±2.0	1.20±0.20	3457.0 ±3.0	0.40±0.20
2915.0 ±2.0	2.80±0.40	3471.0 ±3.0	0.20±0.20
2937.0 ±2.0	0.20±0.20	3485.0 ±3.0	4.40±0.80
2944.0 ±2.0	2.00±0.40	3505.0 ±3.0	2.20±0.40
2958.0 ±2.0	8.00±2.00	3511.0 ±3.0	0.08±0.08
2978.0 ±2.0	0.08±0.08	3522.0 ±3.0	6.00±1.20
2989.0 ±2.0	0.08±0.08	3540.0 ±3.0	2.40±0.80
3000.0 ±2.0	0.08±0.08	3562.0 ±3.0	0.20±0.20
3016.0 ±2.0	1.00±0.40	3578.0 ±3.0	0.80±0.40
3028.0 ±2.0	4.80±0.92	3586.0 ±3.0	0.80±0.08
3039.0 ±2.0	0.08±0.08	3610.0 ±3.0	20.00±4.00
3046.0 ±2.0	6.80±1.40	3620.0 ±3.0	0.08±0.08
3058.0 ±2.0	0.20±0.20	3643.0 ±3.0	5.20±1.20
3079.0 ±2.0	6.00±1.20	3658.0 ±3.0	0.40±0.40
3100.0 ±2.0	2.00±0.40	3664.0 ±3.0	6.40±1.60
3112.0 ±2.0	4.80±1.20	3676.0 ±3.0	0.08±0.08
3120.0 ±2.0	0.08±0.08	3692.0 ±3.0	12.00±2.80
3131.0 ±2.0	2.40±0.60	3714.0 ±3.0	0.20±0.20
3148.0 ±2.0	1.20±0.40	3726.0 ±3.0	2.00±2.00
3153.0 ±2.0	0.60±0.20	3733.0 ±3.0	6.00±2.00
3160.0 ±2.0	0.40±0.20	3751.0 ±3.0	0.40±0.20
3175.0 ±2.0	0.60±0.20	3757.0 ±3.0	0.20±0.20
3185.0 ±2.0	0.20±0.20	3780.0 ±3.0	1.00±0.40
3192.0 ±3.0	4.40±1.20	3790.0 ±3.0	2.80±1.20
3207.0 ±3.0	0.40±0.20	3815.0 ±3.0	2.40±0.80
3214.0 ±3.0	5.20±1.20	3832.0 ±3.0	6.40±2.00
3224.0 ±3.0	0.20±0.20	3848.0 ±3.0	0.20±0.20
3234.0 ±3.0	0.40±0.20	3855.0 ±3.0	0.08±0.08
3242.0 ±3.0	9.20±2.00	3864.0 ±3.0	0.80±0.20
3260.0 ±3.0	0.08±0.08	3870.0 ±3.0	0.08±0.08
3265.0 ±3.0	0.08±0.08	3887.0 ±3.0	14.00±4.00
3273.0 ±3.0	2.80±0.80	3904.0 ±3.0	17.20±4.00
3280.0 ±3.0	0.40±0.20	3917.0 ±3.0	0.20±0.20
3301.0 ±3.0	0.80±0.40	3942.0 ±3.0	0.08±0.08
3306.0 ±3.0	0.08±0.08	3958.0 ±3.0	0.40±0.20
3311.0 ±3.0	0.08±0.08	3972.0 ±3.0	0.20±0.20
3324.0 ±3.0	0.60±0.20	3989.0 ±3.0	14.00±4.00
3332.0 ±3.0	0.20±0.20	3996.0 ±4.0	0.40±0.40
3349.0 ±3.0	0.08±0.08		

* Resonances are considered to be p-wave levels by Wynchank et al.

$^{107}_{47}Ag$

THERMAL CROSS SECTIONS

σ_γ = 37.2±1.2 b
σ_γ^c = 3.0±1.5 b (127 yr $^{108}Ag^*$)
a_{coh} = 8.3±0.2 fm

RESONANCE PROPERTIES

I_γ = 94±8 b
R' = 6.3±0.2 fm
S_0 = 0.35±0.07
S_1 = 2.5±1.0

RESONANCE PARAMETERS

I^π = 1/2$^+$ | ZAbn = 51.82 | S_n = 7269±1 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level				
16.30±0.05	5.8 ± 0.2	0	146 ± 8	1.49 ±0.06
41.5 ±0.1	8.05 ± 0.64	1	137 ± 8	1.25 ±0.10
44.8 ±0.1	1.74 ± 0.20	0	147 ±11	0.26 ±0.03
51.4 ±0.1	34.4 ± 1.7	1	133 ±10	4.80 ±0.24
82.6 ±0.2	0.028± 0.006			0.0031±0.0007
128.1 ±0.2	0.11 ± 0.05			0.010 ±0.004
144.2 ±0.2	10.0 ± 0.7	0	130 ±15	0.83 ±0.06
155.9 ±0.3	0.06 ± 0.03			0.005 ±0.002
162.4 ±0.1	0.25 ± 0.13			0.02 ±0.01
167.1 ±0.1	0.23 ± 0.05			0.018 ±0.004
173.5 ±0.5	65.9 ± 5.3			5.0 ±0.4
183.6 ±0.2	0.16 ± 0.05			0.012 ±0.004
202.5 ±0.2	19.3 ± 1.7	1	154 ±15	1.36 ±0.12
218.2 ±0.4	0.18 ± 0.09			0.012 ±0.006
228.3 ±0.4	1.7 ± 0.5			0.11 ±0.04
251.4 ±0.4	15.8 ± 7.9			1.0 ±0.5
259.4 ±0.5	0.27 ± 0.06			0.017 ±0.004
264.7 ±0.5	4.6 ± 0.7		150 ±40	0.28 ±0.04
270.5 ±0.5	0.082± 0.033			0.005 ±0.002
311.0 ±0.2	176 ± 14	1	134 ±10	10.0 ±0.8
329.0 ±0.2	0.33 ± 0.07			0.018 ±0.004
347.3 ±0.2	0.56 ± 0.19			0.03 ±0.01
356.2 ±0.2	0.26 ± 0.15			0.014 ±0.008
361.8 ±0.2	34.3 ± 2.8	1	175 ±25	1.80 ±0.15
374.3 ±0.2	0.39 ± 0.19			0.02 ±0.01
382.1 ±0.2	0.39 ± 0.20			0.02 ±0.01
402.0 ±0.2	0.48 ± 0.24			0.024 ±0.012
410.0 ±0.2	0.32 ± 0.16			0.016 ±0.008
444.7 ±0.3	33.7 ± 4.2			1.6 ±0.2
461.4 ±0.3	23.2 ± 2.6			1.08 ±0.12
466.7 ±0.3	121 ± 26	1	138 ±40	5.6 ±1.2
472.3 ±0.3	28 ± 4			1.27 ±0.19
476.2 ±0.3	3.5 ± 0.9			0.16 ±0.04
479.7 ±0.3	0.20 ± 0.07			0.09 ±0.03
512.4 ±0.3	17.2 ± 3.6			0.76 ±0.16

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
525.0 ±0.3	0.30 ± 0.18			0.013 ±0.008
532.2 ±0.3	0.16 ± 0.05			0.07 ±0.02
554.5 ±0.3	212 ± 24	0		9.0 ±1.0
576.8 ±0.4	43 ± 5			1.8 ±0.2
587.6 ±0.4	99 ± 10	0	118 ±40	4.1 ±0.4
605.1 ±0.4	3.2 ± 0.5			0.13 ±0.02
625.6 ±0.4	25 ± 5			1.0 ±0.2
653.4 ±0.5	20 ± 3			0.80 ±0.10
674.7 ±0.5	65 ± 8		130 ±30	2.5 ±0.3
695.9 ±0.5	23.7 ± 2.6			0.9 ±0.1
703.5 ±0.5	6.9 ± 0.5			0.26 ±0.02
721.5 ±0.5	1.1 ± 0.3			0.04 ±0.01
734.7 ±0.6	1.1 ± 0.3			0.04 ±0.01
753.0 ±0.6	66 ± 11			2.4 ±0.4
813.0 ±0.6	6.8 ± 1.7			0.24 ±0.06
848.9 ±0.7	8.7 ± 1.5			0.30 ±0.05
882.3 ±0.7	119 ± 18			4.0 ±0.6
886.7 ±0.7	12 ± 4			0.40 ±0.12
914.9 ±0.7	7.3 ± 1.2			0.24 ±0.04
935.4 ±0.8	324 ± 33			10.6 ±1.1
946 ±0.8	62 ± 6			2.0 ±0.2
990.0 ±0.9	120 ± 12			3.8 ±0.4
1048.0 ±0.9	97 ± 10			3.0 ±0.3
1135.0 ±1.1	74 ± 7			2.2 ±0.2
1148.0 ±1.1	41 ± 7			1.2 ±0.2
1179.0 ±1.1	196 ± 21			5.7 ±0.6
1415.0 ±0.7	188 ± 38			5.0 ±1.0
1592.0 ±0.7	80 ± 24			2.0 ±0.6
1627.0 ±1	125 ± 24			3.1 ±0.6
1643.0 ±1	154 ± 32			3.8 ±0.8
1719.0 ±1	137 ± 25			3.3 ±0.6
1836.0 ±1	86 ± 17			2.0 ±0.4
1905.0 ±1	305 ± 31			7.0 ±0.7
1938.0 ±1	660 ± 45			15 ±1
1988.0 ±1	143 ± 18			3.2 ±0.4
2046.0 ±1	370 ± 55			8.2 ±1.2
2176.0 ±2	360 ± 50			7.7 ±1.0
2312.0 ±2	163 ± 40			3.4 ±0.8
2391.0 ±2	780 ±100			16 ±2
2659.0 ±2	650 ±100			12.6 ±2.0

$^{109}_{47}Ag$

THERMAL CROSS SECTIONS

σ_γ = 91±3 b [$^{110}Ag^{g+m}$]
σ_γ = 89±4 b [24 sec $^{110}Ag^{g}$]
σ_γ = 4.5±0.2 b [290 day $^{110}Ag^{m}$]
a_{coh} = 4.3±0.1 fm

RESONANCE PROPERTIES

I_γ = 1450±40 b
R' = 6.3±0.2 fm
S_0 = 0.50±0.15
S_1 = 2.5±1.0

RESONANCE PARAMETERS

I^π = 1/2⁻ %Abn = 48.18 S_n = 6805.5±0.7 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
5.19±0.01	149 ± 6	19.1 ± 0.3	1	136 ± 6	8.29 ±0.06
30.4 ±0.1	137 ± 6	11.0 ± 0.6	1	130 ± 6	1.98 ±0.12
40.1 ±0.1	136 ± 7	7.5 ± 0.2	1	131 ± 7	1.18 ±0.03
55.7 ±0.2	176 ± 9	18.6 ± 1.5	0	139 ± 7	2.5 ±0.2
70.8 ±0.2	147 ± 5	40 ± 3	1	120 ± 5	4.8 ±0.4
87.7 ±0.2	136 ±15	9.4 ± 0.3	1	130 ±15	1.00 ±0.03
91.5 ±0.2		0.05± 0.01			0.005±0.001
106.3 ±0.3		0.20± 0.3			0.020±0.003
133.9 ±0.2	200 ± 7	120 ± 6	1	120 ± 5	10.4 ±0.5
139.7 ±0.2	135 ±46	2.4 ± 0.3		133 ±46	0.20 ±0.03
169.8 ±0.2		0.39± 0.13			0.03 ±0.01
173.1 ±0.2	188 ±20	72 ± 6	1	140 ±15	5.5 ±0.5
209.6 ±0.2	157 ±20	36 ± 2	1	133 ±20	2.50 ±0.15
251.3 ±0.3	131 ±20	17 ± 3	1	120 ±20	1.1 ±0.2
259.0 ±0.3		2.1 ± 0.3			0.13 ±0.02
264.7 ±0.3		0.36± 0.07			0.022±0.004
272.6 ±0.4		2.3 ± 0.3			0.14 ±0.02
291.0 ±0.3	176 ±25	18 ± 3	0	140 ±20	1.05 ±0.15
293.3 ±0.3		0.34± 0.14			0.020±0.008
300.9 ±0.3		1.4 ± 0.5			0.08 ±0.03
316.5 ±0.3	300 ±60	250 ±18	1		14 ±1
322.1 ±0.3		0.22± 0.14			0.012±0.008
327.8 ±0.3		7.2 ± 1.8			0.4 ±0.1
340.2 ±0.3		0.26± 0.07			0.014±0.004
387.0 ±0.4	190 ±25	65 ± 3	1	147 ±25	3.20 ±0.20
391.6 ±0.4		0.32± 0.08			0.016±0.004
398.0 ±0.4	162 ±20	33 ± 3	1	140 ±20	1.65 ±0.15
404.4 ±0.4	346 ±30	100 ± 4	0	146 ±10	5.0 ±0.2
428.6 ±0.4		19 ± 2			0.90 ±0.08
441.0 ±0.4		0.19± 0.04			0.009±0.002
469.7 ±0.4	280 ±70	69 ± 9	0		3.2 ±0.4
487.7 ±0.5		25 ± 2			1.14 ±0.08
495.2 ±0.5		0.9 ± 0.4			0.04 ±0.02
500.6 ±0.5	280 ±30	226 ±16	1	119 ±30	10.1 ±0.06
515.4 ±0.5	250 ±40	91 ± 9	[0]	68 ±40	4.0 ±0.4

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
526.7 ±0.5		1.4 ± 0.9			0.06 ±0.04
557.2 ±0.5		26 ± 4			1.12 ±0.17
560.7 ±0.5		132 ±11	0	127 ±60	5.57 ±0.45
565.5 ±0.5	230 ±40	138 ± 8	1	138 ±40	5.8 ±0.6
608.0 ±0.5	190 ±30	50 ± 5	1	157 ±30	2.0 ±0.2
622.4 ±0.4	310 ±40	100 ± 7	0	110 ±40	4.0 ±0.3
634.5 ±0.5		1.0 ± 0.5			0.04 ±0.02
648.3 ±0.6		1.0 ± 0.5			0.04 ±0.02
669.5 ±0.6		37 ± 4			1.44 ±0.14
681.5 ±0.6		4.2 ± 1.0			0.16 ±0.04
687.4 ±0.6		2.1 ± 0.5			0.08 ±0.02
713.8 ±0.6		1.6 ± 0.5			0.06 ±0.02
726.1 ±0.6		30 ± 3			1.2 ±0.1
730.3 ±0.7		1.6 ± 0.5			0.06 ±0.02
747.6 ±0.7	310 ±70	108 ±16			4.0 ±0.6
752.6 ±0.6		70 ±14			2.5 ±0.5
784.7 ±0.7		280 ±30			10 ±1
803.8 ±0.7		51 ±11			1.8 ±0.4
831.4 ±0.8		6 ± 2			0.20 ±0.08
861.83±0.8		16 ± 2			0.52 ±0.08
883.0 ±0.8		110 ±11			3.7 ±0.4
902.8 ±0.8		18 ± 4			0.60 ±0.12
933.0 ±0.8		110 ±12			3.6 ±0.4
949.3 ±0.8		12 ± 3			0.40 ±0.10
961.0 ±0.8		31 ± 6			1.0 ±0.2
976.0 ±0.9		103 ± 9			3.30 ±0.3
1009 ±1		133 ±13			4.2 ±0.4
1057 ±1		60 ± 7			1.8 ±0.2
1062 ±1		60 ± 7			1.8 ±0.2
1116 ±1		80 ± 7			2.4 ±0.2
1204 ±1		260 ±35			7.4 ±1.0
1219 ±1		280 ±35			8.0 ±1.0
1236 ±1		140 ± 7			4.0 ±0.2
1300 ±1		125 ± 7			3.4 ±0.2
1383 ±1		90 ±10			2.4 ±0.3
1415 ±1		195 ±26			5.2 ±0.7
1484 ±1		58 ±11			1.5 ±0.3
1512 ±1		155 ±16			4.0 ±0.4
1587 ±1		240 ±40			6.0 ±1.0
1678 ±1		140 ±25			3.4 ±0.6
1914 ±2		480 ±90			11 ±2
2091 ±2		180 ±45			4.0 ±1.0
2129 ±2		380 ±75			8.2 ±1.6
2329 ±2		512 ±80			*10.6 ±1.6
2350 ±2		63 ±10			1.3 ±0.2
2506 ±2		35 ± 6			7.0 ±1.2

* Possibly doublet

$^{110}_{47}Ag$

[252 day]

THERMAL CROSS SECTIONS

σ_γ = 82±11 b

$^{111}_{47}Ag$

[7.47 day]

THERMAL CROSS SECTIONS

σ_γ = 3±2 b

RESONANCE PROPERTIES

I_γ = 105±20 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Ag^{107,109}$	activation	JNE,25,129(71)	Ryves
Ag	σ_γ	UCRL-72865(70)	Cranston
Ag	moxon-rae	NIM,86,83(70)	Malik
Ag^{109}	activation	JIN,30,349(68)	Sims
Ag^{111}	activation	ORNL-3994,7(67)	Druschel
Ag^{110M}	activation	CJP,41,1321(63)	Hart
Ag	pile osci.	KE,6,336(63)	Huttel
Ag^{109}	isom. ratio	PR,129,769(63)	Keisch
Ag^{109}	ratio	NP,29,66(62)	Nilsson
Ag	pile osci.	61BUCHAR(61)	Bouzyk
Ag	decay tech.	NSE,9,132(61)	Meadows
Ag	pile osci.	JAERI-1009(60)	Fuketa
Ag^{109}	activation	NSE,8,378(60)	Lyon
Ag,Ag^{109}	pile osci.	JNE,12,32(60)	Tattersall
Ag	pile osci.	AERE-R/R-2333(57)	Cummins
Ag	pile osci.	AERE-R/M-100(57)	Cummins
Ag^{109}	activation	IJP,31,630(57)	Sehgal
Ag^{109}	activation	PRIVATE COMM.(56)	Grimeland
Ag	pile osci.	JNE,1,144(54)	Green
Ag	pulsed n	PR,95,582(54)	Scott
$Ag^{107,109}$	pile osci.	PR,88,412(52)	Pomerance
Ag	pile osci.	PR,83,641(51)	Pomerance
Ag,$Ag^{107,109}$	diffraction	PR,81,527(51)	Shull
Ag	pile osci.	PR,80,342(50)	Harris
$Ag^{107,109}$	activation	PR,72,888(47)	Seren
Ag	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Ag	σ_t	291.-753.	NP/A,131,305(69)	Julien
Ag	σ_t	41.-2665.	AERE-PR/NP-16(69)	Pattenden
Ag^{109}	σ_t	55.-2587.	AERE-PR/NP-16(69)	Pattenden
Ag^{109}	σ_t	30.-317.	PR,141,1129(66)	Chrien
Ag	σ_γ	16.3-915.	66PARIS,1,79(66)	Muradyan
Ag	σ_γ	5.2-903.	66PARIS,1,79(66)	Muradyan
Ag^{109}	$\bar{\sigma}_s$	5.-404.	65ANTWERP,65(65)	Asghar
Ag^{109}	σ_t	100.-3996.	PR/B,137,547(65)	Garg
Ag^{107}	σ_t	62.-630.	65ANTWERP,92(65)	Pattenden
Ag^{109}	$\sigma_t \bar{\sigma}_s$	16.-174.	BAP,8,334(63)	Singh
Ag	σ_γ	144.-173.	CR,254,4162(62)	Julien
Ag	σ_γ	16.-317.	61SACLAY,439(61)	Moxon
Ag	σ_γ	5.-728.	PR,120,2214(60)	Desjardins
Ag	$\sigma_t \sigma_\gamma \bar{\sigma}_s$	5.-133.	NP,5,89(58)	Rae
Ag	σ_t	16.-316.	PR,103,1778(56)	Fluharty
Ag	σ_γ	16.-250.	CU-155(56)	Grimm
Ag	$\bar{\sigma}_s$	1.-20.	PR,104,1425(56)	Wood
Ag	$\bar{\sigma}_s$	0.-20.	PR,98,565(55)	Sheer
Ag,Ag^{109}	σ_t	5.-90.	PR,95,476(54)	Seidl
Ag	σ_t	5.-53.	PR,84,869(51)	Selove

THERMAL CROSS SECTIONS

σ_γ = 2450±20 b
$\bar{\sigma}_s$ = 5.6±0.3 b
a_{coh} = 0.37+0.16i fm

RESONANCE PROPERTIES

S_0 = 0.45±0.15
S_1 = 3.3±1.0

UNASSIGNED RESONANCES

E_0 (eV)	$ag\Gamma_n$ (meV)	$ag\Gamma_n^0$ (meV)
*4.58±0.03		
*6.98±0.03		
54.17±0.06	0.0043±0.0015	.0006± .0002
59.65±0.08	0.0043±0.0015	.0006± .0002
62.41±0.09	0.0053±0.0025	.0006±0.003
110.77±0.11	0.013 ±0.006	.0012± .0006
115.64±0.11	0.012 ±0.006	.0011± .0006
125.34±0.13	0.018 ±0.010	.0016± .0009
145.89±0.16	0.022 ±0.010	.0018± .0008
*245.95±0.22		
281.57±0.26	0.055 ±0.027	.0033± .0016
361.65±0.30	0.078 ±0.040	.0041± .0021
376.56±0.32	0.098 ±0.050	.0050± .0026
446.67±0.41	0.38 ±0.20	.018 ± .010
456.55±0.43	1.4 ±0.2	.066 ± .009
489.66±0.48	0.11 ±0.07	.0050± .0032
494.64±0.62	0.05 ±0.04	.0022± .0018
592.37±0.81	0.19 ±0.12	.0078± .0049
661.27±0.74	0.26 ±0.13	.010 ± .005
717.94±0.42	1.7 ±0.3	.063 ± .011
901.28±0.30	2.0 ±0.5	.067 ± .017
939.18±0.32	0.75 ±0.25	.025 ± .008
955.14±0.65	0.30 ±0.15	.0097± .0049
975.51±0.34	1.5 ±0.3	.048 ± .010
1169.1 ±0.5	0.56 ±0.20	.016 ± .006
1333.7 ±0.5	1.6 ±0.5	.044 ± .014
1356.1 ±0.6	0.81 ±0.50	.022 ± .014
1460.3 ±0.6	1.1 ±0.6	.029 ± .016
1710.5 ±0.8	0.50 ±0.40	.012 ± .010
1734.0 ±0.4	2.1 ±0.6	.050 ± .014
1752.3 ±0.8	1.6 ±0.9	.038 ± .022
1753.9 ±0.8	1.0 ±0.6	.024 ± .014
1770.9 ±0.8	1.5 ±1.1	.036 ± .026
1928.5 ±0.9	1.1 ±0.8	.025 ± .018
2007.5 ±0.5	1.8 ±0.7	.040 ± .016
2018.7 ±0.5	1.5 ±0.6	.033 ± .013
2256.4 ±1.2	1.3 ±0.8	.027 ± .017
2275.9 ±0.6	0.95 ±0.50	.020 ± .010
2290.5 ±0.6	1.7 ±0.8	.036 ± .017

$_{48}$Cd

E_0 (eV)	$ag\Gamma_n$ (meV)	$ag\Gamma_n^0$ (meV)
2303.5 ±1.2		
2330.4 ±0.6		
2345.2 ±0.6		
2388.1 ±1.3		
2430.8 ±0.7		
2450.0 ±0.7		
2465.3 ±1.4		
2470.0 ±0.7		
2489.0 ±0.7		
2497.1 ±0.7		
2526.1 ±0.7		
2534.1 ±0.7		
2560.5 ±0.7		
2603.6 ±0.7		
2650.1 ±0.8		
2745.7 ±0.8		
2752.3 ±0.8		
2771.8 ±0.8		
2777.4 ±0.8		
2791.9 ±0.8		
2827.4 ±1.6		
2867.3 ±0.9		
2883.8 ±0.9		
2899.9 ±0.9		
2927.9 ±0.9		
2943.6 ±0.9		
2965.6 ±0.9		
2993.6 ±0.9		
3020.3 ±0.9		
3054.2 ±0.9		
3073.3 ±0.9		
3082.1 ±1.0		
3089.7 ±1.0		
3120.4 ±1.0		
3141.1 ±1.0		
3197.7 ±2.0		
3213.6 ±1.0		
3240.8 ±1.0		
3256.5 ±1.0		
3274.4 ±1.0		
3320.5 ±1.0		
3375.1 ±1.1		
3391.3 ±1.1		
3430.0 ±1.1		
3456.6 ±1.1		
3478.4 ±1.1		
3516.9 ±2.2		
3528.3 ±2.3		
3535.2 ±2.4		
3549.1 ±1.2		
3579.4 ±1.2		
3605.3 ±1.2		

E_0 (eV)	$ag\Gamma_n$ (meV)	$ag\Gamma_n^0$ (meV)
3616.0 ±1.2		
3676.3 ±1.2		
3683.7 ±1.2		
3729.4 ±2.4		
3804.1 ±1.3		
3829.9 ±1.3		
3914.3 ±1.4		
3926.4 ±1.4		
3992.6 ±1.4		
4054.1 ±1.4		
4127.9 ±2.9		
4141.7 ±1.5		
4192.6 ±1.5		
4221.0 ±3.0		
4304.8 ±1.6		
4340.6 ±1.6		
4346.9 ±3.2		
4368.1 ±1.6		
4414.3 ±1.6		
4436.1 ±1.6		
4468.6 ±1.6		
4513.1 ±1.7		
4582.8 ±1.7		
4624.8 ±1.7		
4645.5 ±1.8		
4657.7 ±1.8		
4747.7 ±1.8		
4773.8 ±1.8		
4807.4 ±1.8		
4842.3 ±1.9		
4889.7 ±1.9		
4952.0 ±1.9		
4979.8 ±2.0		
5001.1 ±2.0		
5011.8 ±2.0		
5043.0 ±2.0		
5170.9 ±2.1		
5194.4 ±2.1		
5236.6 ±2.1		
5273.2 ±2.1		
5317.5 ±2.1		
5328.1 ±2.1		
5394.8 ±2.2		
5418.7 ±2.2		
5447.2 ±4.4		
5479.3 ±2.2		
5500.5 ±2.2		
5574.9 ±2.2		
5602.4 ±2.3		
5623.1 ±2.3		
5764.3 ±2.4		
5776.3 ±2.4		

$_{48}$Cd

E_0 (eV)	$g\Gamma_n$ (meV)	$g\Gamma_n^0$ (meV)
5802.8 ±2.4		
5824.7 ±2.5		
5858.9 ±2.5		
5930.8 ±2.5		
6014.2 ±5.2		
6221.2 ±2.7		
6406.6 ±5.6		
6433.4 ±5.6		
6556.6 ±5.8		
6601.9 ±3.0		
6683.5 ±3.0		
6719.5 ±3.0		
6795.6 ±3.1		
6804.8 ±3.1		
6827.9 ±3.1		
6863.6 ±3.1		
7018.7 ±3.2		
7051.1 ±3.3		
7129.5 ±3.3		
7232.8 ±3.4		
7276.8 ±3.5		
7481.6 ±3.6		
7513.6 ±3.6		
7574.6 ±3.6		
7698.9 ±3.7		
7910.3 ±3.7		
8048.9 ±4.0		
8122.6 ±4.0		
8154.7 ±4.1		
8419.1 ±4.3		
8461.6 ±4.3		
8604.0 ±4.4		
8745.6 ±4.5		
8861.0 ±4.6		
8913.7 ±4.6		
9328.6 ±4.9		
9443.1 ±5.0		
9496.1 ±5.1		
9603.5 ±5.2		
9720.5 ±5.3		
9773.2 ±5.3		

* Small Resonance

$^{108}_{48}$Cd

THERMAL CROSS SECTIONS

σ_γ = 1.1±0.3 b

$^{109}_{48}$Cd

[453 day]

THERMAL CROSS SECTIONS

σ_γ = 650±100 b

THERMAL CROSS SECTIONS

σ_γ = 11±1 b [$^{111}Cd^{9*m}$]
σ_γ = 0.10±0.03 b [48.6 min $^{111}Cd^{m}$]
$\bar{\sigma}_s$ = 6±1 b

RESONANCE PROPERTIES

I_γ = 40±4 b
R' = 7.±0.5 fm
S_0 = 0.50±0.08

RESONANCE PARAMETERS

$I^\pi = 0^-$ %Abn = 12.39 S_n = 6976.8±3.5 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
89.27±0.15	142 ± 10	110 ±15	15.0 ±1.0
230.93±0.16	8.3 ± 0.9		.54 ± .05
339.66±0.28	0.71± 0.09		.038± .004
369.61±0.20	23 ± 2	97 ±20	1.1 ± .1
505.34±0.25	1.44± 0.18		.064± .008
652.05±0.37	3.8 ± 0.4		.14 ± .02
761.78±0.46	11 ± 1		.39 ±0.04
799.76±0.50	410 ± 30	125 ±25	14.4 ±1.0
824.08±0.52	7 ± 1		.24 ±0.04
916.89±0.31	20 ± 4		.66 ± .13
920.85±0.31	75 ± 7		2.4 ± .2
1115.9 ±0.4	31 ± 4	85 ±20	.92 ± .12
1135.3 ±0.4	7.1 ± 1.4		.21 ± .04
1241.5 ±0.5	4.9 ± 1.2		.13 ± .03
1318.1 ±0.3	20 ± 2		.55 ±0.06
1346.7 ±0.3	960 ± 80		26.1 ±2.1
1685.8 ±0.4	13 ± 2		.32 ±0.05
1809.5 ±0.4	24 ± 5		.56 ± .12
1828.2 ±0.4	340 ± 40	97 ±20	7.95 ± .93
1982.9 ±0.5	275 ± 30	90 ±20	6.17 ± .67
2065.7 ±0.5	2100 ±200		46.20 ±4.40
2100.4 ±2.7	11 ± 4		.24 ±0.09
2353.0 ±0.6	12 ± 3		.24 ±0.06
2376.0 ±0.6	2100 ±200		43.08 ±4.10
2410.6 ±0.7	34 ± 6		.69 ± .12
2476.8 ±0.7	59 ± 10		1.2 ± .20
2492.0 ±0.7	49 ± 8		.98 ± .16
2723.2 ±4.0	16 ± 6		.31 ± .11
2739.7 ±0.8	57 ± 10		1.09 ± .19
3042.2 ±0.9	1500 ±200		27.20 ±3.63
3105.7 ±1.0	134 ± 20		2.40 ± .35
3153.1 ±1.0	74 ± 14		1.32 ± .24
3183.7 ±5.0	22 ± 8		.39 ± .15
3375.1 ±1.1	220 ± 40		3.79 ± .69
3496.4 ±1.1	95 ± 18		1.61 ± .30
3636.4 ±1.2	110 ± 15		1.82 ± .25
3667.8 ±2.4	67 ± 12		1.11 ± .20

$^{110}_{48}Cd$

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
3702.1 ±1.2	103 ± 20		1.69 ± .33
3744.4 ±1.3	500 ± 70		8.17 ±1.14
3804.4 ±6.6	25 ± 10		.41 ± .16
3953.5 ±1.4	1000 ±120		15.90 ±1.90
3980.9 ±7.0	28 ± 11		.44 ± .17
4099.0 ±1.4	56 ± 10		.87 ± .16
4161.5 ±1.5	47 ± 10		.73 ± .16
4180.7 ±1.5	110 ± 20		1.70 ± .31
4242.8 ±1.5	330 ± 50		5.07 ± .77
4304.8 ±1.6	140 ± 30		2.13 ± .46
4402.3 ±1.6	340 ± 50		5.12 ± .75
4480.0 ±8.4	105 ± 40		1.57 ± .60
4661.1 ±1.8	76 ± 15		1.11 ± .22
4675.1 ±1.8	92 ± 20		1.35 ± .29
4747.7 ±1.8	144 ± 30		2.08 ± .43
4864.5 ±1.9	260 ± 40		3.73 ± .57
5121.4 ±2.0	720 ±120		1.01 ±1.68
5291.0 ±2.1	540 ± 80		7.42 ±1.10
5369.9 ±2.2	160 ± 40		2.18 ± .55
5694.2 ±2.4	310 ± 70		4.11 ± .93
5802.8 ±2.4	190 ± 50		2.49 ± .66
5983.7 ±2.6	1300 ±200		16.80 ±2.59
6089.0 ±2.6	810 ±150		10.4 ±1.92
6259.0 ±2.7	230 ± 50		2.91 ± .63
6343.9 ±2.8	540 ±100		6.78 ±1.26
6468.9 ±2.9	200 ± 40		2.48 ± .50
6487.4 ±2.9	180 ± 40		2.23 ± .50
6601.9 ±3.0	390 ± 80		4.80 ± .98
6913.7 ±3.2	1000 ±200		12.02 ±2.40
6937.3 ±3.2	240 ± 80		2.88 ± .96
7083.6 ±3.3	330 ± 70		3.92 ± .83
7276.8 ±3.4	260 ± 80		3.28 ± .94
7669.4 ±3.7	1100 ±200		12.56 ±2.28
8718.8 ±4.5	1300 ±200		13.92 ±2.14
8822.2 ±4.6	2800 ±500		29.81 ±5.32
8934.5 ±4.7	530 ±120		5.61 ±1.27
9025.4 ±4.7	510 ±150		5.37 ±1.58
9146.3 ±4.8	990 ±200		10.35 ±2.09
9221.0 ±4.9	920 ±250		9.58 ±2.60
9250.2 ±4.9	1000 ±300		10.40 ±3.11
9269.7 ±4.9	1700 ±500		17.65 ±5.19
9896.0 ±5.4	2300 ±600		23.12 ±6.03

THERMAL CROSS SECTIONS

σ_γ = 24.3±3.0 b
σ_s = 5.2±0.3 b

RESONANCE PROPERTIES

I_γ^c = 51±5 b
R' = 6.4±0.6 fm
S_0 = 0.45±0.06

RESONANCE PARAMETERS

I^π = 1/2⁺ %Abn = 12.75 S_n = 9397.0±2.9 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
27.53±0.03	7.2 ± 0.4	1		105 ±15	1.37 ± .07	
69.43±0.10	0.17± 0.04				0.020± .005	
86.11±0.07	3.8 ± 0.4				.41 ± .04	
99.41±0.09	20.4 ± 1.4	1		108 ±14	2.04 ± .14	
102.93±0.09	1.54± .14				0.151± .014	
114.75±0.11	.28± 0.10				.026± .009	
138.11±0.14	15.0 ± 1.0	1		95 ±12	1.28 ± .09	
140.78±0.15	0.38± 0.08				.032± .006	
164.11±0.18	90 ± 6	1		125 ±15	7.0 ± .5	
203.52±0.16	.46± .20				.032± .014	
208.57±0.17	.52± .20				.036± .014	
225.05±0.15	44 ± 6				2.9 ± .4	
233.41±0.16	114 ± 8	0		102 ±20	7.46 ± .52	
275.56±0.21	29.4 ± 4.0		0	98 ±20	1.77 ± .24	
286.47±0.27	0.68± .36		1		.040± .021	34
311.38±0.24	86 ± 8			160 ±40	4.87 ± .45	
313.0 ±0.5	1.2				0.04	
331.97±0.27	11.0 ± 1.0		0		0.60 ± .05	
336.66±0.27	2.2 ± 0.4				.12 ± .02	
355.99±0.29	64 ± 6		0	97 ±15	3.39 ± .32	
389.02±0.33	40 ±16		0		2.03 ± .81	
410.01±0.36	3.4 ± 1.2		1		.17 ± .06	101
422.66±0.38	3.4 ± 1.2		1		.17 ± .06	99
438.31±0.40	12.8 ± 1.6		0		.611± .076	
443.0 ±0.5	1.2				0.04	
453.0 ±0.5	0.8				0.03	
466.0 ±0.5	2.0		1		0.09	47
478.01±0.45	5.6 ± 1.4				.26 ± .06	
484.01±0.47	5.2 ± 1.4		1		.24 ± .06	122
517.90±0.33	1.6 ± 1.0				.070± .044	
530.64±0.27	2.0 ± 0.8				.087± .034	
540.27±0.28	36 ± 4		0		1.55 ± .17	
543.40±0.40	1.90± .80				.082± .03	
548.20±0.28	5.4 ± 1.6				.23 ± .07	
552 ±1	0.4		1		0.02	9
564 ±1	0.4		1		0.02	9
568 ±1	2.4				0.12	
575.92±0.30	74 ± 6		0	115 ±20	3.08 ± .25	

$^{111}_{48}Cd$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
583 ±1	1.6				0.08	
598.67±0.32	3.4 ± 1.0				.14 ± .04	
603.52±0.33	52 ± 6		0		2.12 ± .24	
607 ±1	0.8				0.04	
622.63±0.34	120 ±14			160 ±30	4.81 ± .56	
654 ±1	3.6				0.16	
671 ±1	5.2				0.20	
685 ±1	0.4				0.02	
688.53±0.79	5.6 ± 2.0				.21 ± .08	
706.28±0.82	10.6 ± 4.0				.40 ± .15	
740 ±1	3.6		1		0.13	43
764.32±0.47	24 ± 6		0		.87 ± .22	
782.69±0.47	4.2 ± 2.2				.15 ± .08	
790.43±0.49	110 ±12		0	80 ±20	3.91 ± .43	
809.26±0.51	98 ±14		0		3.44 ± .49	
836 ±2	0.8				0.03	
845 ±2	1.6				0.04	
858 ±2	2.8		1		0.10	29
860.48±0.55	38 ± 6				1.30 ± .20	
876 ±2	9.2				0.32	
878.17±0.57	66 ± 8		0		2.23 ± .27	
885 ±2	28.8				0.96	
900 ±2	2.8				0.08	
903.65±0.30	18 ± 4		0		.60 ± .13	
908 ±3	2.8				0.08	
924.69±0.62	5.6 ± 3.0				.18 ± .10	
928.10±0.62	4.8 ± 2.8				.16 ± .09	
960 ±2	3.6				0.12	
965.24±0.33	120 ±16				3.86 ± .51	
969 ±2	2.4				0.08	
991 ±2	5.6				0.16	
1003.1±0.4	6.8 ± 2.4				.21 ± .08	
1018.2±0.7	10.8 ± 3.6				.339± .11	
1023.1±1.1	4.8 ± 2.2				.15 ± .07	
1035 ±2	3.6		1		0.11	26
1042.0±0.4	70 ± 8				2.17 ± .25	
1056.9±0.8	5.6 ± 2.8				.17 ± .09	
1068 ±2	4.4		1		0.14	32
1082.1±1.0	4 ± 2				.12 ± .06	
1097 ±2	7.6		1		0.23	52
1115 ±2	1.6				0.04	
1138.9±0.8	11.0 ± 5.4				0.33 ± .16	
1148.8±0.4	17.4 ± 6.0				.513± .17	
1157.1±0.9	5.0 ± 2.6				.15 ± .08	
1174.4±0.5	10.8 ± 4.0				.315± .117	
1191 ±2	4.0				0.12	
1202.2±0.5	10.2 ± 4.0				.294± .12	
1216.8±0.5	226 ±30		0		6.48 ± .86	
1221.0±0.5	9.4 ± 5.0		1		.27 ± .14	54
1237.2±0.5	18.2 ± 6.0				.517± .17	
1252.1±0.5	310 ±30			65 ±25	8.75 ± .85	
1261.6±0.5	44 ± 6				1.24 ± .17	

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^{(1)}$ (meV)
1289.4±0.5	19.8 ± 5.0				.551± .13	
1307.6±0.5	22 ± 8				.61 ± .22	
1337 ±3	50				1.4	
1350 ±3	6.4				0.16	
1362 ±3	6.4				0.16	
1371.2±0.6	34 ± 8				.92 ± .22	
1386 ±3	6.4				0.16	
1399.1±0.3	90 ±14				2.41 ± .37	
1403.2±0.3	132 ±20				3.52 ± .53	
1423 ±3	4.4				0.12	
1424 ±3	11				0.28	
1448.6±0.6	36 ±12				.95 ± .32	
1467.7±0.6	220 ±40				5.74 ±1.04	
1491 ±3	4.0				0.12	
1511.1±0.7	9.6 ± 6.0				.25 ± .15	
1522.3±0.3	32 ± 8		0		.82 ± .21	
1538 ±3	12				0.32	
1551 ±3	1.6				0.04	
1566.5±0.6	94 ±32				2.38 ± .80	
1581.7±0.4	300 ±40	0	0	75 ±30	7.54 ±1.01	
1596.9±0.4	156 ±20		0		3.90 ± .50	
1617.4±0.4	280 ±50		0		6.96 ±1.24	
1630.9±0.4	340 ±80		0		8.42 ±1.98	
1654.2±0.4	160 ±20		0		3.93 ± .49	
1665 ±3	12.8				0.32	
1688 ±3	7.2				0.16	
1698.5±0.7	6.6 ± 3.2				.16 ± .08	
1742.3±0.4	560 ±80		0		13.4 ±1.9	
1766.5±0.8	22 ± 6				.52 ± .14	
1776 ±3	6.0				0.12	
1787.0±0.4	340 ±60		0		8.04 ±1.42	
1791.1±0.8	15.0 ± 8.0				.354± .19	
1820.5±0.4	210 ±40		0		4.92 ± .94	
1825.6±0.9	74 ±36		0		1.73 ± .84	
1883.6±0.5	200 ±30		0		4.60 ± .69	
1920 ±3	20				0.46	
1934.1±0.5	220 ±40		0		5.00 ± .91	
1953 ±3	20				0.44	
1979 ±3	16				0.36	
2016 ±3	3.6				0.08	
2022.7±0.5	116 ±20		0		2.58 ± .45	
2045 ±3	16				0.35	
2065 ±3	2				0.08	
2082.8±1.1	48 ±32				1.05 ± .70	
2089 ±3	12.4				0.44	
2110.7±1.1	26 ±14				.57 ± .30	
2118.6±1.1	12 ± 6				.26 ± .13	
2138.3±1.1	72 ±36		0		1.56 ± .77	
2144.0±1.1	180 ±40		0		3.89 ± .86	
2158.2±1.1	24 ±14				.52 ± .30	
2172.0±1.1	22 ±12				.47 ± .26	
2202 ±4	9.6				0.20	

$^{111}_{48}Cd$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
2205 ±4	30.8				6.4	
2236.6±0.6	82 ±24				1.73 ± .51	
2286 ±4	12.8				0.28	
2294.4±1.2	48 ±24				1.00 ± .50	

$^{112}_{48}Cd$

THERMAL CROSS SECTIONS

σ_γ = 2.2±0.5 b [$^{113}Cd^{g+m}$]
$\bar{\sigma}_s$ = 6.9±0.3 b

RESONANCE PROPERTIES

I_γ^c = 15±3 b
R' = 6.7±0.4 fm
S_0 = 0.58±0.08

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 24.07 S_n = 6539.8±2.8 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
66.77±0.09	7.0 ± 0.6	85 ±20	0.86 ± .07
82.57±0.09	0.08± 0.02		.009± .002
83.24±0.07	0.37± 0.03		.041± .003
226.46±0.15	21 ± 2	115 ±20	1.40 ± .13
442.97±0.41	67 ± 5	105 ±15	3.18 ± .24
452.68±0.27	3.4 ± 0.3		.16 ± .01
565.76±0.30	2.6 ± 0.3		.11 ± .01
737.28±0.44	300 ± 30	100 ±25	11.06 ±1.11
810.61±0.65	3.0 ± 0.6		.11 ± .02
884.47±0.57	6.0 ± 1.0		.20 ± .03
894.50±0.30	6.7 ± 1.0		.22 ± .03
908.73±0.30	250 ± 20	105 ±30	8.29 ± .66
1052.5 ±0.4	13 ± 2		.40 ± .06
1101.5 ±0.4	6.1 ± 1.5		.18 ± .04
1115.4 ±0.4	710 ± 70		21.3 ±2.1
1207.3 ±0.5	14 ± 3		.40 ± .08
1337.3 ±0.5	36 ± 5		.98 ± .1
1423.3 ±0.6	690 ± 70		18.2 ±1.9
1640.1 ±0.4	8.7 ± 1.8		.21 ± .04
1706.0 ±0.4	290 ± 30		7.02 ± .73
1814.4 ±0.4	19 ± 4		.45 ± .09
1942.5 ±0.5	46 ± 6		1.04 ± .14
2035.5 ±0.5	1500 ±150		33.24 ±3.32
2226.2 ±0.6	39 ± 6		.83 ± .13
2336.5 ±0.6	750 ± 70		15.5 ±1.4
2456.6 ±0.7	17 ± 3		.34 ± .06
2573.7 ±0.7	1700 ±170		33.50 ±3.35

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
2684.8 ±0.8	1600 ±200		30.88 ±3.86
2813.4 ±0.8	19 ± 4		.36 ± .08
2817.5 ±0.8	56 ± 10		1.06 ± .19
2951.5 ±0.9	230 ± 30		4.23 ± .55
3005.8 ±1.8	21 ± 6		.38 ± .11
3103.8 ±1.0	490 ± 60		8.80 ±1.08
3153.6 ±1.0	105 ± 15		1.87 ± .27
3224.7 ±1.0	47 ± 8		.83 ± .14
3289.8 ±1.0	46 ± 9		.80 ± .16
3306.9 ±1.0	155 ± 25		2.69 ± .43
3320.5 ±1.1	140 ± 20		2.42 ± .35
3404.3 ±1.1	25 ± 6		.43 ± .10
3491.9 ±1.2	140 ± 20		2.37 ± .34
3710.1 ±1.2	47 ± 12		.77 ± .20
3776.6 ±1.3	220 ± 30		3.60 ± .49
3861.9 ±1.3	55 ± 10		.89 ± .16
3885.7 ±1.3	69 ± 14		1.11 ± .22
4106.9 ±1.4	210 ± 30		3.28 ± .47
4152.7 ±1.5	34 ± 8		.53 ± .12
4200.0 ±1.5	100 ± 20		1.54 ± .31
4263.3 ±1.5	46 ± 12		.70 ± .18
4392.7 ±1.6	92 ± 20		1.39 ± .30
4486.7 ±1.7	97 ± 24		1.45 ± .36
4558.3 ±1.7	1700 ±200		25.18 ±2.96
4798.3 ±1.8	125 ± 25		1.80 ± .36
4854.3 ±1.9	92 ± 20		1.32 ± .29
4907.5 ±1.9	940 ±120		13.4 ±1.71
5001.1 ±2.0	240 ± 50		3.39 ± .70
5136.5 ±2.0	210 ± 40		2.93 ± .56
5236.6 ±2.1	160 ± 30		2.21 ± .42
5285.8 ±2.1	91 ± 25		1.25 ± .34
5552.2 ±2.3	88 ± 18		1.18 ± .24
5574.9 ±2.3	750 ±100		10.00 ±1.33
5686.0 ±2.4	950 ±150		12.59 ±2.00
5734.4 ±2.4	93 ± 25		1.23 ± .33
5948.3 ±2.5	620 ±120		8.04 ±1.56
6085.1 ±2.6	1600 ±300		20.51 ±3.85
6112.4 ±2.6	160 ± 30		2.05 ± .38
6359.1 ±2.8	520 ±120		6.52 ±1.50
6433.4 ±2.8	210 ± 50		2.62 ± .62
6529.1 ±2.9	320 ± 60		3.96 ± .74
6577.0 ±2.9	2400 ±300		29.59 ±3.70
6874.5 ±3.1	140 ± 40		1.69 ± .48
6920.0 ±3.2	390 ±100		4.69 ±1.20
6937.3 ±3.2	220 ± 60		2.64 ± .72
6975.5 ±3.2	2900 ±400		34.72 ±4.79
7167.6 ±3.3	400 ± 80		4.73 ± .95
7640.0 ±3.7	170 ± 50		1.95 ± .57
8007.5 ±3.9	440 ±120		4.92 ±1.34
8029.2 ±3.9	480 ±100		5.36 ±1.12
8248.3 ±4.1	1600 ±300		17.62 ±3.30
8377.0 ±4.2	730 ±160		7.98 ±1.75

$^{112}_{48}Cd$

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
8519.4 ±4.3	540 ±150		5.85 ±1.62
8536.7 ±4.3	760 ±200		8.23 ±2.16
8665.5 ±4.4	350 ± 90		3.76 ± .97
9041.9 ±4.7	400 ±100		4.21 ±1.05
9153.5 ±4.8	2000 ±400		20.90 ±4.18
9225.9 ±4.9	550 ±140		5.73 ±1.46
9570.1 ±5.1	1100 ±200		11.24 ±2.04
9738.9 ±5.3	370 ±100		3.75 ±1.01
10043 ±6	630 ±180		6.29 ±1.80
10262 ±6	940 ±300		9.28 ±2.96
10464 ±6	390 ±120		3.81 ±1.17
10582 ±6	610 ±200		5.92 ±1.94
10678 ±6	3300 ±900		31.94 ±8.71
10899 ±6	2500 ±600		23.95 ±5.75
11018 ±7	510 ±200		4.86 ±1.91
11153 ±7	860 ±250		8.14 ±2.37
11280 ±7	800 ±250		7.53 ±2.35
11322 ±7	530 ±200		4.98 ±1.88
11455 ±7	2100 ±600		19.56 ±5.60

THERMAL CROSS SECTIONS

σ_γ = 19910±300 b
a_{coh} = -1.5+1.2i fm

RESONANCE PROPERTIES

R′ = 6.7±0.4 fm
S_0 = 0.32±0.07

RESONANCE PARAMETERS

I^π = 1/2⁺ %Abn = 12.26 S_n = 9041.0±1.4 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.1776±0.0006	0.968± 0.020	1	114 ± 1	2.28 ±0.02
56.3 ±0.2	0.2 ± 0.1			0.270 ±0.014
18.40 ±0.03	0.28 ± 0.02	1		0.0653± .0047
63.68 ±0.09	4.8 ± 0.4	1	100 ±20	0.600 ± .050
84.82 ±0.07	45 ± 4	1	113 ±10	4.88 ± .43
108.30 ±0.10	16.4 ± 1.2	1	90 ±12	1.57 ± .115
143.08 ±0.15	5.2 ± 0.4			0.433 ± .0334
158.72 ±0.17	14.0 ± 1.0			1.03 ±0.08
192.82 ±0.14	92 ± 6	0	110 ±15	6.62 ± .43
215.16 ±0.28	40 ± 4	1	97 ±14	2.72 ± .27
261.03 ±0.19	54 ± 4	1	97 ±12	3.34 ± .25
269.26 ±0.20	35 ± 4	0	100 ±16	2.14 ± .24
291.56 ±0.22	10.0 ± 0.8			0.585 ± .047
414.03 ±0.37	195 ±18	1	103 ±15	9.58 ± .885
431.94 ±0.39	47 ± 6	1		2.26 ± .29
500.89 ±0.25	86 ± 6	1	108 ±20	3.84 ± .27
524.66 ±0.26	56 ± 6	1	102 ±25	2.45 ± .26
551.59 ±0.29	165 ±15	1	95 ±20	7.03 ±0.64
634.89 ±0.35	170 ±18	0	170 ±50	6.75 ± .71
723.45 ±0.43	40 ± 4			1.48 ± .15
841.45 ±0.54	112 ±18			3.86 ± .62
851.43 ±0.55	720 ±80	1	115 ±30	24.67 ±2.74
1088.6 ±0.4	92 ±14			2.79 ± .424
1120.0 ±0.4	200 ±60			5.98 ±1.79
1267.3 ±0.5	300 ±40	1	95 ±25	8.43 ±1.12
1310.2 ±0.5	58 ±18			1.60 ± .497
1318.1 ±0.5	150 ±50			4.13 ±1.38
1364.0 ±0.6	260 ±40	1	90 ±30	7.04 ±1.08
1628.0 ±0.4	110 ±36			2.73 ± .89
1645.6 ±0.4	66 ±14			1.63 ± .35
1659.7 ±0.4	90 ±18			2.21 ± .44
1866.9 ±0.5	56 ±12			1.30 ± .28
1908.2 ±0.5	158 ±30			3.62 ± .69
1963.3 ±1.0	124 ±50			2.80 ±1.13
2053.2 ±0.5	152 ±40			3.36 ± .88
2114.6 ±0.6	70 ±28			1.52 ± .61
2200.0 ±0.6	122 ±36			2.60 ± .77
2241.2 ±0.6	90 ±30			1.90 ± .63

$^{114}_{48}Cd$

THERMAL CROSS SECTIONS

σ_γ = 0.300±0.015 b [53.5 hr $^{115}Cd^g$]
σ_γ = 0.036±0.007 b [43 day $^{115}Cd^m$]
$\bar{\sigma}_s$ = 6±1 b

RESONANCE PROPERTIES

I_γ = 20±2 b
R' = 6.6±0.4 fm
S_0 = 0.54±0.11

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 28.86 S_n = 6148±10 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
56.40±0.05	0.078± 0.015		.0103± .001
120.10±0.15	50 ± 3	95 ±15	4.57 ± .27
227.07±0.15	3.1 ± 0.5		.21 ± .03
392.24±0.34	840 ± 50		42.41 ± 2.52
567.78±0.38	2.1 ± 0.3		0.88 ± 0.13
670.68±0.38	360 ± 30	130 ±30	13.90 ± 1.16
752.19±0.45	370 ± 30	110 ±25	13.49 ± 1.09
962.13±0.33	17 ± 3		.55 ± .10
1037.9 ±0.9	4.0 ± 1.2		.12 ± .04
1099.7 ±0.4	250 ± 20		7.54 ± .60
1326.5 ±0.3	31 ± 3		.85 ± .08
1425.7 ±0.6	1800 ± 200		47.67 ± 5.29
1475.3 ±0.3	42 ± 4		1.09 ± .10
1485.3 ±0.6	12 ± 3		.31 ± .08
1604.3 ±0.4	28 ± 4		.70 ± .10
1637.3 ±1.9	20 ± 7		.49 ± .17
1690.0 ±0.7	15 ± 3		.36 ± .07
1921.1 ±0.5	490 ± 60		11.18 ± 1.37
1964.9 ±0.5	37 ± 7		.84 ± .16
2132.6 ±0.6	310 ± 40		6.71 ± .87
2267.3 ±0.6	22 ± 4		.46 ± .08
2284.2 ±0.6	68 ± 10		1.42 ± .21
2512.9 ±0.7	56 ± 8		1.12 ± .16
2589.3 ±3.7	45 ± 17		.88 ± .33
2635.9 ±0.8	72 ± 14		1.40 ± .27
2678.3 ±0.8	1500 ± 200		28.98 ± 3.86
2804.0 ±0.8	350 ± 50		6.61 ± .94
2849.3 ±0.9	40 ± 8		.75 ± .15
2955.6 ±4.5	61 ± 24		1.12 ± .44
3027.1 ±0.9	49 ± 10		.89 ± .18
3178.0 ±1.0	3400 ± 500		60.31 ± 8.87
3305.4 ±2.1	86 ± 24		1.50 ± .42
3333.6 ±1.1	330 ± 50		5.72 ± .87
3698.4 ±6.3	53 ± 23		.87 ± .38
3819.5 ±1.3	970 ± 130		15.69 ± 2.10
4258.0 ±1.5	2100 ± 300		32.18 ± 4.60
4418.4 ±3.2	120 ± 30		1.81 ± .45

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
4582.8 ±1.7	260 ± 60		3.84 ± .89
4645.5 ±1.7	190 ± 50		2.79 ± .74
4691.8 ±1.8	320 ± 50		4.67 ± .73
5357.0 ±2.2	430 ± 90		5.88 ± 1.23
5515.0 ±2.3	680 ± 100		9.16 ± 1.35
6042.4 ±2.6	580 ± 90		7.46 ± 1.16
6406.6 ±2.8	770 ± 150		9.62 ± 1.87
7202.6 ±3.4	1200 ± 200		14.14 ± 2.36
7393.8 ±3.5	420 ± 70		4.88 ± .81
7495.8 ±3.6	1200 ± 300		13.86 ± 3.47
7662.0 ±3.7	490 ± 120		5.60 ± 1.37
7837.6 ±3.8	1600 ± 400		18.07 ± 4.52
8368.6 ±4.2	1400 ± 400		15.30 ± 4.37
8946.0 ±4.6	880 ± 250		9.30 ± 2.64
9262.4 ±4.9	7800 ±1400		81.05 ±14.55
9958.3 ±5.5	950 ± 170		9.52 ± 1.70
10088 ±6	1300 ± 300		12.94 ± 2.99

$^{116}_{48}Cd$

THERMAL CROSS SECTIONS

σ_γ = 0.050±0.008 b [2.4 hr $^{117}Cd^g$]
σ_γ = 0.027±0.005 b [3.4 hr $^{117}Cd^m$]
$\bar{\sigma}_s$ = 5.6±0.3 b

RESONANCE PROPERTIES

S_0 = 0.21±0.06

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 7.58 S_n = 5765±13 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
28.97±0.05	0.056± 0.007		.010± .001
676.41±0.39	22 ± 2		.85 ± .08
888.96±0.29	49 ± 5	125 ±30	1.64 ± .17
1048.3 ±0.4	430 ± 40		13.28 ±1.24
1122.4 ±1.1	19 ± 6		.57 ± .18
1384.1 ±0.3	120 ± 10		3.23 ± .27
1566.5 ±0.4	95 ± 15		2.40 ± .38
1857.7 ±0.5	77 ± 15		1.79 ± .35
1968.5 ±0.5	230 ± 40		5.18 ± .90
2361.5 ±0.6	1400 ±200		28.81 ±4.12
2541.2 ±0.7	24 ± 7		.48 ± .14
2651.6 ±0.8	230 ± 50		4.47 ± .97
3358.0 ±1.1	240 ± 40		4.14 ± .69
3652.6 ±1.2	670 ±100		11.09 ±1.66
4206.7 ±1.5	140 ± 40		2.16 ±6.17
4615.3 ±1.7	170 ± 50		2.50 ± .74
4873.8 ±1.9	750 ±180		10.74 ±2.58
5072.5 ±2.0	640 ±120		8.99 ±1.68
5300.5 ±2.2	1600 ±400		21.98 ±5.49
7347.1 ±3.5	1500 ±400		17.50 ±4.67
8822.2 ±4.6	3600 ±900		38.33 ±9.58

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cd,Cd^{113}		ACA,A25,391(69)-	Bacon
Cd,Cd^{111}	σ_t	AE,27,1117(69)	Vertebnyi
$Cd^{112,114,116}$	σ_t	AE,27,1117(69)	Vertebnyi
Cd	pulsed n	NSE,31,152(68)	Meadows
Cd	local osci.	ZFK-132,18(67)	Fahrmann
$Cd^{111,112}$	activation	ORNL-3994,1(66)	Baldock
Cd^{113}	diffraction	AERE-R-5195(66)	Dale
Cd^{116}	activation	RCA,6,29(66)	Decat
$Cd^{108,109}$	mass separation	ORNL-4013,3(66)	Gillette
Cd^{114}	activation	NSE,26,281(66)	Pearlstein
Cd^{110}	activation	NSE,22,373(65)	Kramer
Cd^{108}	activation	AE,16,145(64)	Bedas
Cd^{108}	activation	PHY,30,124(64)	Boyd
Cd	pulsed n	PRIVATE COMM.(64)	Kay
Cd,Cd^{113}	diffraction	JPR,25,615(64)	Smith
Cd	σ_t pile osci.	NUK,6,245(64)	Sokolovsky
Cd	diffraction	PR,126,2262(62)	Arnold
Cd	mirror reflections	RSI,33,916(62)	Bally
$Cd^{108,110}$	activation	NP,36,542(62)	Mangal
Cd	bragg scattering	JPJ,17,335(62)	Peterson
Cd	diffraction	PR,126,2262(62)-	Peterson
Cd	diffraction	PR,124,1848(61)	Arnold
Cd	reflection	PR,124,1848(61)-	Brockhouse
Cd	pulsed n	NSE,9,132(61)	Meadows
Cd,Cd^{113}	diffraction	PRL,6,7(61)	Peterson
Cd	pile osci.	AERE-R/R-2516(59)	Jowitt
Cd	pile osci.	AERE-R/R-2516(58)	Jowitt
Cd	local osci.	PR,83,643(51)	Pomerance
Cd^{114}	activation	PR,72,888(47)	Seren
Cd	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Cd^{110}	σ_t	89.3-9896	BAP,18,96(73)+	Liou
Cd^{112}	σ_t	66.8-11455	BAP,18,96(73)+	Liou
Cd^{114}	σ_t	56.4-9958	BAP,18,96(73)+	Liou
Cd^{116}	σ_t	29.0-8822	BAP,18,96(73)+	Liou
Cd^{111}	σ_γ	276-2301	PR/C,7,780(73)+	Wasson
Cd	σ_t	27.4-99.8	NP/A,132,129(69)	Julien
Cd	$\bar{\sigma}_s$	102-1401	NP/A,138,556(69)	King
Cd	σ_t	18.34-214.3	68WASH,2,789(68)	Asami
Cd	σ_t	0.01-10.0	NUK,11,297(68)	Widder
Cd	σ_t	0.025-1.0	NSE,28,359(67)	Akyuz
Cd	σ_γ	0.2-215	66PARIS,673(66)	Bollinger
Cd^{110}	$\sigma_t\sigma_\gamma$	89.6-372	66PARIS,93(66)	Shepkin
Cd^{111}	$\sigma_t\sigma_\gamma$	27.5-625	66PARIS,93(66)	Shepkin
Cd^{112}	$\sigma_t\sigma_\gamma$	66.7-1450	66PARIS,93(66)	Shepkin
Cd^{113}	$\sigma_t\sigma_\gamma$	0.178-858	66PARIS,93(66)	Shepkin
Cd^{114}	$\sigma_t\sigma_\gamma$	120-1107	66PARIS,93(66)	Shepkin
Cd^{116}	$\sigma_t\sigma_\gamma$	29.3	66PARIS,93(66)	Shepkin
Cd^{111}	σ_γ	28	ZET,45,875(63)	Ignatiev
Cd	σ_γ	0.2-234	PR,124,1142(61)	Jackson
Cd	σ_γ	83.4-554	BAP,2,42(57)	Desjardins
$Cd^{111,113}$	σ_t	10-165	BAP,1,187(57)	Schwartz
$Cd^{111,113}$	σ_γ	10-233	PR,105,616(57)	Simpson
$Cd, Cd^{108,110}$	σ_t	18-400	PR,102,228(56)	Palmer
$Cd^{111,112}$	σ_t	18-400	PR,102,228(56)	Palmer
Cd	$\sigma_t\bar{\sigma}_s$	0.02-0.4	CJP,31,432(53)	Brockhouse
Cd	$\bar{\sigma}_s$	0.178	PR,72,986(47)	Beeman
Cd	σ_t	0-0.28	PR,71,65(47)	Rainwater
Cd	σ_t	0-0.6	PR,72,109(47)	Sawyer

$_{49}$In

THERMAL CROSS SECTIONS

σ_γ = 193.5±1.5 b
a_{coh} = 3.9±0.1 fm

RESONANCE PROPERTIES

I_γ = 3200.±50. b
S_0 = 0.30±0.04
S_1 = 2.5±0.5

$^{113}_{49}$In

THERMAL CROSS SECTIONS

σ_γ = 11.4±1.1 b
σ_γ = 3.1±0.7 b [42 ms $^{114}In^{m2}$]
σ_γ = 4.4±0.7 b [49 day $^{114}In^{m1}$]
σ_γ = 3.9±0.4 b [72 sec $^{114}In^{g}$]

RESONANCE PROPERTIES

I_γ = 282±30 b
R' = 6.6±0.4 fm
S_0 = 0.85±0.20

RESONANCE PARAMETERS

I^π = 9/2$^+$ %Abn = 4.28 S_n = 7313±10 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1.80±0.03	<0.1		<0.08
4.70±0.03	0.104± 0.016		0.048±0.007
14.6 ±0.1	7.6 ± 0.6	60 ±20	2.1 ±0.2
21.55±0.01	2.8 ± 0.2		0.60 ±0.04
24.99±0.02	9.4 ± 0.2	80 ± 5	1.88 ±0.04
26.78±0.02	0.21 ± 0.05		0.04 ±0.01
32.24±0.02	7.7 ± 0.4	72 ±10	1.36 ±0.07
44.71±0.03	2.2 ± 0.2		0.33 ±0.03
45.38±0.03	1.68 ± 0.02		0.250±0.003
70.29±0.03	7.6 ± 0.2		0.90 ±0.02
91.59±0.05	30 ±10		3.12 ±1.04
93.00±0.05	4.24 ± 0.08		0.44 ±0.008
103.95±0.05	30 ± 2	70 ± 5	3.0 ±0.2
123.45±0.08	12 ± 1		1.08
203.36±0.16	38 ± 2		2.66
228.50±0.19	37.0 ± 9.2		2.44
234.48±0.20	13.0 ± 1.4		0.84
236.06±0.20	7.0 ± 1.8		0.44
241.73±0.21	16.6 ± 1.8		1.08
270.45±0.12	8.8 ± 1.4		0.54
304.26±0.15	12.4 ± 1.4		0.72
313.93±0.15	7.0 ± 1.8		0.40

$^{113}_{49}In$

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
325.83±0.16	11.54 ± 2.32		0.54
441.45±0.25	13.8 ± 1.8		0.66
511.56±0.32	39.2 ± 4.6		1.73
544.78±0.35	83.2 ± 4.6		3.6
555.37±0.36	23.6 ± 2.4		1.0
582.87±0.38	11.1 ± 4.6		4.6
593.02±0.40	41.6 ± 2.4		1.70
625.54±0.43	69.2 ± 4.6		2.78
660.81±0.47	74.0 ± 4.6		2.88
714.59±0.52	92.4 ± 9.2		3.46
769.91±0.59	74.0 ± 4.6		2.68
777.57±0.59	31.8 ± 1.4		1.14
785.35±0.60	40.6 ± 2.4		1.45
809.39±0.63	38.4 ± 2.4		1.34
912.01±0.38	180.2 ±23.2		5.96
1064.6 ±0.48	46.2 ± 4.6		1.42
1230.0 ±0.59	110.8 ± 9.2		3.14
1254.6 ±0.61	120 ±14		3.4
1761.9 ±1.0	124 ±10		2.98
2004.1 ±1.2	414 ±14		9.50

$^{115}_{49}In$

THERMAL CROSS SECTIONS

σ_γ = 202±2 b
σ_γ = 92±14 b [2.12 sec $^{116}In^{m2}$]
σ_γ = 65±5 b [54 min $^{116}In^{m1}$]
σ_γ = 45±4 b [13 sec $^{116}In^{g}$]

RESONANCE PROPERTIES

I_γ = 3300±100 b
R' = 6.6±0.2 fm
<D> = 10.7±0.6 eV
S_0 = 0.26±0.03
S_1 = 2.5±0.5

RESONANCE PARAMETERS

I^π = 9/2$^+$ %Abn = 95.72 S_n = 6780±1 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1.457±0.002	3.34 ± 0.06	5	72 ± 2	2.77 ±0.04
3.86 ±0.01	0.319 ± 0.013	4	81 ± 4	0.162 ±0.007
9.12 ±0.04	1.73 ± 0.17	5	80 ±40	0.57 ±0.06
12.1 ±0.1	0.112 ± 0.008		140 ±60	0.032 ±0.002
23.0 ±0.2	1.18 ± 0.14			0.246 ±0.029
22.73 ±0.01	1.04 ± 0.04		81 ± 5	0.218 ±0.010
39.60 ±0.03	4.0 ± 0.2		76 ± 5	0.635 ±0.030

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
46.36 ±0.04	0.26 ± 0.02			0.038 ±0.003
48.14 ±0.04	0.60 ± 0.10		90 ± 5	0.086 ±0.014
63.00 ±0.03	0.84 ± 0.10		95 ±10	0.106 ±0.011
69.50 ±0.03	0.40 ± 0.10			0.048 ±0.012
73.08 ±0.04	0.012 ± 0.006			0.0014 ±0.0007
80.87 ±0.04	1.50 ± 0.10		70 ±10	0.166 ±0.011
83.28 ±0.04	6.6 ± 0.8		73 ± 5	0.72 ±0.09
86.36 ±0.05	0.052 ± 0.026			0.0056 ±0.0028
94.34 ±0.05	2.9 ± 0.3		90 ±10	0.298 ±0.030
100.83 ±0.05	0.044 ± 0.020			0.0042
110.90 ±0.06	0.048 ± 0.024			0.0046
114.43 ±0.06	0.104 ± 0.010			0.0098
120.71 ±0.07	0.008 ± 0.004			0.00072
125.89 ±0.08	3.8 ± 0.2		65 ±20	0.34
132.81 ±0.08	5.4 ± 1.0		180 ±50	0.46
144.04 ±0.09	0.146 ± 0.020			0.0122
145.76 ±0.09	0.06 ± 0.02			0.0050
150.29 ±0.10	4.6 ± 0.1		85 ±10	0.38
158.59 ±0.11	0.146 ± 0.070			0.0116
164.67 ±0.12	18.0 ± 1.0		82 ±10	1.40
168.08 ±0.12	2.10 ± 0.10			0.162
174.08 ±0.13	0.20 ± 0.08			0.0142
177.92 ±0.13	3.0 ± 0.6		80 ±20	0.22
186.96 ±0.14	20.0 ± 2.0		100 ±20	1.462
192.24 ±0.15	0.0320± 0.0008			0.0023
194.45 ±0.15	0.124 ± 0.060			0.0088
1[illegible]8.83 ±0.15	0.072 ± 0.040			0.0052
20[illegible].60 ±0.16	23.0 ± 6.0			1.604
211.88 ±0.17	0.52 ± 0.10			0.036
214.09 ±0.17	0.176 ± 0.010			0.012
224.03 ±0.18	32 ± 6		60 ±15	2.14
226.81 ±0.19	1.32 ± 0.80			0.088
239.28 ±0.20	0.254 ± 0.120			0.0164
246.74 ±0.21	0.192 ± 0.100			0.0122
250.17 ±0.22	60 ± 4		85 ±10	3.8
266.96 ±0.12	4.0 ± 0.2			0.24
276.77 ±0.12	0.136 ± 0.060			0.0082
282.28 ±0.13	0.186 ± 0.080			0.011
288.88 ±0.13	20 ± 2			1.18
294.33 ±0.14	44 ± 10			2.6
302.52 ±0.14	0.104 ± 0.042			0.006
308.37 ±0.15	0.126 ± 0.060			0.0072
319.49 ±0.16	15.0 ± 1.0			0.84
329.57 ±0.16	0.20 ± 0.10			0.011
336.73 ±0.17	0.20 ± 0.10			0.0112
339.80 ±0.17	1.90 ± 0.10			0.104
345.18 ±0.18	0.03 ± 0.14			0.016
354.13 ±0.18	6.28 ± 2.00			0.334
360.60 ±0.19	0.20 ± 0.10			0.0104
362.10 ±0.19	10.88 ± 0.42			0.572
366.87 ±0.19	0.34 ± 0.16			0.0172
370.94 ±0.20	6.90 ± 0.42			0.358

$^{115}_{49}In$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
379.10 ±0.20	0.628 ± 0.104			0.0322
392.97 ±0.20	1.22 ± 0.60			0.062
384.20 ±0.21	5.86 ± 0.62			0.298
402.35 ±0.22	31.4 ± 6.2			1.57
411.56 ±0.23	31.4 ± 6.2			1.54
423.00 ±0.24	10.46 ± 1.04			0.508
431.21 ±0.25	0.22 ± 0.10			0.0106
437.16 ±0.25	1.04 ± 0.10			0.050
448.90 ±0.26	12.54 ± 2.10			0.592
453.89 ±0.27	21.0 ± 4.2			0.982
456.82 ±0.27	19.2 ± 2.0			0.90
469.65 ±0.28	5.44 ± 0.62			0.250
473.58 ±0.28	0.56 ± 0.20			0.026
477.55 ±0.29	3.14 ± 0.22			0.144
488.01 ±0.29	0.64 ± 0.30			0.030
493.67 ±0.30	0.50 ± 0.20			0.022
498.20 ±0.30	2.92 ± 0.22			0.131
501.88 ±0.31	1.04 ± 0.50			0.046
503.73 ±0.31	25.0 ± 4.2			1.12
506.21 ±0.31	1.08 ± 0.50			0.048
513.15 ±0.32	0.098 ± 0.050			0.0044
515.38 ±0.32	3.34 ± 0.22			0.147
525.46 ±0.33	14.22 ± 2.10			0.620
530.11 ±0.33	0.94 ± 0.10			0.04
547.92 ±0.35	5.44 ± 0.22			0.232
551.10 ±0.35	1.68 ± 0.10			0.072
559.70 ±0.36	0.64 ± 0.30			0.026
562.61 ±0.36	0.94 ± 0.08			0.040
569.62 ±0.37	0.52 ± 0.20			0.022
571.86 ±0.37	35.54 ± 2.10			1.49
580.19 ±0.38	7.94 ± 0.42			3.30
589.09 ±0.39	6.70 ± 0.22			0.276
602.22 ±0.40	2.10 ± 0.42			0.085
609.99 ±0.41	0.84 ± 0.06			0.034
614.13 ±0.42	37.64 ± 2.10			1.52
619.59 ±0.42	16.72 ± 1.04			0.672
643.93 ±0.45	4.80 ± 0.22			0.189
647.07 ±0.45	5.72 ± 0.20			0.146
654.80 ±0.46	9.00 ± 0.20			0.352
674.03 ±0.48	11.28 ± 0.22			0.434
683.23 ±0.49	3.14 ± 0.22			0.12
694.62 ±0.50	4.18 ± 0.22			0.159
699.15 ±0.50	1.22 ± 0.60			0.046
704.75 ±0.51	2.30 ± 0.22			0.0866
707.83 ±0.52	5.86 ± 1.04			0.220
719.85 ±0.53	3.14 ± 0.22			0.117
724.10 ±0.54	1.00 ± 0.50			0.036
727.84 ±0.54	3.34 ± 0.22			0.124
733.25 ±0.54	12.34 ± 0.22			0.456
752.66 ±0.57	2.30 ± 0.22			0.0838
760.06 ±0.58	1.08 ± 0.50			0.0392
774.02 ±0.59	20.90 ± 2.10			0.752

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
783.54 ±0.60	15.88 ± 0.42			0.568
789.58 ±0.61	16.72 ± 1.04			0.596
795.08 ±0.62	5.8 ± 4.0			0.20
800.63 ±0.62	0.90 ± 0.40			0.032
812.55 ±0.63	0.50 ± 0.20			0.018
815.73 ±0.64	3.34 ± 0.62			0.117
819.41 ±0.32	8.36 ± 1.04			0.292
829.79 ±0.33	10.88 ± 0.62			0.378
836.70 ±0.33	17.76 ± 0.62			0.614
853.52 ±0.34	58.54 ± 4.18			2.004
861.08 ±0.35	23.0 ± 4.2			0.784
863.85 ±0.35	18.8 ± 4.2			0.64
869.44 ±0.35	1.58 ± 0.80			0.054
875.09 ±0.35	6.90 ± 0.42			0.234
882.58 ±0.36	0.76 ± 0.40			0.026
891.62 ±0.37	15.88 ± 0.42			0.532
898.96 ±0.37	3.56 ± 0.42			0.119
905.76 ±0.38	0.56 ± 0.30			0.019
913.90 ±0.38	13.8 ± 0.6			0.46
923.43 ±0.38	6.28 ± 1.46			0.206
931.94 ±0.39	2.28 ± 1.0			0.075
943.74 ±0.39	1.10 ± 0.50			0.036
948.12 ±0.40	52.2 ± 0.20			1.70
956.57 ±0.40	31.36 ± 2.10			1.014
973.81 ±0.41	1.24 ± 0.60			0.040
977.99 ±0.42	36.3 ± 2.0			1.17
981.76 ±0.42	2.90 ± 0.42			0.0926
997.97 ±0.43	33.4 ± 2.0			1.06
1007.1 ±0.5	0.82 ± 0.40			0.026
1019.5 ±0.5	0.90 ± 0.40			0.028
1035.7 ±0.5	6.90 ± 1.04			0.214
1043.0 ±0.5	52.2 ± 4.2			1.618
1049.0 ±0.5	5.22 ± 0.62			0.1614
1055.1 ±0.5	10.04 ± 0.50			0.032
1060.3 ±0.5	12.96 ± 0.62			0.398
1075.1 ±0.5	35.6 ± 4.2			1.084
1085.8 ±0.5	33.4 ± 2.0			1.016
1103.7 ±0.5	1.42 ± 0.60			0.042
1111.7 ±0.5	13.18 ± 0.62			0.394
1140.2 ±0.5	19.24 ± 0.84			0.516
1170.3 ±0.6	16.72 ± 2.08			0.488
1179.7 ±0.6	19.24 ± 0.62			0.560
1188.0 ±0.6	3.0 ± 1.0			0.088
1190.8 ±0.6	3.34 ± 0.42			0.0970
1199.3 ±0.6	0.82 ± 0.40			0.024
1213.1 ±0.6	48.0 ± 6.2			1.38
1216.6 ±0.6	10.2 ± 3.0			0.292
1224.2 ±0.6	39.8 ± 4.2			1.14
1237.8 ±0.60	1.50 ± 0.60			0.042
1243.1 ±0.6	20.90 ± 2.10			0.600
1270.0 ±0.6	3.58 ± 1.8			0.1002
1276.8 ±0.6	5.52 ± 2.8			0.154

$^{115}_{49}In$

E_0 (eV)		$2g\Gamma_n$ (meV)		J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1281.2	±0.6	16.52	± 0.62			0.462
1304.7	±0.6	1.82	± 0.80			0.050
1309.3	±0.7	14.22	± 0.62			0.392
1325.0	±0.7	11.50	± 4.18			0.316
1330.9	±0.7	12.96	± 0.84			0.356
1334.3	±0.7	7.94	± 0.62			0.218
1342.3	±0.7	8.16	± 0.62			0.222
1346.0	±0.7	14.2	± 0.6			0.38
1349.8	±0.7	29.2	± 4.2			0.796
1357.9	±0.7	7.32	± 0.62			0.199
1367.6	±0.7	1.62	± 0.80			0.044
1372.4	±0.7	2.84	± 1.40			0.0764
1389.3	±0.7	10.24	± 0.84			0.274
1397.9	±0.7	12.96	± 1.04			0.346
1402.2	±0.7	7.32	± 0.42			0.195
1415.9	±0.7	25.0	± 2.0			0.666
1421.0	±0.7	3.28	± 1.6			0.0872
1430.6	±0.8	8.70	± 0.62			0.230
1441.8	±0.8	2.90	± 0.42			0.0764
1448.6	±0.8	3.14	± 0.62			0.0824
1460.7	±0.8	2.18	± 0.80			0.0570
1468.4	±0.8	29.2	± 4.2			0.764
1480.0	±0.8	6.90	± 0.62			0.179
1484.7	±0.8	0.52	± 0.20			0.0136
1492.6	±0.8	4.32	± 1.4			0.112
1520.6	±0.8	44.0	± 2.0			1.13
1546.1	±0.8	27.2	± 2.0			0.692
1554.4	±0.8	9.52	± 4.14			0.242
1562.9	±0.8	5.0	± 2.0			0.126
1567.1	±0.9	20.90	± 2.10			0.528
1579.9	±0.9	3.0	± 1.0			0.076
1595.5	±0.9	31.4	± 2.0			0.786
1614.0	±0.9	37.6	± 4.2			0.936
1619.3	±0.9	188.2	±21.0			4.68
1640.9	±0.9	46.0	± 2.0			1.14
1646.4	±0.9	2.46	± 1.00			0.0608
1654.7	±0.9	2.4	± 1.0			0.060
1664.9	±0.9	15.68	± 6.2			3.84
1675.1	±0.9	1.6	± 0.6			0.04
1679.8	±0.9	14.2	± 0.4			0.34
1688.4	±1.0	167.2	± 2.0			4.08
1694.1	±1.0	12.0	± 3.0			0.30
1704.6	±1.0	2.12	± 1.0			0.0512
1711.4	±1.0	58.6	± 6.2			1.414
1724.1	±1.0	9.0	± 0.4			0.22
1735.9	±1.0	73.2	±10.4			1.76
1739.9	±1.0	8.8	± 3.0			0.211
1765.0	±1.0	6.2	± 2.4			0.146
1780.3	±1.0	5.2	± 0.4			0.124
1789.6	±1.0	2.0	± 0.8			0.048
1796.9	±1.0	39.72	± 2.08			0.937
1808.4	±1.0	3.8	± 1.4			0.088

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1813.7 ±1.0	2.36 ± 1.00			0.0554
1826.4 ±1.0	3.6 ± 1.6			0.084
1833.9 ±1.1	4.6 ± 1.6			0.108
1843.6 ±1.1	6.4 ± 2.0			0.150
1854.5 ±1.1	54.4 ± 6.2			1.262
1865.5 ±1.1	13.6 ± 1.0			0.32
1878.8 ±1.1	6.6 ± 3.0			0.154
1891.1 ±1.1	129.6 ± 6.2			2.98
1904.7 ±1.1	16.6 ± 4.2			0.38
1918.5 ±1.1	35.6 ± 6.2			0.812
1925.4 ±1.1	2.70 ± 1.2			0.0614
1939.3 ±1.2	18.2 ± 1.0			0.42
1946.4 ±1.2	33.4 ± 2.0			0.758
1959.4 ±1.2	31.4 ± 2.0			0.708
1967.7 ±1.2	16.72 ± 4.18			0.378
1980.9 ±1.2	41.8 ± 6.2			0.94

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
In^{115}	activation	JNE,24,35(70)	Ryves
In^{113}	activation	CJP,47,2031(69)	Ricabarra
In	pile osci.	AE-351(69)	Sokolowski
$In^{113,115}$	activation	NP/A,112,474(68)	Alexander
$In^{113,115}$	activation	BAP,12,544(67)	Clark
In^{115}	isom. ratio	YF,1,250(65)	Balodis
In^{115}	isom. ratio	NP,66,297(65)	Poenitz
In^{115}	isom. ratio	NSE,19,464(64)	Greenfield
In	pile osci.	64PARIS,479(64)	Vidal
In^{115}	activation	ADP,12,225(63)	Alexander
In	diffraction	PR,131,2098(63)	Arnold
In^{115}	activation	NSE,17,329(63)	Beckurts
In	pile osci.	KE,6,336(63)	Huttel
In^{113}	isom. ratio	PR,129,769(63)	Keisch
In^{115}	activation	NKA,8,437(63)	Jozefowicz
In^{115}	isom. ratio	PL,3,40(62)	Fettweis
In	pile osci.	61BUCHAR(61)	Bouzyk
In	pulsed n	NSE,9,132(61)	Meadows
In^{115}	isom. ratio	PR,119,208(60)	Domanic
In	pile osci.	JAERI-1009(60)	Fuketa
In	pile osci.	JNE,12,32(60)	Tattersall
In	diffraction	JAP,30,1323(59)	Sidhu
In^{115}	activation	ZN,13A,820(58)	Meister
In	pile osci.	AERE-R/M-100(57)	Cummins
In^{115}	activation	JNE,5,230(57)	Myasishcheva
In^{115}	activation	IJP,31,630(57)	Sehgal
In	pile osci.	PR,83,641(51)	Pomerance
In^{113}	activation	PR,74,1248(48)	Goldhaber
In^{115}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
In^{113}	σ_γ(spectra)	26.6-2002	PRIVATE COMM.(72)	Coceva
In^{115}	σ_γ(spectra)	1.5-1982	PRIVATE COMM.(72)	Coceva
In^{113}	$\sigma_t\sigma_\gamma$	21-2004	COLUMBIA,THESIS(71)	Hacken
In^{115}	$\sigma_t\sigma_\gamma$	22.7-1981	COLUMBIA,THESIS(71)	Hacken
In	σ_γ	1.46	NUK,12,259(69)	Fleck
In	σ_t	1.4-9.2	AE,16,523(64)	Begzhanov
In^{115}	polarization	1.46	PR,127,1124(62)	Sailor
In	$\bar{\sigma}_a$	1.46	JPR,22,707(61)	Ceulemans
In	polarization	1.46	PRIVATE COMM.(61)	Marshak
In	polarization	1.4-9.2	PR,118,211(60)	Stolovy
In	σ_t	1.4-9.2	PR,109,417(58)	Moore
In	σ_t	9.0-12.9	AE,5,55(56)	Radkevich
In	polarization	1.4	PR,98,1512(55)	Dabbs
In^{113}	σ_t	4.7-105	PR,99,10(55)	Harvey
In^{115}	σ_t	3.8-95	PR,99,10(55)	Harvey
In	σ_t	1.4-3.9	PR,98,1267(55)	Landon
In^{113}	σ_t	1.8-22	PR,87,161(52)	Sailor
In^{115}	σ_t	1.4-24	PR,87,161(52)	Sailor

$_{50}$Sn

THERMAL CROSS SECTIONS

σ_γ = 0.63±0.01 b
a_{coh} = 6.1±0.1 fm

RESONANCE PROPERTIES

I_γ = 8.5±2.0 b
S_0 = 0.18±0.09
S_1 = 2.0±1.5

$^{112}_{50}$Sn

THERMAL CROSS SECTIONS

σ_γ = 0.35±0.08 b [20 min $^{113}Sn^m$]
σ_γ = 0.8±0.1 b [118 day $^{113}Sn^g$]

RESONANCE PROPERTIES

$I_\gamma{}^c$ = 27±5 b
R' = 7.0±0.5 fm
S_0 = 0.5±0.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.96 S_n = 7744±3 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
21.02	0.0039± 0.0012			(110)	0.0009±0.0003
46.38	0.028 ± 0.021			(110)	0.004 ±0.003
64.66	0.44 ± 0.04			(110)	0.055 ±0.006
72.26	0.34 ± 0.05			(110)	0.040 ±0.006
98.8 ±0.2	88 ± 3	1/2	0	110 ±21	8.8 ±0.4
104.7	9.2 ± 1.0				0.90 ±0.4
251.1	2.6 ± 0.4				0.16 ±0.02
514	51 ± 10				2.2 ±0.4
577	24 ± 6				1.0 ±0.3
877	200 ± 50				6.8 ±1.7
1321	700 ±200				19 ±6
1416	120 ± 60				3.2 ±1.6

$^{114}_{50}Sn$

RESONANCE PROPERTIES

I_γ^c = 1.2±0.6 b
R' = 8.6±0.8 fm
S_0 = 0.7±0.3

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.66 S_n = 7534±7 keV

E_0 (eV)	$g\Gamma_n$ (meV)	$g\Gamma_n^0$ (meV)
578 ± 20	8 ± 0.83	0.3
666 ±250	60 ± 9.7	2.0
984 ±460	140 ±15	4.5
1367 ±210	110 ± 6	3
1980 ±900	700 ±20	16

$^{115}_{50}Sn$

THERMAL CROSS SECTIONS

σ_γ = 50±20 b

RESONANCE PROPERTIES

I_γ^c = 23±9 b
S_0 = 0.3±0.2

RESONANCE PARAMETERS

$I^\pi = 1/2^+$ %Abn = 0.35 S_n = 9566±6 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	$2g\Gamma_n^0$ (meV)
292 ±0.5	33 ± 8	1.9±0.5
448	90 ± 30	4.3±1.3
493.7	120 ± 40	5.4±1.6
866	280 ±170	10 ±6

$^{116}_{50}Sn$

THERMAL CROSS SECTIONS

σ_γ = 0.006±0.002 b [14 day $^{117}Sn^m$]
a_{coh} = 5.8±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 11±3 b
R' = 6.2±0.2 fm
S_0 = 0.26±0.05

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 14.3 S_n = 6942.5±2.9 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
111.2± 0.1	68 ± 3	1/2	0	52 ±8	6.45± 0.28	
147.9± 0.1	3.5± 0.2	3/2	1		0.29± 0.02	826
632 ± 2	30 ± 6	3/2	1		1.17± 0.20	910
750 ± 2	4.3± 0.9				0.16± 0.03	
981 ± 2	16 ± 5				0.51± 0.18	
1338 ± 3	300 ± 75				8.2 ± 2.0	
1553 ± 8	2600 ± 300	1/2	0		66 ± 8	
1802 ±10	255 ± 100				6.0 ± 2.0	
3380 ±15	3900 ±1000				67.0 ±17.0	
3460 ±15	1400 ± 500				23.8 ± 3.5	
4640 ±20	4000 ±1000				58.7 ±14.7	

$^{117}_{50}Sn$

THERMAL CROSS SECTIONS

σ_γ = 2.6±1.0 b
a_{coh} = 6.4±0.25 fm

RESONANCE PROPERTIES

I_γ^c = 16±5 b
R' = 6.2±0.2 fm
S_0 = 0.19±0.02

RESONANCE PARAMETERS

$I^\pi = 1/2^+$ %Abn = 7.61 S_n = 9327.3±1.3 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1.32± 0.01	0.0002± 0.0001				.00018± .00009
34.05± 0.05	0.034 ± 0.002				.0058 ± .0004
38.8 ± 0.05	6.2 ± 0.3	1	0	100 ±15	1.00 ±0.05
74.47± 0.2	0.065 ± 0.010				0.0075 ±0.0011
120.4 ± 0.3	12 ± 1	1		65 ±15	1.09 ±0.11
123.7 ± 0.3	4.4 ± 0.4	0		70 ±16	0.40 ±0.04

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
148.0 ± 0.3	0.14 ± 0.06				0.012 ±0.005
166.2 ± 0.4	0.40 ± 0.10				0.031 ±0.008
196.1 ± 0.5	27 ± 3	1	0	122 ±40	1.9 ±0.2
200.8 ± 0.5	0.97 ± 0.14				0.068 ±0.010
221.4 ± 0.6	0.71 ± 0.20				0.048 ±0.013
275.6 ± 0.8	0.34 ± 0.09				0.021 ±0.005
298.7 ± 1.0	0.7 ± 0.2				0.041 ±0.012
342.7 ± 1.0	33 ± 3	0		54 ±26	1.78 ±0.18
360.0 ± 1.0	24 ± 7				1.3 ±0.5
401.0 ± 1.0	8.8 ± 1.0				0.44 ±0.05
421.9 ± 1.0	125 ± 15	1		130 ±60	6.1 ±0.7
460.0 ± 1.0	25 ± 3	0		62 ±29	1.17 ±0.12
527.1 ± 1.0	0.15 ± 0.04				0.0065 ±0.0016
533.0 ± 1.0	3.6 ± 0.8				0.16 ±0.03
557.8 ± 1.0	1.4 ± 0.4				0.0059 ±0.0015
580.8 ± 1.0	60 ± 6	0		50 ±25	2.49 ±0.25
647.9 ± 1.0	4 ± 2				0.16 ±0.08
659.6 ± 1.0	4 ± 2				0.16 ±0.08
687.4 ± 1.0	2.8 ± 1.1				0.11 ±0.04
706.5 ± 1.0	4.6 ± 1.4				0.17 ±0.05
791.3 ± 1.0	10 ± 3				0.36 ±0.11
814.5 ± 2.0	130 ± 12	1		64 ±25	4.56 ±0.42
867.2 ± 2.0	21.0 ± 4.2				0.71 ±0.14
882.3 ± 2.0	5.6 ± 2.0				0.19 ±0.07
941.5 ± 2.0	40 ± 4				1.3 ±0.1
993.0 ± 2.0	400 ± 60				12.7 ±1.9
999.0 ± 2.0	180 ± 30				5.7 ±0.9
1167.0 ± 2.0	24 ± 5				0.7 ±0.2
1193.0 ± 3.0	16 ± 8				0.46 ±0.23
1123.0 ± 3.0	24 ± 12				0.69 ±0.35
1281.0 ± 3.0	26 ± 10				0.72 ±0.28
1318.0 ± 3.0	3.2 ± 1.6				0.008 ±0.004
1361.0 ± 3.0	175 ± 18	1		65 ±20	4.75 ±0.50
1443.0 ± 3.0	8.2 ± 2.5				0.22 ±0.06
1493.0 ± 4.0	148 ± 15				3.83 ±0.38
1552.0 ± 4.0	10 ± 6				0.25 ±0.15
1630.0 ± 4.0	70 ± 21				1.7 ±0.5
1674.0 ± 4.0	100 ± 40				2.4 ±1.0
1754.0 ± 4.0	120 ± 30				2.86 ±0.72
1812.0 ± 5.0	50 ± 30				1.2 ±0.7
1871.0 ± 5.0	80 ± 48				1.9 ±1.1
1903.0 ± 6.0	80 ± 20				1.83 ±0.46
2013.0 ± 6.0	400 ± 80				8.91 ±1.78
2084.0 ± 6.0	450 ± 95				9.8 ±2.0
2160.0 ± 6.0	70 ± 28				1.5 ±0.6
2190.0 ± 6.0	70 ± 28				1.5 ±0.6
2282.0 ± 7.0	100 ± 20				2.09 ±0.42
2320.0 ± 7.0	75 ± 19				1.56 ±0.39
2587.0 ± 8.0	480 ±100				9.43 ±1.89
2978.0 ±10	580 ±145				10.6 ±2.7

$^{118}_{50}Sn$

THERMAL CROSS SECTIONS

σ_γ = 0.016±0.006 b [250 day $^{119}Sn^m$]
a_{coh} = 5.8±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 7±2 b
R' = 6.7±0.4 fm
S_0 = 0.40±0.15

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 24.03 S_n = 6485.0±1.2 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
45.75± 0.15	0.72± 0.04	3/2	1	110 ±10	0.106± 0.005	1150
289.0 ± 1.0	0.50± 0.15				0.029± 0.009	
307.5 ± 1.0	0.80± 0.08				0.046± 0.005	
243.9 ± 2.0	2.3 ± 0.2				0.124± 0.012	
360 ± 2	315 ± 20	1/2	0		16.6 ± 1.1	
772 ± 5	800 ± 80	1/2	0		28.8 ± 2.9	
1584 ± 7	320 ± 50				8.05 ± 1.26	
1710 ± 8	33 ± 12				0.80 ± 0.30	
2976 ±16	1400 ± 200				25.7 ± 3.7	
3460 ±20	1750 ± 300				29.75 ± 5.10	
3960 ±25	1100 ± 500				17.4 ± 7.8	
4725 ±30	6300 ±2000				91.7 ±29.2	

THERMAL CROSS SECTIONS

σ_γ = 2.3±1.0 b
a_{coh} = 6.00±0.25 fm

RESONANCE PROPERTIES

I_γ^c = 3.5±1.0 b
R' = 6.2±0.2 fm
S_0 = 0.08±0.03

RESONANCE PARAMETERS

I^π = 1/2$^+$ %Abn = 8.58 S_n = 9104.4±1.3 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	$2g\Gamma_n^0$ (meV)
6.22	0.0037± 0.002	.00146± .00007
74.76	0.062 ± 0.009	0.0072 ±0.0010
114.8	0.55 ± 0.05	0.051 ±0.005
140.9 ±0.2	5.0 ± 0.7	0.42 ±0.06
145.7	0.58 ± 0.09	0.048 ±0.007
222.6 ±0.4	12.0 ± 0.9	0.80 ±0.06
261.6	2.1 ± 0.2	0.130 ±0.013
283.1	0.88 ± 0.13	0.052 ±0.008
330.0	0.38 ± 0.11	0.021 ±0.006
456 ±1	40 ± 7	1.9 ±0.3
697	50 ±10	1.9 ±0.4
830	110 ±20	3.8 ±0.8
885	11 ± 4	0.37 ±0.15
948	350 ±50	11.4 ±1.6
1150	35 ±14	1.0 ±0.4
1258	80 ±40	2.3 ±1.2

THERMAL CROSS SECTIONS

σ_γ = 0.001±0.001 b [76 yr $^{121}Sn^m$]
σ_γ = 0.14±0.03 b [27 hr $^{121}Sn^g$]
a_{coh} = 6.4±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 1.5±0.5 b
R' = 6.5±0.2 fm
S_0 = 0.08±0.06
S_1 = 1.1±0.4

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 32.85 S_n = 6180.1±2.7 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
67.32	0.035± 0.011			0.004 ±0.001	
150.0	0.045± 0.009			0.0036±0.0007	
365.2	2.5 ± 0.3		1	0.13 ±0.01	175
427 ± 1	11 ± 0.6	1/2	1	0.54 ±0.03	
920 ± 2	22 ± 5	[3/2]	1	0.73 ±0.17	390
952 ± 2	90 ± 10		0	2.9 ±0.3	
1288 ± 3	15 ± 2		1	0.42 ±0.06	190
1424 ± 4	21 ± 6		1	0.56 ±0.16	320
1720 ± 6	155 ± 30		1	3.74 ±0.72	1070
2835 ± 4	32 ± 6		1	0.60 ±0.11	104
3122 ± 5	670 ± 60		0	12.0 ±1.1	
3283 ± 5	2.9 ± 1.5			0.050 ±0.025	
3853 ± 6	95 ± 15		1	1.5 ±0.2	
4250 ±10	35 ± 4		1	0.54 ±0.05	
4327 ±10	26 ± 2		[1]	0.39 ±0.03	
4365 ±10	400 ± 4		1	6.05 ±0.61	685
5030 ±10	75 ± 5		1	1.1 ±0.1	108
5070 ±10	585 ± 60		1	8.2 ±0.8	800
5192	67.73 ± 6.49		1	0.94 ±0.09	
6680	89.09 ± 31.06			1.09 ±0.38	
6826	16.52 ± 9.91		1	0.20 ±0.12	
6981	88.57 ± 35.09			1.06 ±0.42	
7118	47.25 ± 18.56		1	0.56 ±0.22	
7308	466.76 ± 117.12		0	5.46 ±1.37	
7501	102.20 ± 35.51		1	1.18 ±0.41	
8160	853.64 ± 51.49		1	9.45 ±0.57	
8608	115.05 ± 6.49		1	1.24 ±0.07	
8664	68.88 ± 5.58		1	0.74 ±0.06	
8943	7652 ± 114.43		0	80.92 ±1.21	
9117	52.52 ± 3.82		1	0.55 ±0.04	
9543	1710.52 ± 68.38		1	17.51 ±0.70	
10320	268.19 ± 19.30		1	2.64 ±0.19	
10880	646.71 ± 44.85		1	6.20 ±0.43	
11280	832.67 ± 58.41		1	7.84 ±0.55	
11480	303.22 ± 24.64		0	2.83 ±0.23	
11660	150.09 ± 11.88		1	1.39 ±0.11	

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
11790	597.20 ± 35.83		0	5.50 ±0.33	
12350	60.01 ± 7.22		[1]	0.540 ±0.06	
12680	47.29 ± 38.29			0.42 ±0.34	
12870	645.51 ± 51.06		1	5.69 ±0.45	
13050	615.74 ± 48.12		0	5.39 ±0.43	
14260	160.02 ± 10.75		1	1.34 ±0.09	
14730	246.38 ± 16.99		1	2.03 ±0.14	
15620	30.00 ± 12.50			0.24 ±0.10	
16140	5812.23 ± 232.49		1	45.75 ±1.83	
16600	5153.64 ± 206.15		1	40.0 ±1.60	
16710	261.12 ± 25.85		[1]	2.02 ±0.20	
17170	9756.82 ± 292.21		1	74.46 ±2.23	
17310					
17340	429.28 ± 43.45		1	3.26 ±0.33	
17430	113.54 ± 18.48		[1]	0.86 ±0.14	
18020	965.18 ± 67.12		0	7.19 ±0.50	
18230	344.30 ± 35.10		1	2.55 ±0.26	
18320	56.85 ± 17.60			0.42 ±0.13	
19000	1417.00 ± 850.48		0	10.28 ±6.17	
19300	2122.8 ±1273.9		0	15.28 ±9.17	
19700					
20970	5139.31 ± 1[illegible].50		0	35.49 ±1.06	
21410	1738.30 ± 86.33		1	11.88 ±0.59	
21870	2427.90 ± 121.32		1	16.41 ±0.82	
22190	1480.69 ± 119.17		1	9.94 ±0.80	
22670	1166.7 ± 117.4		[1]	7.75 ±0.78	
22720	1053.6 ± 105.5		[1]	6.99 ±0.70	
23030	8739.7 ± 349.0		0	57.59 ±2.30	
23310	7035.3 ± 280.9		1	46.08 ±1.84	
23590	2677.1 ± 133.6		1	17.43 ±0.87	
23660	1775.1 ± 124.6		0	11.54 ±0.81	
24040	2586.2 ± 155.0		1	16.68 ±1.00	
24450	1083.6 ± 107.9		1	6.93 ±0.69	
24820	9499.5 ± 285.2		1	60.29 ±1.81	
25170	3325.3 ± 199.9		1	20.96 ±1.26	
25520	4284.5 ± 170.9		1	26.82 ±1.07	
25990	2237.7 ± 178.9		1	13.88 ±1.11	
26210	7635.0 ± 306.0		0	47.16 ±1.89	
26290	1571.2 ± 157.3		[1]	9.69 ±0.97	
26480	3130.9 ± 187.1		1	19.24 ±1.15	
27130	8558.4 ± 257.0		1	51.96 ±1.56	
27400	3135.1 ± 188.7		1	18.94 ±1.14	
27960	1177.2 ± 140.5			7.04 ±0.84	
28250	7318.1 ± 292.5		1	43.54 ±1.74	
28520	7592.8 ± 304.0		1	44.96 ±1.80	
28610	1343.0 ± 160.7		1	7.94 ±0.95	
29170	4078.5 ± 244.2		1	23.88 ±1.43	
29320	2385.3 ± 190.1		0	13.93 ±1.11	
29660	2660.8 ± 213.6		1	15.45 ±1.24	
30610	3810.6 ± 267.7		0	21.78 ±1.53	
31230	148.45 ± 60.08			0.84 ±0.34	
31710	9297.2 ± 372.2		1	52.21 ±7.09	

$^{120}_{50}Sn$

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
32040	365.15 ± 59.07			2.04 ±0.33	
32070	528.29 ± 84.17		[1]	2.95 ±0.47	
32720	3095.0 ± 200.8		1	17.11 ±1.71	
32760	832.59 ± 99.55		1	4.60 ±0.55	
32800	11517 ± 576		1	63.59 ±3.18	
32960	14747 ± 737		1	81.23 ±4.06	
33100	332.94 ± 83.69			1.83 ±0.46	
33200	508.36 ± 91.10			2.79 ±0.50	
33250	3967.9 ± 397.5		1	21.76 ±2.18	
33420	329.06 ± 65.81			1.80 ±0.36	
33460	1189.0 ± 166.5		[1]	6.50 ±0.91	
35020	149.71 ± 65.50		[0]	0.80 ±0.35	
35060	672.20		[1]	3.59	
35110	1950.6 ± 234.2		[1]	10.41 ±1.25	
35160	658.2 ± 105.0		[1]	3.51 ±0.56	
36060	3619.4 ± 470.9		[1]	19.06 ±2.48	
36470	2293.6 ± 275.0		[1]	12.01 ±1.44	
36500	492.91 ± 99.36			2.58 ±0.52	
37630	853.53 ± 118.33		1	4.40 ±0.61	
37880	1741.9 ± 208.3		1	8.95 ±1.07	
37900	4146.7 ± 208.3		1	21.30 ±1.07	
37940	1753.0 ± 214.3		1	9.0 ±1.1	
38160	2953.6 ± 353.6		1	15.12 ±1.81	
38570	13640 ± 681		1	69.45 ±3.47	
38860	1305.0 ± 183.3		0	6.62 ±0.93	
39250	624.7 ± 99.1		1	3.15 ±0.50	
39270	1797.4 ± 249.7		1	9.07 ±1.26	
40020	2584.7 ± 310.1		1	12.92 ±1.55	
40140	2714.7 ± 244.4		0	13.55 ±1.22	
40820	442.47 ± 107.1			2.19 ±0.53	
40870	3998.8 ± 400.3		1	19.78 ±1.98	
40950	242.83 ± 87.12			1.20 ±0.43	
40990	1060.9 ± 170.1		[1]	5.24 ±0.84	
42470	8684.3 ± 694.5		1	42.14 ±3.37	
42690	2911.2 ± 349.2		1	14.09 ±1.69	
43500	1249.3 ± 200.2		1	5.99 ±0.96	
43750	690.25 ± 138.0			3.30 ±0.66	
43810	6639.3 ± 531.6		1	31.72 ±2.54	
44130	1035.7 ± 176.5		1	4.93 ±0.84	
44580	29855 ±1195		1	141.40 ±5.66	
45500	5383.9 ± 537.5		1	25.24 ±2.52	
45550	7551.0 ± 678.7		1	35.38 ±3.18	
47470	1601.4 ± 224.4		1	7.35 ±1.03	
47560	4241.7 ± 508.1		1	19.45 ±2.33	
47690	7979.6 ±1196.7		0	36.54 ±5.48	
48110	3397.6 ± 476.0		1	15.49 ±2.17	
48370	5271.8 ± 633.4		1	23.97 ±2.88	
48740	291.42 ± 145.71			1.32 ±0.66	
48780	430.68 ± 150.19			1.95 ±0.68	
49320	13929 ± 974.9		[0]	62.72 ±4.39	
49380	1378 ± 193			6.20 ±0.87	
49470	10256 ± 718		1	46.11 ±3.23	

E_0 (eV)	$g\Gamma_n$ (meV)		J	ℓ	$g\Gamma_n^0$ (meV)		$g\Gamma_n^1$ (meV)
50110	3647	± 475		1	16.29	±2.12	
50380	1515	± 258		1	6.75	±1.15	
50420	754	± 150		1	3.36	±0.67	
50460	4533	± 499		1	20.18	±2.22	
50650	4989	± 599		1	22.17	±2.66	
51090	827	± 199		[1]	3.66	±0.88	
51310	5366	± 643		1	23.69	±2.84	
51710	355	± 141		[1]	1.56	±0.62	
51890	10718	± 857		1	47.05	±3.76	
52040	5427	± 543		1	23.78	±2.38	
52140	1121	± 221		[1]	4.87	±0.97	
52680	11313	± 792		1	49.29	±3.45	
53010	1101	± 265		1	4.78	±1.15	
53160	3938	± 786		1	17.08	±3.41	
53450	1209	± 243		1	5.23	±1.05	
53660	3389	± 473		1	14.63	±2.04	
54220	28175	±1118		1	121.0	±4.8	
54410	30650	±1540		0	131.4	±6.6	
54920	1411	± 169			6.02	±0.72	
55090	11834	± 946		1	50.42	±4.03	
55370	3278	± 459		1	13.93	±1.95	
55450	6459	± 645		1	27.43	±2.74	
55600	1247	± 250			5.29	±1.06	
55680	5295	± 583		1	22.44	±2.47	
56540	3593	± 466		1	15.11	±1.96	
56610	12487	± 873		1	52.48	±3.67	
56690	1548				6.50		
56760	5794	± 638		1	24.32	±2.68	
57170	3685			1	15.41		

$^{122}_{50}Sn$

THERMAL CROSS SECTIONS

σ_γ = 0.0010±0.0005 b [40 min $^{123}Sn^m$]
σ_γ = 0.180±0.050 b [125 day $^{123}Sn^g$]
a_{coh} = 5.5±0.3 fm

RESONANCE PROPERTIES

I_γ^c = 0.60±0.18 b
R' = 6.2±0.2 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 4.72 S_n = 5948±3 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	$g\Gamma_n^0$ (meV)
106.9± 0.2	0.77± 0.08	3/2	1	0.075± 0.008
259.9± 0.3	1.75± 0.12	1/2		0.108± 0.008
1756 ± 8	3400 ± 500	1/2	0	81.1 ±11.9
3450 ±25	120 ± 100			2.0 ± 1.6
5400 ±80	5000 ±2000			68 ±44
6865 ±30	19000 ±3000			277 ±44

$^{124}_{50}Sn$

THERMAL CROSS SECTIONS

σ_γ = 0.13±0.03 b [9.7 min $^{125}Sn^m$]
σ_γ = 0.004±0.002 b [9.62 day $^{125}Sn^g$]
a_{coh} = 5.9±0.2 fm

RESONANCE PROPERTIES

I_γ = 6.9±1.0 b
R' = 6.5±0.2 fm
S_0 = 0.15±0.08

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 5.94 S_n = 5732±3 keV

E_0 (eV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
62.0± 0.1	6.3± 0.4	1/2	1	239 ±25	0.80 ± 0.05
579 ± 3	1.5± 0.5				0.062± 0.019
950 ± 2	6 ± 3				0.19 ± 0.10
2380 ± 20	2700 ± 100				55.3 ± 2.1
3390 ± 40	1400 ± 600				24 ±10
5360 ± 40	700 ± 700				9.5 ± 9.5
9970 ±120	7100 ±1500				71.1 ±14.9

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Sn^{126}	activation	70HELSINKI,589(70)	Ricabarra
$Sn^{112,122,124}$	activation	NSE,31,545(68)	Tilbury
Sn^{112}	activation	ORNL-4196,66(67)	Emery
$Sn^{116,117,118,119}$	diffraction	ACR,23,868(67)	Kay
$Sn^{120,122,124}$	diffraction	ACR,23,868(67)	Kay
$Sn^{122,124}$	activation	NP,41,372(63)	Mangal
Sn^{112}	activation	PR,124,1186(61)	Schmorak
$Sn^{115,117,119}$	σ_γ(spectra)	JNE,12,47(60)	Groshev
Sn	pile osci.	JNE,12,32(60)	Tattersall
Sn^{124}	activation	PR,91,1423(53)+	Hughes
Sn	local osci.	PR,83,641(51)	Pomerance
Sn	pile osci.	PPS/A,63,1175(50)	Colmer
Sn	pile osci.	PR,80,342(50)	Harris
Sn^{118}	activation	PR,77,743(50)	Mihelich
$Sn^{112,116,120,122}$	activation	ORNL-828,49(50)	Nelson
Sn^{124}	activation	ORNL-828,49(50)	Nelson
Sn^{124}	activation	BNL-C-9,89(49)	Studier
$Sn^{118,120,122,124}$	activation	PR,72,888(47)	Seren
Sn	absorption	PR,69,411(46)	Coltman
Sn	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Sn^{116}	σ_γ(spectra)	147-632	BAP,17,17(72)	Bhat
Sn^{122}	σ_γ(spectra)	106-260	BAP,17,17(72)	Bhat
Sn^{120}	σ_t	367-57170	PRIVATE COMM.(72)	Harvey
Sn^{120}	$\sigma_t \sigma_\gamma$	67-9587	NP/A,147,205(70)	Muradyan
Sn^{117}	$\sigma_t \sigma_\gamma \bar{\sigma}_s$	1.3-2978	YF,10,18(69)	Adamchuk
Sn	σ_t	38-197	NP/A,132,129(69)	Julien
Sn^{117}	σ_γ(spectra)	38.8	PR,166,1111(68)	Bhat
Sn^{118}	σ_γ(spectra)	46-359	PR,166,1111(68)	Bhat
Sn^{120}	σ_γ(spectra)	427	PR,166,1111(68)	Bhat
Sn^{124}	σ_γ(spectra)	62	PR,166,1111(68)	Bhat
Sn^{116}	σ_t	111-4640	YF,3,801(66)	Adamchuk
Sn^{118}	σ_t	45-4725	YF,3,801(66)	Adamchuk
Sn^{120}	σ_t	364-12070	YF,3,801(66)	Adamchuk
Sn^{122}	σ_t	106-6880	YF,3,801(66)	Adamchuk
Sn^{124}	σ_t	61-9960	YF,3,801(66)	Adamchuk
Sn^{118}	σ_γ(spectra)	45.8	BAP,11,841(66)	Slaughter
Sn^{122}	σ_γ(spectra)	107-260	BAP,11,841(66)	Slaughter
Sn^{124}	σ_γ(spectra)	62	BAP,11,841(66)	Slaughter
Sn^{118}	σ_t	45-7400	65ANTWERP,76(65)	Harvey
Sn^{120}	σ_t	365-1720	65ANTWERP,76(65)	Harvey
Sn^{124}	σ_t	62	65ANTWERP,76(65)	Harvey
Sn^{124}	σ_γ(spectra)	62	CJP,43,2156(65)	McNeill
Sn^{112}	σ_t	21-1416	ORNL-3425,36(63)	Fuketa
Sn^{114}	σ_t	277-1980	ORNL-3425,36(63)	Fuketa
Sn^{115}	σ_t	292-866	ORNL-3425,36(63)	Fuketa
Sn^{116}	σ_t	111-3400	ORNL-3425,36(63)	Fuketa
Sn^{117}	σ_t	1.3-1363	ORNL-3425,36(63)	Fuketa
Sn^{118}	σ_t	45-3450	ORNL-3425,36(63)	Fuketa
Sn^{119}	σ_t	6.2-1258	ORNL-3425,36(63)	Fuketa
Sn^{120}	σ_t	364-1714	ORNL-3425,36(63)	Fuketa
Sn^{122}	σ_t	107-6850	ORNL-3425,36(63)	Fuketa
Sn^{124}	σ_t	61-9680	ORNL-3425,36(63)	Fuketa
Sn^{112}	σ_t	96-280	PR,99,10(56)	Harvey
Sn^{114}	σ_t	280	PR,99,10(56)	Harvey
Sn^{115}	σ_t	290	PR,99,10(56)	Harvey
Sn^{116}	σ_t	112-149	PR,99,10(56)	Harvey
Sn^{117}	σ_t	39-460	PR,99,10(56)	Harvey
Sn^{118}	σ_t	46-368	PR,99,10(56)	Harvey
Sn^{119}	σ_t	141-460	PR,99,10(56)	Harvey
Sn^{120}	σ_t	425	PR,99,10(56)	Harvey
Sn^{124}	σ_t	62	PR,99,10(56)	Harvey

THERMAL CROSS SECTIONS

σ_γ = 5.4±0.6 b
$\bar{\sigma}_s$ = 4.2±0.2 b
σ_t = 9.6±0.6 b
a_{coh} = 5.641±0.012 fm

RESONANCE PROPERTIES

I_γ = 175±10 b
<D> = 7.0±0.5 eV
S_0 = 0.26±0.07
S_1 = 1.5±1.0

UNASSIGNED RESONANCES

E_0 (eV)	$ag\Gamma_n^0$ (meV)	E_0 (eV)	$ag\Gamma_n^0$ (meV)
157.10±0.06	0.004 ±0.001	1467.2 ±0.8	0.01 ±0.01
282.70±0.12	0.002 ±0.001	1533.7 ±0.9	0.01 ±0.01
295.90±0.12	0.020 ±0.003	1541.1 ±0.9	0.01 ±0.01
307.10±0.15	0.006 ±0.002	1550.2 ±0.9	0.01 ±0.01
317.00±0.15	0.005 ±0.002	1581.6 ±0.9	0.01 ±0.01
344.00±0.15	0.005 ±0.001	1601.5 ±1.0	0.02 ±0.01
372.96±0.20	0.010 ±0.002	1653.8 ±1.0	0.02 ±0.01
500.00±0.30	0.004 ±0.001	1662.9 ±1.0	0.02 ±0.01
577.05±0.40	0.006 ±0.002	1681.7 ±1.0	0.02 ±0.01
587.00±0.40	0.008 ±0.002	1687.3 ±1.0	0.02 ±0.01
592.50±0.40	0.005 ±0.002	1708.0 ±1.0	0.02 ±0.01
651.80±0.50	0.002 ±0.001	1723.8 ±1.0	0.20 ±0.04
665.50±0.50	0.004 ±0.001	1733.8 ±1.0	0.20 ±0.02
697.00±0.50	0.005 ±0.001	1752.0 ±1.1	0.01 ±0.01
705.00±0.55	0.003 ±0.001	1766.0 ±1.1	0.01 ±0.01
727.8 ±0.55	0.005 ±0.002	1790.5 ±1.1	0.10 ±0.05
754.5 ±0.60	0.0025±0.0005	1808.2 ±1.2	0.02 ±0.01
762.6 ±0.60	0.005 ±0.001	1811.4 ±1.2	0.02 ±0.02
774.8 ±0.60	0.10 ±0.05	1821.0 ±1.2	0.10 ±0.05
865.20±0.70	0.005 ±0.003	1829.5 ±1.2	0.02 ±0.01
929.50±0.80	0.10 ±0.02	1836.0 ±1.2	0.02 ±0.01
952.0 ±0.8	0.005 ±0.002	1893.0 ±1.2	0.25 ±0.05
983.5 ±0.8	0.002 ±0.001	1938.0 ±1.3	0.02 ±0.02
1032.7 ±0.9	0.003 ±0.001	2010 ±1.4	0.01 ±0.01
1058.0 ±0.9	0.003 ±0.002	2024 ±1.4	0.04 ±0.02
1072.5 ±0.9	0.008 ±0.004	2045 ±1.4	0.01 ±0.01
1128.2 ±1.0	0.010 ±0.005	2053 ±1.4	0.05 ±0.02
1213.0 ±1.2	0.02 ±0.01	2085 ±1.4	0.22 ±0.05
1233.0 ±1.2	0.02 ±0.01	2115 ±1.5	0.28 ±0.05
1265.0 ±1.3	0.01 ±0.01	2190 ±1.5	0.04 ±0.02
1334.3 ±1.3	0.03 ±0.01	2196 ±1.5	0.03 ±0.02
1353.9 ±1.4	0.020 ±0.005	2222 ±1.5	0.30 ±0.10
1397.9 ±0.7	0.025 ±0.005	2250 ±1.5	0.01 ±0.01
1415.2 ±0.7	0.050 ±0.010	2255 ±1.5	0.35 ±0.05
1421.1 ±0.7	0.06 ±0.01	2280 ±1.5	0.03 ±0.02
1438.1 ±0.8	0.25 ±0.10	2325 ±1.6	0.02 ±0.01

$_{51}$Sb

E_0 (eV)		$ag\Gamma_n^0$ (meV)		E_0 (eV)		$ag\Gamma_n^0$ (meV)	
2335	±1.6	0.01	±0.01	2641	±1.9	0.05	±0.02
2346	±1.6	0.02	±0.01	2652	±1.9	0.04	±0.02
2375	±1.6	0.04	±0.02	2658	±1.9	0.05	±0.03
2411	±1.7	0.03	±0.02	2666	±1.9	0.03	±0.03
2419	±1.7	0.01	±0.01	2686	±1.9	0.40	±0.15
2431	±1.7	0.01	±0.01	2716	±2.0	0.17	±0.06
2462	±1.7	0.20	±0.04	2755	±2.0	0.02	±0.02
2473	±1.7	0.03	±0.01	2767	±2.0	0.27	±0.05
2500	±1.8	0.04	±0.02	2802	±2.1	0.03	±0.03
2509	±1.8	0.03	±0.02	2810	±2.1	0.04	±0.02
2533	±1.8	0.17	±0.03	2825	±2.1	0.25	±0.05
2538	±1.8	0.03	±0.02	2850	±2.1	0.37	±0.10
2552	±1.8	0.04	±0.02	2874	±2.1	0.14	±0.05
2560	±1.8	0.18	±0.03	2885	±2.1	0.05	±0.03
2570	±1.8	0.03	±0.02	2915	±2.2	0.80	±0.15
2572	±1.8	0.03	±0.02	2942	±2.2	0.05	±0.03
2586	±1.8	0.05	±0.02	2962	±2.2	0.03	±0.02
2604	±1.9	0.15	±0.03	2974	±2.2	0.20	±0.05
2615	±1.9	0.06	±0.02	2996	±2.2	1.25	±0.20
2627	±1.9	0.12	±0.05				

$^{121}_{51}$Sb

THERMAL CROSS SECTIONS

σ_γ = 0.055±0.010 b [4.1 min ^{122}Sb^m]
σ_γ = 6.2±0.2 b [2.8 day ^{122}Sb^g]

RESONANCE PROPERTIES

I_γ = 200±5 b
$\langle D \rangle$ = 10.3±1.0 eV
S_0 = 0.29±0.05
S_1 = $1.1^{+1.5}_{-0.5}$

RESONANCE PARAMETERS

I^π = 5/2$^+$ %Abn = 57.25 S_n = 6807.3±1.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
6.24±0.03	2.1 ± 0.1	3	88 ± 3	0.84 ±0.04
15.41±0.06	6.9 ± 0.4	2	95 ±10	1.75 ±0.10
29.65±0.05	5.1 ± 0.4	3	85 ±10	0.94 ±0.09
37.77±0.15	0.017± 0.003			0.0028±0.0005
53.55±0.15	2.0 ± 0.2	2		0.27 ±0.03
55.1 ±0.2	0.04 ± 0.01		88 ±15	0.0054±0.0013
64.5 ±0.1	0.65 ± 0.05	3	90 ±10	0.081 ±0.006
73.8 ±0.1	7.5 ± 0.5	2	99 ±10	0.87 ±0.06
89.6 ±0.1	7.0 ± 1.0	[3]		0.74 ±0.11
90.3 ±0.1	4.4 ± 0.7			0.46 ±0.07

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
111.4 ±0.1	2.8 ± 0.3	2		0.27 ±0.03
126.8 ±0.1	27 ± 3	3	85 ±15	2.4 ±0.2
131.9 ±0.1	10.5 ± 1.0	3		0.91 ±0.09
144.3 ±0.1	13 ± 1	2	94 ±15	1.1 ±0.1
149.9 ±0.1	28 ± 1	3	100 ±15	2.29 ±0.08
160.6 ±0.1	1.5 ± 0.3	[2]		0.12 ±0.02
167.1 ±0.1	15 ± 2	2	99 ±30	1.16 ±0.15
176.6 ±0.1	0.08 ± 0.02			0.006 ±0.002
184.7 ±0.1	0.18 ± 0.02			0.013 ±0.02
192.3 ±0.1	1.3 ± 0.2			0.094 ±0.014
214.0 ±0.1	1.4 ± 0.2			0.096 ±0.014
222.6 ±0.1	4.0 ± 0.2	3	143 ±20	0.27 ±0.04
230.6 ±0.1	0.8 ± 0.2			0.053 ±0.013
245.9 ±0.1	0.29 ± 0.05			0.019 ±0.003
248.8 ±0.1	0.28 ± 0.06			0.018 ±0.004
261.6 ±0.2	0.2 ± 0.1			0.012 ±0.006
265.8 ±0.2	0.2 ± 0.1			0.012 ±0.006
270.1 ±0.2	0.3 ± 0.1			0.018 ±0.006
274.9 ±0.2	0.28 ± 0.07			0.017 ±0.004
286.4 ±0.2	11.0 ± 0.7	3	119 ±25	0.65 ±0.04
293.7 ±0.2	0.13 ± 0.05			0.008 ±0.003
309.3 ±0.2	2.6 ± 0.9			0.15 ±0.05
320.5 ±0.2	0.50 ± 0.12			0.028 ±0.007
331.4 ±0.2	2.7 ± 0.4			0.15 ±0.02
338.5 ±0.2	8.3 ± 0.9	[2]		0.45 ±0.05
347.2 ±0.2	0.16 ± 0.05			0.0086±0.0024
355.8 ±0.2	0.24 ± 0.06			0.013 ±0.003
367.1 ±0.2	0.32 ± 0.02			0.017 ±0.004
392.8 ±0.2	20 ± 2			1.0 ±0.2
405.7 ±0.3	1.2 ± 0.2			0.060 ±0.007
414.6 ±0.3	0.06 ± 0.18			0.03 ±0.01
421.4 ±0.3	9.0 ± 1.0	3		0.44 ±0.05
432.6 ±1.2	0.2 ± 0.1			0.0096±0.0048
443.5 ±0.3	42 ±21			2.0 ±1.0
447.6 ±0.3	32 ± 6			1.5 ±0.3
450.2 ±0.3	36 ± 9			1.7 ±0.4
453.8 ±0.3	156 ±21			7.3 ±1.0
463.6 ±1.2	1.9 ± 0.6			0.089 ±0.027
470.1 ±0.3	12.5 ± 1.3			0.58 ±0.06
476.6 ±1.2	0.60 ± 0.15			0.028 ±0.007
481.6 ±0.3	1.5 ± 0.5			0.068 ±0.020
497.0 ±0.3	6.7 ± 0.9			0.30 ±0.04
500.0 ±0.3	0.80 ± 0.33			0.036 ±0.015
507.1 ±0.3	0.47 ± 0.24			0.021 ±0.010
535.1 ±0.4	8.1 ± 0.7			0.35 ±0.03
543.2 ±0.4	102 ± 9			4.4 ±0.4
551.2 ±1.5	0.79 ± 0.39			0.034 ±0.017
558.9 ±0.4	19.4 ± 6.6			0.82 ±0.28
563.5 ±0.4	1.2 ± 0.2			0.05 ±0.01
580.0 ±0.4	0.48 ± 0.14			0.020 ±0.006
599.0 ±0.4	4.9 ± 1.0			0.20 ±0.04
605.6 ±0.5	57 ±10			2.3 ±0.4

$^{121}_{51}Sb$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
613.5 ±0.5	11.9 ± 1.2			0.48 ±0.05
630.8 ±0.4	32.7 ± 2.8			1.30 ±0.11
644.0 ±0.5	0.25 ± 0.15			0.010 ±0.006
661.2 ±0.5	30.3 ± 2.1			1.18 ±0.08
671.1 ±0.5	36 ± 5			1.4 ±0.2
675.8 ±0.5	16 ± 3			0.60 ±0.11
710.5 ±0.6	16.0 ± 1.5			0.60 ±0.06
715.2 ±0.6	1.9 ± 0.8			0.07 ±0.03
718.6 ±0.6	38 ± 3			1.4 ±0.1
735.3 ±0.6	5.4 ± 1.1			0.20 ±0.04
772.3 ±0.6	81 ± 8			2.9 ±0.3
789.7 ±0.6	23 ± 4			0.81 ±0.15
795.2 ±0.6	42 ± 8			1.5 ±0.3
800.2 ±0.7	93 ±14			3.3 ±0.5
803.5 ±0.7	88 ±14			3.1 ±0.5
839.2 ±0.7	24 ± 2			0.83 ±0.08
859.2 ±0.7	11.7 ± 1.5			0.40 ±0.05
889.6 ±0.7	6.9 ± 0.9			0.23 ±0.03
911.5 ±0.7	11.5 ± 3.0			0.38 ±0.10
917.0 ±0.8	115 ±21			3.8 ±0.7
936.2 ±0.8	4.3 ± 1.2			0.14 ±0.04
947.5 ±0.8	46 ± 6			1.5 ±0.2
962.4 ±0.8	40 ± 6			1.3 ±0.2
993.5 ±0.8	120 ±10			3.8 ±0.3
1012.7 ±0.9	27 ± 3			0.84 ±0.09
1036.4 ±0.9	6.5 ± 1.6			0.20 ±0.05
1048 ±4	9.7 ± 1.9			0.30 ±0.06
1084.5 ±1.0	31 ± 3			0.93 ±0.09
1110.9 ±1.0	127 ±18			3.8 ±0.5
1123.5 ±1.0	6.0 ± 1.3			0.18 ±0.04
1145.0 ±1.1	13.1 ± 3.4			0.39 ±0.10
1180.5 ±1.1	96 ±38			2.8 ±1.1
1183.7 ±1.1	110 ±38			3.2 ±1.1
1201.7 ±1.2	64 ± 7			1.85 ±0.20
1220.0 ±1.2	31 ± 3			0.9 ±0.1
1250.0 ±1.2	61 ± 6			1.73 ±0.17
1260.5 ±1.2	12 ± 3			0.32 ±0.07
1307.5 ±1.3	104 ±10			2.88 ±0.29
1329.2 ±1.3	33 ± 4			0.90 ±0.10
1347.2 ±1.3	21 ± 3			0.58 ±0.08
1364.9 ±1.7	119 ± 6			3.22 ±0.17
1436.6 ±0.8	64 ±15			1.7 ±0.4
1451.6 ±0.8	12 ± 3			0.31 ±0.07
1483.5 ±0.8	77 ± 8			2.0 ±0.2
1521.4 ±0.9	11 ± 3			0.28 ±0.07
1529.6 ±0.9	9 ± 3			0.24 ±0.07
1555.0 ±0.9	15 ± 3			0.37 ±0.07
1574.8 ±0.9	11 ± 3			0.28 ±0.07
1595.0 ±0.9	100 ±16			2.5 ±0.4
1640.0 ±1.0	28 ± 6			0.70 ±0.14
1698.8 ±1.0	71 ±11			1.7 ±0.3
1729 ±2	57 ±17			1.4 ±0.4

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1741.0 ±1.0	10 ± 3			0.24 ±0.07
1776.0 ±1.1	90 ±23			2.1 ±0.5
1796.7 ±1.1	170 ±50			4.0 ±1.2
1824.0 ±1.2	180 ±45			4.2 ±1.1
1844.0 ±1.2	35 ± 9			0.81 ±0.20
1903.0 ±1.3	130 ±30			3.0 ±0.7
1917.0 ±1.3	70 ±18			1.6 ±0.4
1978.0 ±1.3	134 ±18			3.0 ±0.4
2000.0 ±1.4	214 ±54			4.8 ±1.2
2035.0 ±1.4	65 ±16			1.4 ±0.4
2107.0 ±1.5	92 ±18			2.0 ±0.4
2124 ±3	59 ±21			1.3 ±0.5
2153.0 ±1.5	110 ±33			2.4 ±0.7
2268.0 ±1.5	48 ±24			1.0 ±0.5
2275 ±3	105 ±42			2.2 ±0.9
2310 ±3	120 ±30			2.5 ±0.6
2366.0 ±1.6	107 ±20			2.2 ±0.4
2394.0 ±1.6	78 ±10			1.6 ±0.2
2436.0 ±1.7	69 ±10			1.4 ±0.2
2526.0 ±1.8	347 ±85			6.9 ±1.7

$^{123}_{51}Sb$

THERMAL CROSS SECTIONS

σ_γ = 0.011±0.0025 b [21 min $^{124}Sb^{m1}$]
σ_γ = 0.035±0.020 b [1.3 min $^{124}Sb^{m2}$]
σ_γ = 4.28±0.16 b [60.2 day $^{124}Sb^{g}$]

RESONANCE PROPERTIES

I_γ = 140±10 b
<D> = 20.7±3.0 eV
S_0 = 0.22±0.07
S_1 = 2^{+2}_{-1}

RESONANCE PARAMETERS

I^π = 7/2$^+$ %Abn = 42.75 S_n = 6466.8±1.4 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
21.4±0.1	30 ± 3	4	100 ±10	6.5 ± 0.7
50.5±0.1	3.0 ± 0.3	3	87 ±20	0.42 ± 0.04
76.7±0.1	5.7 ± 0.4	4	107 ±15	0.65 ± 0.05
105.0±0.1	53 ± 5	3	78 ±15	5.16 ± 0.52
176.4±0.1	0.28± 0.05			0.021± 0.004
186.1±0.1	0.32± 0.06			0.023± 0.004
191.8±0.1	23 ± 3	3	90 ±10	1.66 ± 0.22
197.8±0.1	0.39± 0.03			0.028± 0.002
218.6±0.1	4.1 ± 0.4			0.28 ± 0.03

$^{123}_{51}Sb$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
225.1±0.1	0.28± 0.04			0.019± 0.003
240.6±0.1	18 ± 3	4	122 ±20	1.16 ± 0.19
295.9±0.1	1.6 ± 0.2			0.090± 0.014
299.3±0.2	25.9 ± 2.4	4	120 ±20	1.50 ± 0.14
323.7±0.2	33.6 ± 3.4			1.87 ± 0.19
331.4±0.2	1.1 ± 0.3			0.062± 0.030
339.0±0.2	0.63± 0.21			0.034± 0.011
351.2±0.2	6.4 ± 0.6			0.34 ± 0.03
373.0±0.2	1.4 ± 0.2			0.07 ± 0.01
392.8±0.2	2.3 ± 0.4			0.12 ± 0.02
395.0±0.2	25.8 ± 2.0			1.3 ± 0.1
414.6±0.3	0.63± 0.13			0.031± 0.06
470.9±0.3	4.3 ± 0.4			0.20 ± 0.02
481.6±0.3	11.5 ± 1.2			0.52 ± 0.05
520.0±0.4	0.93± 0.20			0.041± 0.009
533.1±0.4	11.5 ± 1.2			0.50 ± 0.05
571.1±0.4	26 ± 3			1.1 ± 0.1
599.0±0.4	8.8 ± 0.9			0.36 ± 0.04
627.6±0.5	27 ± 3			1.1 ± 0.1
644.0±0.5	1.4 ± 0.4			0.054± 0.016
659.1± .5	18.5 ± 1.9			0.72 ± 0.07
691.5±0.5	3.4 ± 0.9			0.13 ± 0.03
702.6±2.0	0.9 ± 0.5			0.034± 0.017
719.4±2.5	4.4 ± 1.3			0.16 ± 0.05
747.4±0.6	169 ± 27			6.2 ± 1.0
815.5±0.7	29 ± 6			1.0 ± 0.2
839.2±0.7	93 ± 9			3.2 ± 0.3
872.0±0.7	207 ± 30			7.0 ± 1.0
885.2±0.7	85 ± 9			2.85 ± 0.29
893.5±0.7	2.1 ± 0.9			0.07 ± 0.03
910.8±0.7	21 ± 2			0.69 ± 0.07
933.3	19 ± 2			0.62 ± 0.06
968.7±0.8	35 ± 4			1.12 ± 0.11
977.5±0.8	5.0 ± 0.6			0.16 ± 0.02
988.3±0.8	88 ± 8			2.8 ± 0.3
1026.3±0.9	13 ± 3			0.42 ± 0.09
1048.4±1.0	58 ± 6			1.8 ± 0.2
1084.5±1.0	12 ± 4			0.36 ± 0.11
1094 ±4	6 ± 2			0.18 ± 0.06
1110.9±1.0	24 ± 6			0.72 ± 0.18
1117.5±1.0	60 ± 13			1.8 ± 0.4
1165.0±1.1	88 ± 5			2.57 ± 0.14
1228 ±3	6 ± 2			0.17 ± 0.07
1239 ±3	5 ± 2			0.14 ± 0.06
1250.0±1.2	41 ± 8			1.16 ± 0.22
1273.2±1.3	50 ± 7			1.4 ± 0.2
1307.5±1.3	28 ± 4			0.78 ± 0.12
1329.2±1.3	19 ± 6			0.52 ± 0.16
1385.5±0.7	18 ± 2			0.50 ± 0.05
1407 ±3	5 ± 3			0.13 ± 0.07
1458 ±3	8 ± 3			0.2 ± 0.1
1483.5±0.8	170 ± 43			4.4 ± 1.1

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1491.0±0.8	62 ± 19			1.6 ± 0.5
1494.0±0.8	46 ± 19			1.2 ± 0.5
1571 ±4	6.7 ± 1.7			0.17 ± 0.04
1599.8±0.9	20 ± 3			0.55 ± 0.07
1619.5±1.0	116 ± 12			2.87 ± 0.29
1648.2±1.0	41 ± 4			1.0 ± 0.1
1671.5±1.0	6.5 ± 1.2			0.16 ± 0.03
1698.8±1.0	157 ± 16			3.82 ± 0.38
1740 ±3	4 ± 2			0.096± 0.048
1783.0±1.1	80 ± 25			1.9 ± 0.6
1796.7±1.1	270 ± 40			6.3 ± 0.9
1860.0±1.2	120 ± 13			2.8 ± 0.3
1871.0±1.2	160 ± 20			3.7 ± 0.5
1900 ±3	6 ± 3			0.14 ± 0.07
1932.0±1.3	66 ± 9			1.5 ± 0.2
1965.0±1.3	11 ± 5			0.25 ± 0.12
2000.0±1.4	360 ± 36			8.03 ± 0.80
2035.0±1.4	10 ± 6			0.22 ± 0.13
2107.0±1.5	106 ± 14			2.3 ± 0.3
2143 ±3	155 ± 23			3.4 ± 0.5
2148.0±1.5	280 ± 28			6.1 ± 0.6
2172.0±1.5	102 ± 14			2.2 ± 0.3
2204.0±1.5	61 ± 23			1.3 ± 0.5
2237.0±1.5	200 ± 20			4.2 ± 0.4
2274 ±1.5	47 ± 9			1.0 ± 0.2
2315 ±1.6	98 ± 15			2.0 ± 0.3
2357.0±1.6	112 ± 44			2.3 ± 0.9
2384.0±1.6	56 ± 17			1.2 ± 0.3
2444.0±1.6	34 ± 9			0.69 ± 0.17
2479 ±1.7	60 ± 25			1.2 ± 0.2
2665 ±3	50 ± 15			1.0 ± 0.3
2708 ±2	360 ± 72			6.9 ± 1.4
2782	40 ± 12			0.76 ± 0.22
2839	120 ± 30			2.2 ± 0.6
2907	52 ± 16			0.96 ± 0.29
3020	310 ± 78			5.7 ± 1.4
3128	130 ± 33			2.3 ± 0.6
3243	190 ± 76			3.3 ± 1.3
3266	194 ± 78			3.4 ± 1.4
3314	280 ± 42			4.8 ± 0.7
3370	150 ± 75			2.6 ± 1.3
3401	200 ± 80			3.4 ± 1.4
3530	67 ± 20			1.1 ± 0.3
3696	280 ± 84			4.6 ± 1.4
3984	390 ± 195			6.2 ± 3.1
4166	1800 ±1440			28 ±22

$^{124}_{51}Sb$

[60.20 day]

THERMAL CROSS SECTIONS

σ_γ = 6.5±1.5 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Sb	Christiansen filters	ZN,26,391(71)	Koester
$Sb^{121,123}$	activation	JN-1317,53(70)	Hogg
$Sb^{121,123}$	activation	JNE,24,35(70)	Ryves
$Sb^{121,123}$	activation	CJP,47,2031(69)	Ricabarra
Sb	σ_t 0.002-0.4	JNE,22,389(68)	AbuEl-Ela
$Sb^{121,123}$	activation	JIN,30,1353(68)	Orvini
Sb^{123}	activation	JIN,30,349(68)	Sims
$Sb^{123,124}$	activation	CJP,44,2956(66)	Courtemanche
Sb^{121}	isom. ratio	64PARIS,2,703(64)	Gulyas
Sb	diffraction	PR,131,2098(63)	Arnold
Sb^{124}	activation	PR-CM-36,7(63)	Eastwood
Sb^{121}	isom. ratio	PR,129,769(63)	Keisch
$Sb^{121,123}$	isom. ratio	PR,125,1615(62)	Der Mateosian
Sb^{123}	isom. ratio	NP,37,90(62)	Vanhorenbeeck
Sb^{121}	isom. ratio	NSA,20,22052(60)	Kardon
Sb^{121}	activation	NSE,8,378(60)	Lyon
Sb^{121}	activation	NP,12,261(59)	Sehgal
$Sb^{121,123}$	pile osci.	PR,88,412(52)	Pomerance
Sb	pile osci.	PR,83,641(51)	Pomerance
Sb	diffraction	PR,81,527(51)	Shull
Sb	$\bar{\sigma}_s$	PR,83,379(51)	Weiss
Sb	pile osci.	PPS/A,63,1175(50)	Colmer
Sb^{121}	activation	PR,72,888(47)	Seren
Sb	absorption	PR,69,411(46)	Coltman

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Sb	σ_t	6.2-1400	JPJ,33,1185(72)	Ohkubo
Sb^{121}	σ_γ	6.2-421	71KNOX,785(71)	Cauvin
Sb^{123}	σ_γ	21.6-299	71KNOX,785(71)	Cauvin
Sb	σ_γ	6.2-127	PR/C,2,1115(70)	Bhat
Sb	σ_t	6.2	JNE,24,245(70)	Mateiciuc
Sb	σ_t	6.2-249	68WASH,2,789(68)	Asami
Sb^{121}	$\sigma_t\sigma_\gamma$	6.2-2533	YF,8,852(68)	Muradyan
Sb^{123}	$\sigma_t\sigma_\gamma$	21.6-4166	YF,8,852(68)	Muradyan
Sb	σ_t	15.4-2996	PR,166,1234(68)	Wynchank
Sb	σ_t	0.05-21.6	RRP,12,907(67)	Mateiciuc
Sb	σ_t polar.	6.2-15	PR,155,1330(67)	Stolovy
Sb	σ_t	6.2-21	NP,42,676(63)	Bolotin
Sb	σ_γ	6.2-190	PR,124,1142(61)	Jackson
Sb	σ_t	6.2-21.6	PR,108,353(57)	Stolovy
Sb,Sb^{123}	σ_t	6.2-190	PR,102,228(56)	Palmer

THERMAL CROSS SECTIONS

σ_γ = 4.7±0.1 b
a_{coh} = 5.43±0.04 fm

RESONANCE PROPERTIES

I_γ = 54±3 b
<D> = 11.2±3.0 eV
S_0 = 0.28±0.03

UNASSIGNED RESONANCES

E_0 (eV)	$2ag\Gamma_n$ (meV)	$2ag\Gamma_n^0$ (meV)
320.3±0.5	0.10±0.05	0.0056±0.0028
375.0±0.5	0.60±0.30	0.031 ±0.015
391.9±1.0	0.20±0.10	0.010 ±0.005
410.0±0.5	0.23±0.10	0.011 ±0.005
505.2±1.0	1.2 ±0.5	0.053 ±0.022
531.4±1.0	0.40±0.20	0.017 ±0.009
543.0±0.5	0.40±0.20	0.017 ±0.009
548.0±0.5	0.20±0.10	0.0085±0.0043
755.5±0.7	0.30±0.10	0.011 ±0.004
1095.5±1.0	0.70±0.30	0.021 ±0.009
1145.7±1.0	0.50±0.20	0.015 ±0.006
1236.0±1.0	1.0 ±0.5	0.028 ±0.014
1408.4±2.0	1.5 ±0.5	0.040 ±0.013
1475.0±1.5	1.0 ±0.5	0.026 ±0.013
1594.0±1.5	0.66±0.30	0.017 ±0.008
1648.7±2.0	2.0 ±1.0	0.049 ±0.025
1840.7±2.0	8.0 ±3.0	0.19 ±0.07
1952.0±2.0	2.0 ±1.0	0.045 ±0.022
2011.2±2.0	2.0 ±1.0	0.045 ±0.022
2079.0±2.0	2.0 ±1.0	0.44 ±0.022
2447.0±3.0	5.0 ±2.0	0.10 ±0.04
2504.4±3.0	5.0 ±2.0	0.10 ±0.04
2539.6±3.0	5.0 ±2.0	0.10 ±0.04
2547.3±3.0	4.0 ±2.0	0.079 ±0.04
2581.7±3.0	6.0 ±3.0	0.11 ±0.06
2592.5±3.0	4.0 ±2.0	0.079 ±0.04
2668.7±3.0	4.0 ±2.0	0.077 ±0.04

$^{120}_{52}$Te

THERMAL CROSS SECTIONS

σ_γ = 0.340±0.060 b [150 day ^{121}Te^m]
σ_γ = 2.0±0.3 b [17 day ^{121}Te^g]
a_{coh} = 5.2±0.5 fm

$^{122}_{52}Te$

THERMAL CROSS SECTIONS

σ_γ = 2.8±0.9 b
σ_γ = 1.1±0.5 b [117 day $^{123}Te^m$]
σ_γ = 1.7±0.8 b [$^{123}Te^g$]

RESONANCE PROPERTIES

I_γ^c = 80±5 b
<D> = 132±15 eV
S_0 = 0.79±0.2

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 2.46 S_n = 6929.9±2.6 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
72.79± 0.05	393 ± 30	133 ± 10	260 ±27	15.6 ± 1.2
230.9 ± 0.1	125 ± 41	16.2± 0.75	109 ±41	1.06± 0.05
332.6 ± 0.1	434 ± 30	375 ± 20	59 ±36	20.6 ± 1.1
454.5 ± 0.1	232 ± 35	148.5± 5.0	83.5±35.4	6.97± 0.23
612.4 ± 0.2	1260 ± 50	1065 ± 25	195 ±56	43.1 ± 1.0
922.4 ± 0.3	800 ± 60	729 ± 30		24 ± 1
978.8 ± 0.4	450 ±100	275 ± 10		8.79± 0.32
1127.0 ± 0.5	440 ±150	255 ± 125		7.6 ± 0.4
1358.1 ± 0.6	450 ±150	450 ± 20		12.2 ± 0.5
1627.0 ± 0.6		89 ± 16		2.2 ± 0.4
1783.0 ± 0.8	1260 ±340	506 ± 40		12 ± 1
1804.0 ± 1.0	480 ±260	552 ± 42		13 ± 1
1903.0 ± 1.0		150 ± 35		3.5 ± 0.8
2274.0 ± 3.0		540 ± 45		11.3 ± 1.0
2325.0 ± 3.0		250 ± 38		5.19± 0.78
2378.0 ± 1.5	1590 ±330	1330 ± 68		27.3 ± 1.4
2512.0 ± 1.5		400 ± 50		8.0 ± 1.0
2868.0 ± 3.0		780 ± 80		14.6 ± 1.5
2966.2 ± 3.0		595 ± 400		10.9 ± 7.3
3189.3 ± 4.0		1270 ± 300		22.5 ± 2.7
3486.0 ± 4.0		885 ± 110		15.0 ± 1.9
3706.0 ± 4.0		620 ± 250		10.2 ± 4.1
4214.0 ± 4.0		640 ± 250		8.5 ± 3.9
4280.0 ± 4.0		675 ± 250		10.3 ± 3.8
4767.5 ± 5.0		830 ± 140		12 ± 2
4851.2 ± 5.0		1475 ± 200		21.2 ± 2.9
5007.4 ± 6.0		2475 ± 350		35.0 ± 5.0
5477.5 ± 6.0		3815 ± 500		51.5 ± 6.8
5808.0 ± 3.0		1500		19.7
6128 ± 4		1450 ± 400		18.5 ± 5.1
6338 ±10				
6494 ±10				
6533 ±10		2950 ± 500		36.5 ± 6.2
7027 ±10		3750 ± 500		44.8 ± 6.0
7650 ±10				
7870 ±10		16000 ±1100		180.4 ±12.4
8175 ±10				

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
9642 ±10				
9797 ±10		7200 ±1250		72.7 ±12.6
9995 ±10				
10824 ±15				

[1.2×10^{13} yr]

THERMAL CROSS SECTIONS

σ_γ = 406±30 b
a_{coh} = 5.7±0.3 fm

RESONANCE PROPERTIES

I_γ^c = 5630±300 b
R' = 6.0±0.2 fm
<D> = 26.3±3.9 eV
S_0 = 0.98±0.20

RESONANCE PARAMETERS

I^π = 1/2$^+$ %Abn = 0.87 S_n = 9423.8±1.4 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
2.334±0.008	114 ± 3	15.6± 0.9	1	104 ± 3	10.2 ±1.2
24.1 ±0.1	182 ± 20	37 ± 5	0	108 ±18	7.5 ±1.0
35.9 ±0.1	110 ± 10	12 ± 1	1	102 ±10	2.0 ±0.2
73.1 ±0.1	108 ± 20	6.0± 0.2			0.70±0.02
96.8 ±0.1	145 ± 20	14.5± 0.5	0	116 ±20	1.48±0.05
108.8 ±0.2	100 ± 40	5.2± 0.2			0.50±0.02
119.9 ±0.1	100 ± 20	14.9± 0.5			1.37±0.05
132.7 ±0.2	253 ± 25	98 ± 75	1	188 ±25	8.5 ±0.7
158.6 ±0.2	261 ± 30	242 ± 20	1	100 ±20	19.2 ±1.6
182.1 ±0.3	150	20			1.48
235.3 ±0.2	310 ± 30	74 ± 3	0	162 ±30	4.8 ±0.2
274.8 ±0.2	101 ± 35	66 ± 2	1	57 ±35	4.00±0.13
317.5 ±0.2	520 ± 50	153 ± 5	0	214 ±50	8.6 ±0.3
334.6 ±0.2		36 ± 4	1		2.0 ±0.2
341.7 ±0.3	109 ± 50	107 ± 6	1		5.8 ±0.3
363.4 ±0.3	328 ± 50	290 ± 20	1	135 ±50	15.2 ±1.1
374.5 ±0.3	140 ± 70	68 ± 4	1		3.5 ±0.2
409.5 ±0.3		51.8± 5.0	1		2.56±0.25
436.6 ±0.3	450 ±170	72 ± 4	(1)		3.45±0.19
467.6 ±0.3		69 ± 4	1		3.2 ±0.2
493.5 ±0.5		20	0		0.90
498.3 ±0.5		49.7± 5.0	1		2.23±0.22
562.5 ±1.0	300	200			0.84
608.0 ±1.0		300			1.22
616.8 ±0.5	1750 ±200	580 ± 20	0		23.4 ±0.8

$^{123}_{52}Te$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
620.7 ±0.6	300	80 ± 7			3.21±0.29
664.4 ±0.5	180 ±100	180 ± 18	1		7.0 ±0.7
747.1 ±0.6		186 ± 25			6.8 ±0.9
854.7 ±0.7		213 ± 35			7.3 ±1.2
918.0 ±0.8		275 ± 45			9.08±1.49
997.4 ±1.0		340 ±115			10.77±3.64
1062.7 ±1.0		256 ± 35			7.86±1.07
1073.5 ±1.0		400 ±170			12.2 ±5.19
1098.0 ±1.0		230 ±115			6.94±3.47
1111.7 ±1.0		300 ± 45			9.00±1.35
1192.6 ±1.0		115 ± 60			3.33±1.74
1225.8 ±1.0		340 ±170			9.71±4.86
1309.0 ±1.0		220 ± 54			6.1 ±1.5
1437.8 ±0.8		190 ± 75			5.0 ±2.0
1507.9 ±2.0		170 ± 60			4.38±1.55
1727.1 ±1.0		850 ±115			20.5 ±2.8
1813.0 ±1.1		340 ±115			8.0 ±2.7
1998.0 ±2.0		920 ±350			20.6 ±7.8

$^{124}_{52}Te$

THERMAL CROSS SECTIONS

σ_γ = 6.8±1.3 b [$^{125}Te^{g+m}$]
σ_γ = 0.040±0.025 b [58 day $^{125}Te^{m}$]
a_{coh} = 5.5±0.3 fm

RESONANCE PROPERTIES

I_γ^c = 7±2 b
<D> = 147±12 eV
S_0 = 0.68±0.20

RESONANCE PARAMETERS

I^π = 0+ %Abn = 4.61 S_n = 6584.9±2.0 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
347.0± 0.5	200 ±100	0.60± 0.25	199 ±100	0.0322± 0.013
351.6± 0.5	130 ± 60	18.0 ± 0.5	128 ± 60	0.96 ± 0.027
419.1± 0.5	150 ± 60	0.68± 0.50		0.033 ± 0.024
421.5± 0.5	200 ±100	1.2 ± 0.5	199 ±100	0.059 ± 0.024
440.1± 0.5	200 ±100	2.1 ± 0.5	198 ±100	0.100 ± 0.024
446.6± 0.1	200 ±100	0.65± 0.40	199 ±100	0.0307± 0.0190
541.0± 0.5	130 ± 20	94.0 ± 2.5		4.04 ± 0.107
678.5± 0.5	188 ± 30	86 ± 10	102 ± 30	3.3 ± 0.4
692.0± 2.0		4.75± 0.50		0.180 ± 0.019
814.2± 0.5	340 ± 40	237 ± 31	103 ± 45	8.3 ± 1.1
1001.7± 1.0	130 ± 60	34.0 ± 3.5	96 ± 60	1.07 ± 0.11
1028.0± 0.9	160 ± 80	80 ± 15		2.5 ± 0.5

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
1459.0± 1.0	600 ± 60	607.5 ± 12.5		15.04 ± 0.33
1555.0± 1.0	3120 ±100	3470 ± 240		86 ± 6
1682.0± 2.0	± 15.0	7.5		0.366 ± 0.183
1690.0± 1.0	350 ±150	225 ± 20		5.47 ± 0.48
1989.0± 1.0	3720 ±100	3700 ± 150		82.0 ± 3.4
2091.0± 1.3	250 ±100	78 ± 27		1.7 ± 0.6
2348.9± 3.0		43 ± 13		0.88 ± 0.26
2602.0± 2.0	2175 ±300	1630 ± 160		32 ± 3
2663.5± 3.0		41 ± 15		0.79 ± 0.29
2828.0± 3.0	1820 ±300	1380 ± 210		26 ± 4
2918.0± 2.0		290 ± 10		5.4 ± 0.2
3331.0± 3.0		235 ± 35		4.94 ± 0.60
3388.0± 3.0	1470 ±500	720 ± 50		12.38 ± 0.86
3539.0± 3.0		202 ± 50		3.4 ± 0.8
3850.0± 4.0		2790 ± 300		45 ± 5
4017 ± 4		120 ± 50		1.89 ± 0.79
4226.0± 4.0		1756 ± 195		27 ± 3
4468 ± 4		218 ± 50		3.25 ± 0.75
4509.0± 4.0				7.5 ± 1.5
4631.0± 5.0		544 ± 140		8 ± 2
4863.0± 5.0		740 ± 100		10.6 ± 1.4
5047.0± 5.0		155 ± 125		2.18 ± 1.76
5144.0± 5.0		3300 ± 75		46.01 ± 1.05
5588.0± 5.0		2850 ± 150		38.12 ± 2.01
6626.0± 6.0		2190 ± 250		26.91 ± 3.07
6637.0± 6.0		3225 ± 250		39.59 ± 3.07
6695.0± 7.0		925 ± 150		11.30 ± 1.83
6934 ± 7.0		300 ± 120		3.60 ± 1.44
7465 ± 8.0		1650 ± 300		19.10 ± 3.47
7859.0± 8.0		2150 ± 300		24.03 ± 3.38
8753.0		1100 ± 250		11.76 ± 2.67
8972.0± 5.0		480 ± 200		5.18 ± 2.11
9700.0±20		315		3.2
9748.0±15		1450 ± 500		14.65 ± 5.07
9965.0±15		4075 ± 750		40.82 ± 7.52
10035 ±15		315		3.14
10135 ±15		690 ± 250		6.85 ± 2.48
10200 ±15		545 ± 300		5.40 ± 2.97
10245 ±15		610 ± 300		6.03 ± 2.96
10450 ±15		5900 ±1000		57.7 ± 9.8
10680 ±15		640 ± 400		6.20 ± 3.87
10775 ±15		1345 ± 550		12.96 ± 5.30
11000 ±10		1205 ±1000		11.49 ± 9.54
11088 ±10		755 ± 400		7.17 ± 3.80
11250 ±15		2800 ± 650		26.40 ± 6.13
11670 ±15		1830 ± 750		16.94 ± 6.94
11840 ±15		2440 ± 750		22.42 ± 6.90
12353 ±15		2080 ± 600		18.72 ± 5.40
12570 ±15		3150		28.10
12700 ±15		3765 ± 650		33.41 ± 5.77
12860 ±15		2130 ± 650		18.96 ± 5.74
13020 ±20		1050		9.20

$^{124}_{52}Te$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
13220 ±25		1050		9.13
13380 ±20		1325 ± 650		11.46 ± 5.82
13490 ±20		4530 ± 650		39.00 ± 5.60
13574 ±20		5235 ± 600		44.93 ± 5.15
15405 ±20		3600 ± 650		29.01 ± 5.24
15560 ±20		2450 ± 850		19.64 ± 6.82
17450 ±25		8450 ± 850		63.97 ± 6.44
19965 ±25		16000 ±4000		113.25 ±28.31
20330 ±25		4900 ±2500		34.37 ±17.54
20700 ±25		3850 ±2500		26.76 ±17.38
21475 ±25		3150		21.50
21835 ±25		2100		14.21
22810 ±25		11200 ±4000		74.15 ±26.49
23000 ±30		2750 ±2000		18.13 ±13.19
23405 ±30		4900 ±2500		32.03 ±16.34
23790 ±30		11900 ±4000		77.15 ±25.94
23970 ±30		6450 ±2500		41.66 ±16.10
24810 ±30		3600 ±2500		22.86 ±15.87
26475 ±30		22250 ±5000		136.75 ±30.73
28080 ±30		4385 ±2500		26.17 ±14.92

$^{125}_{52}Te$

THERMAL CROSS SECTIONS

σ_γ = 1.55±0.16 b
a_{coh} = 5.6±0.3 fm

RESONANCE PROPERTIES

I_γ^c = 20±4 b
<D> = 38±3 eV
S_0 = 0.49±0.10

RESONANCE PARAMETERS

I^π = 1/2$^+$ %Abn = 6.99 S_n = 9109.3±1.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
26.3± 0.1		1.00± 0.015	1	102 ±20	0.20 ±0.03
90.2± 0.1		0.15			0.016
106.0± 0.1	160 ± 40	0.44± 0.10			0.043±0.01
134.9± 0.2	152 ± 15	27 ± 2		134 ±15	2.33 ±0.17
215.9± 0.2	188 ± 15	63.9 ± 2.2	1	145 ±15	4.35 ±0.15
230.7± 0.2	155 ± 40	25.2 ± 1.0		105 ±40	1.6 ±0.5
262.8± 0.2	240 ± 15	113 ± 4	1	165 ±15	6.98 ±0.26
289.7± 0.2	251 ± 15	190 ± 50	1	125 ±25	11.4 ±2.5
322.0± 0.2	190 ± 20	25.0 ± 1.0		173 ±20	1.39 ±0.06
397.8± 0.2	150 ± 20	33.7 ± 1.0	1	128 ±20	1.69 ±0.05
426.5± 0.4	130 ±100	80.2 ± 5.0			3.88 ±0.24

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
431.7± 0.5	1800 ±200	780 ± 20	0		37.5 ±1.0
517.0± 0.5	160 ± 40	77 ± 7	0		3.4 ±0.3
579.4± 0.5	1160 ± 40	510 ± 50	0	140 ±40	21.2 ±2.1
628.0± 0.5	170 ± 40	37 ± 3	1	145 ±40	1.5 ±0.2
682.5± 0.5	208 ± 30	81 ± 8	1	154 ±30	3.1 ±0.3
700.5± 0.5	243 ± 30	152 ± 5	1	142 ±30	5.75 ±0.19
754.0± 0.6		12 ± 2			0.45 ±0.07
780.9± 0.6	336 ± 30	265 ± 11	1	159 ±30	9.5 ±0.4
801.0± 1.0	200 ±200	6.0 ± 3.0			0.21 ±0.11
816.8± 1.0	200 ±100	20.7 ± 1.0			0.724±0.035
863.8± 1.0	200 ±200	6.0 ± 3.0			0.204±0.102
937.5± 0.5	314 ± 50	160 ± 40	1		5.2 ±1.3
1000.0± 0.9	424 ± 40	210 ± 20	1	284 ±45	6.63 ±0.63
1032.3± 0.9	1300 ±100	450 ± 20	0		14.01 ±0.62
1076.3± 1.0	550 ± 60	381 ± 20	1		11.6 ±0.6
1085.0± 1.5	200 ±200	4.0 ± 2.0			0.12 ±0.06
1128.8± 1.1	626 ± 60	390 ± 20	1		11.61 ±0.60
1165.3± 1.5	150 ±100	21 ± 2			0.62 ±0.06
1188.7± 1.2	214 ± 90	72 ± 2	1	166 ±90	2.09 ±0.06
1220.8± 1.5	200 ±150	16 ± 8			0.46 ±0.23
1249.0± 1.2		258 ± 20	1		7.3 ±0.6
1315.8± 1.3		247 ± 36	1		6.8 ±1.0
1521.4± 0.8		184 ± 40	1		4.71 ±0.51
1543.8± 1.5	200	28 ± 3			0.71 ±0.08
1574.0± 0.9	237 ±170	79.7 ± 5.0			2.01 ±0.13
1643.3± 1.5	520 ±350	47.1 ± 5.0			1.16 ±0.12
1676.8± 2.0	200	22.2 ± 2.5			0.54 ±0.06
1713.7± 1.0	210 ±150	112 ± 8	1		2.71 ±0.19
1748.0± 1.1	1250 ±100	1170 ± 83	1		28.0 ±2.0
1813.5± 1.1		64 ± 13			1.5 ±0.3
1876.0± 3.0	35 ± 20				0.81 ±0.46
1914.3± 1.2		35 ± 13			0.80 ±0.29
1933.0± 1.2		235 ± 10	1		5.35 ±0.23
2026.0± 1.3	700 ±200	351 ±100	0		5.58 ±0.22
2033.8± 2.0		23 ± 10			0.51 ±0.22
2054.0± 2.0	595 ±150	312 ± 20	1		6.9 ±0.4
2059.7± 2.0		16 ± 10			0.35 ±0.22
2119.7± 2.5	400 ±300	36 ± 15			0.78 ±0.33
2155.0± 2.5	400 ±300	31 ± 15			0.67 ±0.32
2205.0± 1.5	600 ±300	80 ± 10			1.7 ±0.2
2274.0± 1.5		650 ±100	1		13.64 ±2.10
2373.0± 1.6	650 ±150	490 ± 50	1		10.07 ±1.03
2395.2± 2.5	200	58 ± 10			1.19 ±0.20
2493.3± 1.7		98 ± 7			1.96 ±0.14
2525 ± 3		326 ± 25	1		6.49 ±0.50
2559.3± 3.0	500	420 ± 10			0.83 ±0.20
2629.8± 1.9		1160 ± 50	0		22.63 ±0.98
2639.0± 1.9	400 ±200	130 ± 20			2.53 ±0.39
2740.0± 2.0	1040 ±250	715 ± 50	1		13.67 ±0.96
2788.0± 2.0		180 ± 20	1		3.41 ±0.37
2849.4± 2.1		860 ±107	1		16.0 ±2.0
2990 ± 3	500	1150 ± 20			2.10 ±0.37

$^{125}_{52}Te$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
3006 ± 4	400	30 ± 15			0.55 ±0.27
3095 ± 4	400	110 ± 50			1.98 ±0.90
3120.0± 2.3		260 ± 30			4.66 ±0.54
3154 ± 4	300	50 ± 20			0.89 ±0.36
3178.7± 4.0	480 ±430	242 ± 20			4.29 ±0.35
3233.0± 4.0	400	50 ± 20			0.88 ±0.35
3300.0± 2.6		741 ± 30	1		12.90 ±0.52
3393.3± 2.7		575 ± 30	1		9.87 ±0.52
3438.0± 2.7		1088 ± 60			18.56 ±1.02
3585.0± 2.0		927 ± 50			15.49 ±0.84
3625.7± 4.0	500	80 ± 40			1.33 ±0.66
3649.0± 4.0	500	120 ± 50			1.99 ±0.83
3695.0± 5.0	500	100 ± 50			1.65 ±0.82
3739.9± 5.0	500	120 ± 50			1.96 ±0.82
3822.0± 3.2		676 ± 40			10.94 ±0.65
3874.4± 5.0	500	100 ± 50			1.61 ±0.80
3986.0± 5.0	500	210 ±100			3.33 ±1.58
4007.0± 3.5	2300 ±500	1090 ± 50			15.6 ±1.5
4053.0± 5.0	740 ±560	425 ± 50			6.68 ±0.79
4085.8± 3.6	1100 ±760	343 ± 40			5.37 ±0.63
4118 ± 5	500	80 ± 40			1.25 ±0.62
4128 ± 5		110 ± 40			1.72 ±0.62
4182.0± 5.0		80 ± 40			1.24 ±0.62
4244.0± 5.0		290 ±100			4.45 ±1.54
4318.0± 5.0		100 ± 50			1.52 ±0.76
4427.0± 5.0		210 ±100			3.16 ±1.50
4595.0± 6.0		345 ± 35			5.09 ±0.52
4689.0± 6.0		200 ± 25			2.92 ±0.37
4798.0± 6.0		80 ± 40			1.15 ±0.58
4850.0± 6.0		570 ± 60			8.18 ±0.86
4969.0± 6.0		2030 ±120			28.80 ±1.70
4982.0± 6.0		1090 ±150			15.44 ±2.13
5211.0± 7.0		1500 ± 80			22.03 ±1.11
5309.0± 7.0		270 ±100			3.71 ±1.37
5432.0± 7.0		315 ±100			4.27 ±1.36
5481.0± 7.0		1250 ± 60			1.69 ±0.81
5536.0± 7.0		270 ±100			3.63 ±1.34
5598.0± 8.0		790 ± 60			10.56 ±0.80
5664.0± 8.0		214 ± 60			2.84 ±0.80
5704.0		312 ± 60			4.13 ±0.79
5759.0		517 ± 80			6.81 ±1.05
5821.0		195 ± 70			2.56 ±0.92
6033.0±10.0		210 ±100			2.70 ±1.29
6188.0±10.0		2190 ±150			27.84 ±1.91
6480.0±10.0		660 ±100			8.20 ±1.24
6511.0±10.0		1120 ±180			13.88 ±2.23
7102.0±10.0		2900 ±200			34.41 ±2.37
7162.0±10.0		250 ±100			2.95 ±1.18
7275.0±10.0		1120 ±150			13.13 ±1.76
7400.0±10.0		350 ±180			4.07 ±2.09
7636.0±10.0		520 ±250			5.95 ±2.86
7748.0±10.0		1100 ±200			12.50 ±2.27

THERMAL CROSS SECTIONS

σ_γ = 0.135±0.23 b [104 day $^{127}Te^m$]
σ_γ = 0.90±0.15 b [9.3 hr $^{127}Te^g$]

RESONANCE PROPERTIES

I_γ^c = 10±2 b
<D> = 210±20 eV
S_0 = 0.30±0.10

RESONANCE PARAMETERS

I^π = 0+ %Abn = 18.71 S_n = 6289±3 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
200.5± 0.1		283 ± 11	0	118 ± 56	20.0 ±0.8
428.0± 0.5	220 ± 30	6.25± 0.50		158 ± 30	0.302±0.024
1081.3± 0.5	200	3.0 ± 1.0		197	0.091±0.025
1293.0± 1.0	200 ±100	7 ± 1		193 ±100	0.194±0.028
1360.3± 0.7	150 ±100	30.5 ± 1.5			0.537±0.040
1448.0± 1.0	150 ±100	13.65± 1.50			0.359±0.039
1538.0± 0.9		17.7 ± 1.2			0.45 ±0.03
1693.3± 1.0		29 ± 4			0.7 ±0.1
1750.0± 1.0	180 ±140	60 ± 3			1.43 ±0.05
2146.5± 2.0					1.5 ±0.3
2521.0± 2.0	3000 ±600	2505 ±100	0		49.9 ±2.0
2938.0± 3.0		1630 ±160			30 ±3
3282.0± 3.0	500 ±300	30.5 ± 5.0		470 ±300	0.503±0.088
3676.0± 4.0	500 ±300	48.5 ± 7.5			0.80 ±0.13
3775.0± 4.0	500 ±300	44.5 ± 7.5		456 ±300	0.72 ±0.12
4557.0± 5.0		740 ± 40			11.0 ±0.56
4662.0± 5.0		158 ± 20			2.3 ±0.3
5102.0± 5.0		156 ± 23			2.2 ±0.3
5318.0± 5.0		280 ± 30			3.8 ±0.4
5474.8± 5.0		1221 ± 33			16.5 ±0.9
5961.1± 6.0		1600 ± 70			20.7 ±0.9
6567.0± 6.0		40 ± 20			0.49 ±0.25
6748.6± 7.0		578.5 ± 40.0			7.04 ±0.49
6830.9± 7.0		187.5 ± 35.0			2.27 ±0.43
7255.9± 7.0		397.5 ± 50.0			4.67 ±0.59
7385.0± 7.0		425 ± 50			4.95 ±0.58
7759.8± 8.0		632 ± 50			7.17 ±0.57
8460.0± 8.0		200 ±100			2.17 ±1.08
8854.0± 9.0		715 ± 80			7.96 ±0.85
9038.0±10.0		495 ± 68			5.20 ±0.70
9623.0±10.0		810 ±200			8.25 ±2.04
9948.0±10		305 ± 75			3.06 ±0.75
10483 ±10		1075 ±225			10.5 ±2.2
10549 ±10		875 ±130			8.52 ±1.27
10592 ±10		890 ±110			8.65 ±1.07
10956 ±11		899 ±110			8.58 ±1.05
11155 ±11		370 ± 60			3.5 ±0.6
11751 ±11		2600 ±140			24.0 ±1.3

$^{126}_{52}Te$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
11911					
12008					
12212					
12479 ±12		4480 ±173			40.1 ±1.5
12724					
12816					
13153					
13458 ±13		4800 ±200			41.38 ±1.72
13585 ±14		1025 ±173			8.80 ±1.48
13867					
13919					
14097					
14468 ±14		2108 ±300			17.52 ±3.00
14537 ±15		1675 ±265			13.9 ±2.2
15165					
15332					
15822					
15894					
16135					
16249					
16590					
16669 ±17		1450 ±193			11.23 ±1.49
17080 ±18		7750 ±350			59.3 ±2.7
17541					
17640					
17750					

THERMAL CROSS SECTIONS

σ_γ = 0.015±0.001 b [34 day $^{129}Te^m$]
σ_γ = 0.1997±0.0080 b [69 min $^{129}Te^g$]

RESONANCE PROPERTIES

I_γ = 1.5±0.1 b
<D> = 262.5±30.0 eV
S_0 = 0.25±0.10

RESONANCE PARAMETERS

I^π = 0^+ %Abn = 31.79 S_n = 6085±3 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
348.1± 0.5	150 ±100	0.30± 0.15			150 ±100	0.016± 0.008
424.0± 0.5	125 ± 10	61.0 ± 2.5	1/2		64 ± 10	2.97 ± 0.12
435.5± 0.5	176 ± 20	18.50± 0.25	1/2	1	157.5± 20.0	0.885± 0.01
941.0± 0.5	200 ± 60	14.7 ± 0.2	1/2	1	185 ± 60	0.48 ± 0.06
1320.5± 0.5		11 ± 4				0.3 ± 0.1
1459.0± 1.0	280 ± 50	115 ± 5			165 ± 50	3.01 ± 0.13
1583.0± 1.0		10.5 ± 1.0				0.264± 0.025
1837 ± 1		600 ± 85				14 ± 2
2971 ± 3		1960 ± 165				36 ± 3
3265 ± 3		95 ± 15				1.67 ± 0.27
3544 ± 3		21 ± 7				0.36 ± 0.12
4080 ± 4	600	25			575	0.39
5330 ± 5		540 ± 50				7.40 ± 0.69
6108 ± 1		213 ± 3				1.38 ± 0.19
7076 ± 7		890 ± 100				5.29 ± 0.60
7936 ± 8		140				0.785
10012 ±10		860 ± 75				8.60 ± 0.75
10355 ±10		100				0.98
10656 ±10		7450 ±1250				72.2 ±12.1
10830 ±11		2000 ± 100				19.22 ± 0.96
11495 ±15		12400 ± 125				11.6 ± 1.16
12098 ±15		300				2.73
12828 ±15		500				4.415
12893 ±15		4975 ± 250				43.82 ± 2.20
12960 ±20		250				2.20
13080 ±20		1358 ± 130				11.87 ± 1.135
14600 ±20		3200 ± 300				26.49 ± 2.9

$^{128}_{52}Te$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
15330 ±20		500				4.04
16340 ±20		700				5.48
17010 ±20		4075 ± 400				31.25 ± 3.07
17520 ±20		2775 ± 300				21.0 ± 2.3
17990 ±25		1690 ± 250				12.6 ± 1.9
18900 ±25		1000				7.28
19420 ±25		3525 ± 375				25.3 ± 2.7
19700 ±25		500				3.6
20220 ±25		500				3.52
21025 ±25		500				3.45
21820		14150 ± 500				9.58 ± 3.39

THERMAL CROSS SECTIONS

σ_γ = 0.02±0.01 b [30 hr $^{131}Te^m$]
σ_γ = 0.270±0.06 b [25 min $^{131}Te^g$]
a_{coh} = 5.7±0.3 fm

RESONANCE PROPERTIES

I_γ = 0.61±0.20 b
<D> = 870±140 eV
S_0 = 0.14±0.05

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 34.48 S_n = 5927±3 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	$g\Gamma_n^0$ (meV)
1140.5± 1.1		9.5± 0.5	0.282±0.020
1713.0± 1.0		42.5± 1.75	1.028±0.042
2235 ± 3	1500	8.0	0.17
3200 ± 3		51 ± 5	0.90 ±0.05
4444 ± 5	1500 ± 500	347.5± 25.0	5.22 ±0.38
5555 ± 5	1650 ±1200	235.0± 20.0	3.16 ±0.27
5785 ±10		12 ± 12	0.158±0.158
7015 ± 8		1558 ± 50	18.60 ±0.60
8047 ±10		908 ± 53	10.12 ±0.59
10020 ±10		7700 ± 200	76.9 ±2.0
13644 ±15		400	3.43
14580 ±15		500	4.14
17843 ±20		700	5.24
18764 ±20		2200 ± 250	16.06 ±1.83
19183 ±20		500	3.61
20960 ±30		1200	8.29
21540 ±30		3200 ± 50	21.80 ±0.34
23350 ±30		5045 ± 550	33.02 ±3.6
24220 ±30		12150 ± 750	78.05 ±4.82
27760 ±30		3000	18.0
29760 ±35		23000 ±1500	133.3 ±8.7
30170 ±35		5010 ±1000	29.36 ±5.76

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Te	Christiansen filters	ZN,26,391(71)	Koester
Te^{128}	activation	NSE,35,88(69)	Maxia
Te^{130}	activation	CJP,46,2473(68)	Ricabarra
Te^{130}	isom. ratio	JIN,28,1(66)	Hanboodiri
Te^{128}	isom. ratio	NP,60,241(64)	Bishop
Te^{126}	isom. ratio	PR,129,769(63)	Keisch
$Te^{126,128,130}$	activation	NP,36,542(62)	Mangal
$Te^{120,130}$	activation	PR,128,761(62)	Sahgal
Te^{120}	activation	BNP,6,70(61)	Esch
$Te^{124,125}$	diffraction	ANN,11,303(61)	Wilkinson
Te	pile osci.	JNE,12,32(60)	Tattersall
Te^{124}	activation	ZET,36,632(59)	Gvozdev
Te	mirror reflections	RSI,27,620(56)	Heindl
$Te^{120,122,123,124}$	pile osci.	PR,88,412(52)	Pomerance
$Te^{125,126,128,130}$	pile osci.	PR,88,412(52)	Pomerance
Te	pile osci.	PR,83,641(51)	Pomerance
Te	pile osci.	PR,80,342(50)	Harris
$Te^{122,124}$	activation	PR,76,333(49)	Hill
$Te^{126,128,130}$	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Te	σ_γ(spectra)	20-1500	BNF,17,556(72)	Mughabghab
Te^{123}	σ_s	24-663	71KNOX,3,785(71)	Cauvin
Te^{125}	σ_s	135-3393	71KNOX,3,785(71)	Cauvin
Te^{122}	σ_t	72-10824	CEA-N-1268(70)	Tellier
Te^{123}	σ_t	24-1998	CEA-N-1268(70)	Tellier
Te^{124}	σ_t	347-28080	CEA-N-1268(70)	Tellier
Te^{125}	σ_t	90-7748	CEA-N-1268(70)	Tellier
Te^{126}	σ_t	200-17750	CEA-N-1268(70)	Tellier
Te^{128}	σ_t	348-21820	CEA-N-1268(70)	Tellier
Te^{130}	σ_t	1140-30170	CEA-N-1268(70)	Tellier
Te	σ_t	320-2669	CEA-N-1268(70)	Tellier
Te	σ_γ(spectra)	2-600	BNP,13,1390(68)	Mughabghab
Te	σ_t	17-4862	PR,166,1234(68)	Wynchank
Te,Te^{128}	$\sigma_t \sigma_\gamma$	2.3-10500	PRIVATE COMM.(64)	Cote
Te^{122}	σ_γ	72-1770	AE,14,264(63)	Danelyan
Te^{123}	σ_γ	2.3-365	AE,14,264(63)	Danelyan
Te^{124}	σ_γ	198-1890	AE,14,264(63)	Danelyan
Te^{125}	σ_γ	25-768	AE,14,264(63)	Danelyan
Te,Te^{128}	$\sigma_t \sigma_\gamma$	2.3-10500	PRIVATE COMM.(63)	Singh
Te^{130}	σ_t	1500-117500	NP,14,387(61)	Bilpuch
Te,Te^{123}	σ_t	24-400	BNP,5,18(60)*	Bolotin
Te	σ_t	23-35	PRIVATE COMM.(56)	Simpson
Te	σ_t	2.3-24	PR,94,790(54)	Foote

125
Sn
(59.7 day)

THERMAL CROSS SECTIONS

σ_γ = 894±90 b

RESONANCE PROPERTIES

I_γ = 13730±2000 b

126
Sn
(13.0 day)

THERMAL CROSS SECTIONS

σ_γ = 5960 b

RESONANCE PROPERTIES

I_γ = 40600 b

127
Sn

THERMAL CROSS SECTIONS

σ_γ = 6.2±0.2 b
R_{coh} = 5.25±0.04 fm

RESONANCE PROPERTIES

I_γ = 147±6 b
$\langle D \rangle$ = 13.0±0.5 eV
S_0 = 0.62±0.09
S_1 = 1.5±1.5

RESONANCE PARAMETERS

I^π = 5/2⁺ ZAbn = 100 S_n = 6825.7±0.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	$2g\Gamma_n^0$ (meV)
10.7				
14.5				
20.5 ±0.1	1.4± 0.1	3		0.31 ±0.02
31.3 ±0.1	19 ± 3	2		3.4 ±0.4
37.8 ±0.1	45 ± 5	2		7.4 ±0.8
45.5 ±0.2	23 ± 4	2		3.4 ±0.6
66.1 ±0.2	2.4± 0.3	2		0.30 ±0.04
78.5 ±0.3	35 ± 4	2		4.0 ±0.4
90.3 ±0.3	27 ± 3	3		2.8 ±0.3
139.6 ±0.4	65 ± 4	3	0	5.5 ±0.3
145.70±0.10				0.012±0.0017
*153.61±0.11				0.015±0.002
168.5 ±0.2	117 ±13		0	9 ±1

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	$2g\Gamma_n^0$ (meV)
173.80±0.13		3		0.20 ±0.02
*178.03±0.13		[illegible]		0.07 ±0.01
195.3 ±0.3	105 ± 7	2	0	7.5 ±0.5
206.10±0.16		3	0	2.40 ±0.20
237.05±0.20		3	0	2.60 ±0.20
244.64±0.21				0.70 ±0.10
264.95±0.24			0	2.20 ±0.20
270.97±0.25				0.40 ±0.10
274.50±0.25				0.02 ±0.01
291.96±0.28				0.03 ±0.01
299.21±0.29				0.70 ±0.10
310.60±0.15				1.00 ±0.10
324.37±0.16				0.02 ±0.005
325.34±0.16				0.028±0.005
328.70±0.17				0.14 ±0.02
362.20±0.19				0.30 ±0.02
374.50±0.20			0	6.40 ±0.20
385.83±0.21			0	10.70 ±0.70
392.70±0.22				0.02 ±0.02
420.00±0.24				1.14 ±0.10
426.93±0.25			0	5.10 ±0.40
434.78±0.25			0	2.10 ±0.20
*439.81±0.26				0.02 ±0.02
448.29±0.26			0	2.20 ±0.20
454.61±0.27				0.05 ±0.01
475.82±0.29				0.40 ±0.04
480.12±0.29				0.56 ±0.04
499.16±0.31				1.70 ±0.30
515.47±0.33				1.70 ±0.20
518.25±0.33				1.60 ±0.20
532.93±0.34				3.30 ±0.20
550.24±0.36				0.05 ±0.02
565.80±0.37				5.60 ±0.60
569.14±0.38				0.80 ±0.15
583.96±0.39				0.10 ±0.02
588.64±0.40				0.02 ±0.01
619.20±0.43				2.30 ±0.10
623.88±0.43				0.02 ±0.01
632.00±0.44				1.36 ±0.04
644.48±0.45				0.36 ±0.08
658.64±0.47				0.20 ±0.04
668.97±0.48				1.68 ±0.08
689.38±0.50				0.04 ±0.02
701.98±0.52				3.70 ±0.20
708.50±0.52				11.00 ±2.00
730.93±0.55				3.50 ±0.20
736.39±0.56				0.02 ±0.02
744.13±0.56				5.80 ±0.40
757.69±0.58				0.03 ±0.01
762.30±0.58				6.40 ±0.40
779.34±0.60				0.26 ±0.06
790.20±0.62				0.64 ±0.10

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	$2g\Gamma_n^0$ (meV)
805.00±0.63				0.02 ±0.02
813.00±0.64				2.40 ±0.50
828.11±0.66				0.36 ±0.06
833.37±0.67				5.20 ±0.40
*839.35±0.68				0.02 ±0.02
861.83±0.70				0.34 ±0.04
866.71±0.71				0.04 ±0.01
889.58±0.74				0.50 ±0.10
901.35±0.75				0.75 ±0.10
914.87±0.77				0.74 ±0.06
927.15±0.78				0.04 ±0.01
942.86±0.80				1.40 ±0.10
954.89±0.82				4.50 ±0.40
960.59±0.83				0.86 ±0.10
987.30±0.86				0.04 ±0.01
1006.30±0.89				4.80 ±0.60
1025.50±0.92				0.50 ±0.08
1067.00±0.97				0.06 ±0.03
1069.50±0.97				0.09 ±0.04
1078.30±0.98				9.00 ±1.00
1088.[illegible]0±1.00				0.04 ±0.01
1095.10±1.01				0.80 ±0.10
1115.20±1.03				4.40 ±0.60
1156.20±1.09				0.10 ±0.03
*1165.30±1.10				0.02 ±0.02
*1169.00±1.11				0.02 ±0.02
1172.50±1.12				1.20 ±0.10
1183.50±1.13				0.04 ±0.02
1195.90±1.15				0.02 ±0.02
1202.1 ±1.2				2.20 ±0.20
1213.7 ±1.2				2.90 ±0.40
1221.9 ±1.2				0.02 ±0.02
1227.1 ±1.2				0.40 ±0.05
1234.2 ±1.2				0.10 ±0.02
*1239.6 ±1.2				0.02 ±0.02
*1248.0 ±1.2				0.06 ±0.02
*1252.9 ±1.2				0.02 ±0.02
1256.6 ±1.2				0.62 ±0.10
*1262.7 ±1.2				0.02 ±0.02
1268.2 ±1.3				0.28 ±0.04
1278.2 ±1.3				0.52 ±0.08
1283.3 ±1.3				0.04 ±0.02
1287.7 ±1.3				0.06 ±0.02
1309.6 ±1.3				0.02 ±0.02
1314.8 ±1.3				0.16 ±0.05
1326.6 ±1.3				3.40 ±0.60
1346.1 ±1.4				0.05 ±0.02
1352.2 ±1.4				2.30 ±0.20
1364.6 ±1.4				0.65 ±0.10
1367.4 ±1.4				1.05 ±0.15
1377.1 ±1.4				0.56 ±0.15
1404.2 ±1.5				0.03 ±0.03

$^{127}_{53}$I

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	$2g\Gamma_n^0$ (meV)
1410.7 ±1.5				3.50 ±0.50
1420.2 ±1.5				3.20 ±0.40
1435.8 ±1.5				0.44 ±0.05
1479.3 ±1.6				0.08 ±0.04
1490.3 ±1.6				0.03 ±0.02
1515.1 ±1.6				4.80 ±0.40
1535.6 ±1.7				0.02 ±0.02
1548.9 ±1.7				6.60 ±1.00
1558.1 ±1.7				0.18 ±0.08
1574.3 ±1.7				1.80 ±0.40
1578.6 ±1.7				0.30 ±0.20
1582.0 ±1.7				0.82 ±0.15
1600.3 ±1.8				0.26 ±0.05
1605.6 ±1.8				0.08 ±0.04
1617.2 ±1.8				1.60 ±0.20
1630.6 ±1.8				0.04 ±0.02
1642.5 ±1.8				2.50 ±0.30
1660.9 ±1.9				1.90 ±0.10
1675.9 ±1.9				0.40 ±0.05
1714.2 ±2.0				0.03 ±0.03
1723.0 ±2.0				0.15 ±0.05
*1728.9 ±2.0				0.03 ±0.03
1741.8 ±2.0				4.20 ±0.60
1768.0 ±2.1				1.30 ±0.16
1787.6 ±2.1				1.36 ±0.20
1795.9 ±2.1				0.38 ±0.08
1813.8 ±2.1				0.04 ±0.02
1825.6 ±2.2				3.40 ±0.60
1860.0 ±2.2				0.20 ±0.10
1865.0 ±2.2				5.60 ±0.60
1882.0 ±2.3				0.20 ±0.05
1895.0 ±2.3				0.34 ±0.10
1899.0 ±2.3				0.20 ±0.05
1912.0 ±2.3				0.85 ±0.10
1923.0 ±2.3				1.36 ±0.20
1940.0 ±2.4				0.88 ±0.06
1954.0 ±2.4				1.40 ±0.20
1965.0 ±2.4				0.46 ±0.10
1972.0 ±2.4				2.20 ±0.30
988.5 ±2.5				0.92 ±0.06
1997.0 ±2.5				4.50 ±0.50
2007.0 ±1.0				0.12 ±0.04
2015.0 ±1.0				7.00 ±0.50
2027.0 ±1.0				0.04 ±0.02
2042.0 ±1.0				0.02 ±0.02
2053.0 ±1.0				2.00 ±0.20
2068.0 ±1.0				0.04 ±0.02
2079.0 ±1.0				1.80 ±0.20
2092.0 ±1.0				4.20 ±0.40
2109.0 ±1.0				0.30 ±0.10
2121.0 ±1.0				0.58 ±0.12
*2133.0 ±1.0				0.02 ±0.02

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	$2g\Gamma_n^0$ (meV)
2145.0 ±1.0				2.10 ±0.10
2188.0 ±1.0				7.00 ±0.50
2199.0 ±1.0				0.80 ±0.20
2204.0 ±1.0				0.80 ±0.20
2212.0 ±1.0				0.40 ±0.10
2231.0 ±1.0				0.42 ±0.10
2237.0 ±1.0				0.36 ±0.10
2245.0 ±1.0				0.70 ±0.10
2278.0 ±2.0				4.60 ±0.60
2285.0 ±2.0				1.30 ±0.50
2290.0 ±2.0				1.00 ±0.20
2303.0 ±2.0				0.12 ±0.05
2317.0 ±2.0				0.10 ±0.05
2336.0 ±2.0				0.70 ±0.10
2349.0 ±2.0				1.50 ±0.20
2363.0 ±2.0				0.70 ±0.10
2377.0 ±2.0				0.08 ±0.02
2389.0 ±2.0				3.20 ±0.20
2407.0 ±2.0				2.90 ±0.20
2423.0 ±2.0				5.00 ±0.40
2434.0 ±2.0				0.08 ±0.02
2446.0 ±2.0				0.70 ±0.10
2468.0 ±2.0				1.00 ±0.22
2475.0 ±2.0				1.50 ±0.50
2486.0 ±2.0				0.10 ±0.05
2495.0 ±2.0				0.20 ±0.05
2508.0 ±2.0				0.20 ±0.05
2517.0 ±2.0				0.10 ±0.05
2530.0 ±2.0				1.40 ±0.40
2538.0 ±2.0				1.40 ±0.40
2549.0 ±2.0				1.40 ±0.40
2566.0 ±2.0				0.56 ±0.15
2583.0 ±2.0				0.08 ±0.02
2600.0 ±2.0				1.50 ±0.40
2614.0 ±2.0				0.05 ±0.02
2632.0 ±2.0				0.07 ±0.02
*2643.0 ±2.0				0.03 ±0.03
2655.0 ±2.0				1.50 ±0.40
2664.0 ±2.0				0.10 ±0.10
2671.0 ±2.0				0.18 ±0.10
2685.0 ±2.0				0.02 ±0.02
2693.0 ±2.0				1.04 ±0.08
2717.0 ±2.0				0.04 ±0.02
2730.0 ±2.0				1.50 ±0.50
2734.0 ±2.0				0.80 ±0.20
2753.0 ±2.0				1.50 ±0.20
2765.0 ±2.0				0.40 ±0.10
2773.0 ±2.0				0.80 ±0.20
2791.0 ±2.0				6.20 ±0.60
2806.0 ±2.0				0.16 ±0.06
*2813.0 ±2.0				0.02 ±0.02
2825.0 ±2.0				2.20 ±0.40

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	$2g\Gamma_n^0$ (meV)
2846.0 ±2.0				1.00 ±0.20
2859.0 ±2.0				0.36 ±0.10
2869.0 ±2.0				0.03 ±0.03
2893.0 ±2.0				15.00 ±5.00
2908.0 ±2.0				0.30 ±0.10
2919.0 ±2.0				0.30 ±0.10
2925.0 ±2.0				0.05 ±0.05
2930.0 ±2.0				0.05 ±0.05
2943.0 ±2.0				6.40 ±0.60
2967.0 ±2.0				0.60 ±0.10
2988.0 ±2.0				0.65 ±0.15
3002.0 ±2.0				0.70 ±0.05
3035.0 ±2.0				0.15 ±0.05
3053.0 ±2.0				0.65 ±0.20
3071.0 ±2.0				0.35 ±0.10
3090.0 ±2.0				2.00 ±0.40
3109.0 ±2.0				0.15 ±0.05
3128.0 ±2.0				2.50 ±0.50
3143.0 ±2.0				1.50 ±0.40
3162.0 ±2.0				0.06 ±0.06
3172.0 ±2.0				3.00 ±0.50
3190.0 ±3.0				0.15 ±0.05
3197.0 ±3.0				0.20 ±0.10
3204.0 ±3.0				0.20 ±0.10
3234.0 ±3.0				1.00 ±0.20
3244.0 ±3.0				0.75 ±0.20
3267.0 ±3.0				7.00 ±1.50
3296.0 ±3.0				2.50 ±0.50
3335.0 ±3.0				0.15 ±0.05
3348.0 ±3.0				4.00 ±0.80
3364.0 ±3.0				1.00 ±0.30
3375.0 ±3.0				0.40 ±0.10
3391.0 ±3.0				0.40 ±0.10
3405.0 ±3.0				0.10 ±0.05
3416.0 ±3.0				0.14 ±0.05
3432.0 ±3.0				2.00 ±0.40
3443.0 ±3.0				1.00 ±0.30
3468.0 ±3.0				3.00 ±0.50
3480.0 ±3.0				0.90 ±0.20
3497.0 ±3.0				1.00 ±0.30
3522.0 ±3.0				2.60 ±0.60
3534.0 ±3.0				0.08 ±0.05
3557.0 ±3.0				2.00 ±0.40
3569.0 ±3.0				1.60 ±0.40
3595.0 ±3.0				0.60 ±0.20
3613.0 ±3.0				1.70 ±0.40
3634.0 ±3.0				1.60 ±0.40
3658.0 ±3.0				5.00 ±1.00
3680.0 ±3.0				2.00 ±0.40
3701.0 ±3.0				2.00 ±0.40
3713.0 ±3.0				0.70 ±0.15
3726.0 ±3.0				0.10 ±0.05

127
53

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	$2g\Gamma_n^0$ (meV)
3732.0 ±3.0				0.05 ±0.05
3742.0 ±3.0				0.10 ±0.05
3754.0 ±3.0				0.80 ±0.30
3764.0 ±3.0				0.05 ±0.05
3786.0 ±3.0				0.20 ±0.10
3812.0 ±3.0				5.00 ±1.00
3821.0 ±3.0				0.15 ±0.05
3838.0 ±3.0				0.10 ±0.10
3844.0 ±3.0				2.50 ±0.50
3861.0 ±3.0				13.00 ±4.00
3874.0 ±3.0				0.05 ±0.05
3890.0 ±3.0				3.00 ±0.50
3914.0 ±3.0				11.00 ±3.00
3924.0 ±3.0				1.50 ±0.50
3937.0 ±3.0				0.15 ±0.05
3948.0 ±3.0				4.00 ±1.00
3972.0 ±3.0				0.04 ±0.04
4003.0 ±4.0				18.00 ±5.00

* Resonances most probably p-wave or spurious

129
53
[1.59×10^7 yr]

THERMAL CROSS SECTIONS

σ_γ = 18±2 b [9 min $^{130}I^m$]
σ_γ = 9±1 b [12.4 hr $^{130}I^g$]
σ_γ = 27±3 b

RESONANCE PROPERTIES

I_γ = 36±4 b

RESONANCE PARAMETERS

$I^\pi = 7/2^+$ S_n = 6456±12 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	$2g\Gamma_n^0$ (meV)
72.4±0.5	13 ± 3	1.5 ±0.3
97.0±0.7	1.1± 0.5	0.11±0.05
129 ±1	3.4± 1.1	0.3 ±0.1
148 ±1	67 ±25	5.5 ±2.0
153 ±2	20 ± 7	1.5 ±0.5

130
53
[12.4 hr]

THERMAL CROSS SECTIONS

σ_γ = 18±3 b

$^{131}_{53}I$

[8.041 day]

THERMAL CROSS SECTIONS

$\sigma_\gamma \sim 0.7$ b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
I^{127}	diffraction	ACR,A28,663(72)	Atoji
I^{126}	activation	PRIVATE COMM.(71)	Elgart
I^{127}	activation	AKE,15,83(70)	Breitenhuber
I^{127}	activation	JNE,24,35(70)	Ryves
I^{127}	activation	CJP,46,2473(68)	Ricabarra
I^{127}	activation	DA,27B,919(66)	Kappe
I^{129}	activation	JCP,44,970(66)	Wilkey
I^{125}	activation	JIN,27,1727(65)	Narang
I^{127}	activation	NP,71,417(65)	Robertson
I^{127}	activation	AE,19,1210(65)	Stavisskii
I^{125}	activation	JIN,26,1625(64)	Bresesti
I^{131}	activation	ORNL-3468,15(63)	Halperin
I^{127}	activation	NKA,8,437(63)	Jozefowicz
I^{129}	σ_t	NSE,17,371(63)	Pattenden
I^{125}	activation	ACRH-15,92(61)	Harper
I^{127}	pulsed n	NSE,9,132(61)	Meadows
I^{129}	σ_t	NSE,8,112(60)	Block
I^{127}	pile osci.	JNE,12,32(60)	Tattersall
$I^{129,130}$	activation	PIC-2,16,54(58)	Eastwood
I^{127}	activation	PR,86,937(58)	Grimeland
I^{131}	mass analys.	JIN,5,253(58)	Kennett
$I^{129,130}$	activation	CJC,36,1424(58)	Roy
I^{129}	activation	CJC,34,293(56)	Purkayastha
I^{127}	local osci.	PR,83,641(51)	Pomerance
I^{127}	diffraction	PR,81,527(51)	Shull
I^{127}	pile osci.	PPS/A,63,1175(50)	Colmer
I^{127}	pile osci.	PR,80,342(50)	Harris
I^{130}	activation	BNL-C-9,70(49)	Yaffe

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
I^{127}	multiplicity	20-240	71KNOX,785(71)	Cauvin
I^{127}	σ_γ(spectra)	0-50	PR-P-84,62(69)	Lone
I^{127}	σ_t	168-4003	PR/B,137,547(65)	Garg
I^{127}	σ_t	20.5-169	NSE,17,371(63)	Pattenden
I^{129}	σ_t	72-153	NSE,17,371(63)	Pattenden
I^{127}	σ_γ(SI)	20-154	BAP,5,294(61)	Desjardins
I^{127}	σ_t	10.4	PR,123,629(61)	DuToit
I^{129}	σ_t	72-154	ORNL-2610,22(58)	Block
I^{129}	σ_t	72-154	58GENEVA,16,150(58)	Harvey
I^{127}	σ_t	20-195	ORNL-2501,26(58)	Slaughter
I^{127}	σ_t	20-92	AE,1,55(56)	Radkevich
I^{127}	σ_t	20-92	PR,95,476(54)	Seidl

$_{54}$Xe

THERMAL CROSS SECTIONS

σ_γ = 24.5±1.0 b
$\bar{\sigma}_s$ = 4.30±0.02 b
a_{coh} = 4.87±0.10 fm

UNASSIGNED RESONANCES

E_0 (eV)	Γ (meV)	$2ag\Gamma_n$ (meV)	Γ_γ (meV)	$2ag\Gamma_n^0$ (meV)
9.88	128 ± 64	0.074± 0.013	127 ±64	0.024 ±0.004
86.56				0.024
100.17	280 ± 196	0.24 ± 0.10		0.024 ±0.010
249.50				0.02
336.80		0.60 ± 0.30		0.0327±0.016
339.00		0.50 ± 0.25		0.0272±0.013
474.90		0.55 ± 0.39		0.0252±0.0176
515.50				
517.40				
577.25	3000 ±1500	13.0 ± 5.9		0.54 ±0.24
640.60	700 ± 595	70 ± 35		2.8 ±1.4
681.12		1.7 ± 0.9		0.065 ±0.033
684.32		2.6 ± 0.8		0.099 ±0.030
703.48		4.2 ± 0.9		0.158 ±0.035
740.42		1.0 ± 0.7		0.0367±0.0257
1114.6		7.0 ± 1.5		0.212 ±0.047
1231.8		10.0 ± 4.0		0.285 ±0.114
1322.7	650 ± 423	31.0 ± 4.0		0.852 ±0.111
1372.9		4.0 ± 2.2		0.108 ±0.059
1380.3		24.0 ± 4.8		0.646 ±0.129
1384.2		6.0 ± 2.7		0.16 ±0.07
1399.8		9.0 ± 2.5		0.241 ±0.067
1544.2		8.0 ± 2.4		0.204 ±0.061
1765.0		15.0 ± 3.6		0.357 ±0.086
1776.2		6.0 ± 3.6		0.142 ±0.085
1839.5		8.0 ± 3.6		0.186 ±0.084
1891.0		14 ± 4		0.322 ±0.081
1899.3		16.0 ± 4.0		0.367 ±0.092
1936.6		6.0 ± 3.6		0.136 ± .082
1951.3		24 ± 4		0.543 ±0.098
2131.2	790 ± 166	240 ± 12		5.20 ±0.26
2211.3		38.0 ± 8.4		0.808 ±0.178
2234.3		17.0 ± 5.4		0.360 ±0.115
2262.0		4.0 ± 2.8		0.084 ±0.059
2332.5		21.0 ± 5.9		0.435 ±0.122
2454.8		28.0 ± 6.4		0.565 ±0.130
2521.5		29.0 ± 8.7		0.577 ±0.173
2533.7		19.0 ± 8.6		0.377 ±0.170
2542.6		39.0 ± 8.6		0.773 ±0.170
2597.0		5.0 ± 3.5		0.098 ±0.069
2610.0		13.0 ± 7.8		0.254 ±0.152
2625.9		18.0 ± 8.1		0.351 ±0.158
2770.8		18.0 ± 9.0		0.342 ±0.171
2848.7		71.0 ± 15.6		1.33 ±0.29

E_0 (eV)	Γ (meV)	$2ag\Gamma_n$ (meV)	Γ_γ (meV)	$2ag\Gamma_n^0$ (meV)
2874.9		28.0 ± 8.4		0.522 ±0.157
2905.5		25.0 ± 8.5		0.461 ±0.157
2913.6		14.0 ± 7.7		0.259 ±0.143
2963.1	1150 ± 920	82.0 ± 16.4		1.50 ±0.30
2771.8		23.0 ± 9.2		0.422 ±0.169
3125.5		36.0 ± 10.4		0.643 ±0.290
3130.0		14.0 ± 9.8		0.250 ±0.175
3158.0				
3162.4		59 ± 12		1.05 ±0.22
3207.8	1410 ±1058	144 ± 33		2.54 ±0.58
3228.5	1890 ± 983	160 ±240		2.81 ±0.42
3236.1		39 ± 10		0.685 ±0.171
3305.8		7 ± 6		0.122 ±0.11
3339.4		21 ± 12		0.363 ±0.200
3357.4	*2840 ± 795	254 ± 25		4.38 ±0.44
3481.4		87 ± 22		1.47 ±0.37
3509.5	1820 ± 746	248 ± 30		4.19 ±0.50
3530.5		59 ± 15		0.99 ±0.25
3600.0		62 ±155		1.03 ±0.26
3610.5		101 ± 18		1.68 ±0.30
3618.0		23 ± 14		0.38 ±0.23
3651.6		52 ± 16		0.86 ±0.26
3690.4	5690 ± 683	711 ± 53		11.7 ±0.9
3757.6		21 ±137		0.342
3774.0		79 ± 16		1.28 ±0.26
3827.2		68 ± 22		1.1 ±0.4
3867.9		55 ± 17		0.88 ±0.26
3890.4		55 ± 17		0.88 ±0.26
3929.0		100 ± 70		1.59 ±1.11
3971.1		37 ± 18		0.59 ±0.29

* Possibly a doublet Xe-129 and Xe-128

$^{124}_{54}$Xe

THERMAL CROSS SECTIONS

σ_γ = 128±15 b [^{125}Xe^{g+m}]
σ_γ = 22.0±2.5 b [55 sec ^{125}Xe^{m}]

RESONANCE PROPERTIES

I_γ = 3600±500 b

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 0.096 S_n = 7770±150 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
5.16±0.06	7.6± 0.8	3.3±0.3
251.6	266 ±146	16.7±9.2

There is a discrepancy of a factor of about 2 between the calculated and measured absorption resonance integral and thermal cross section.

$^{125}_{54}Xe$

[18 h]

THERMAL CROSS SECTIONS

σ_γ < 5600 b

$^{126}_{54}Xe$

THERMAL CROSS SECTIONS

σ_γ = 0.26±0.07 b (75 sec $^{127}Xe^m$)
σ_γ = 4.0±0.6 b ($^{127}Xe^{g+m}$)

RESONANCE PROPERTIES

I_γ = 38.0±3.8 b

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 0.09 S_n = 7224±9 keV

E_0 (eV)	Γ_n (meV)
459.64	1.30±0.46

$^{128}_{54}Xe$

THERMAL CROSS SECTIONS

σ_γ = 0.36±0.07 b (8 day $^{129}Xe^m$)
σ_γ = 5±1 b ($^{129}Xe^g$)

RESONANCE PROPERTIES

I_γ^c = 12±3 b
S_0 = $0.85^{+0.70}_{-0.35}$

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 1.92 S_n = 6905±5 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_n^0 (meV)
237.69	390 ± 78	320 ± 21	20.8 ±1.4
370.78		45.6± 10.0	2.37±0.52
554.54		151 ± 17	6.41±0.71
716.04	3500 ±210	3595 ±144	134.4 ±5.4
1365.0		167 ± 34	4.51±0.90
1408.4		164 ± 66	4.37±1.8
1609.9		391 ± 82	9.74±2.05
2755.8		990 ± 25	18.9 ±4.7
3441.3		2370 ±403	40.4 ±6.9

THERMAL CROSS SECTIONS

σ_γ = 18±7 b

RESONANCE PROPERTIES

I_γ^c = 250±25 b
<D> = 32±3 eV

RESONANCE PARAMETERS

I^π = 1/2⁺ %Abn = 26.44 S_n = 9254.9±1.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
9.44±0.06	120 ± 10	9.0± 0.4	[1]		114 ± 9	2.9 ±0.1
90.53	140 ± 30	4.8± 3.4			135 ±31	.50±0.35
92.3 ±0.3	202 ± 12	125 ± 7	1		119 ±12	13.0 ±0.7
125.84	413 ± 25	161 ± 8	0		91 ±26	14.3 ±0.7
162.81	201 ± 16	100 ± 5	1		134 ±16	19.2 ±1.0
185.68	215 ± 19	115 ± 7	1		138 ±19	8.46±0.51
228.14	150 ± 45	67.3± 5.4	1		105 ±45	4.45±0.36
244.48	180 ± 72	32.2± 2.4			148 ±73	2.04±0.15
341.52	33 ± 32	5.4± 1.2				0.29±0.07
374.74	234 ± 40	139 ± 7	1		142 ±40	22.3 ±1.1
379.28		5.7± 1.4				0.29±0.07
432.23	300 ± 63	225 ± 14	1		150 ±63	10.8 ±0.7
462.61	330 ± 46	304 ± 18	1		127 ±47	14.2 ±0.9
508.62	330 ± 92	69.2± 4.2	[0]		192 ±92	3.07±0.18
580.82	710 ± 57	779 ± 39	1		191 ±63	32.3 ±1.6
585.03	750 ± 90	367 ± 20	0			15.2 ±0.8
605.07	170 ± 85	113 ± 9	1			4.61±0.35
636.80	520 ± 94	548 ± 41	1		155 ±98	21.7 ±1.6
759.91		17.8± 3.9				0.64±0.14
777.31		24 ± 4				0.85±0.15
798.87	434 ± 60	529 ± 28	1		84 ±64	18.7 ±1.0
885.10		31.4± 4.4				1.05±0.15
908.63	1310 ± 92	612 ± 21	0			2.03±0.07
920.17		22 ± 4				0.72±0.14
933.14	150 ± 98	159 ± 10	1			5.18±0.34
966.76		39 ± 6				1.25±0.18
1028.9		40 ± 8				1.3 ±0.3
1053.5	410 ± 82	323 ± 16	1		194 ±83	9.94±0.50
1136.1	300 ± 150	163 ± 13				4.84±0.39
1186.0	800 ± 80	926 ± 42	1		183 ±86	26.9 ±1.2
1199.0	380 ± 91	372 ± 17	1		132 ±02	10.7 ±0.5
1234.2		106 ± 16				3.0 ±0.5
1296.1	480 ± 240	178 ± 15	[0]			4.9 ±0.4
1355.3	470 ± 94	548 ± 30	1		104 ±97	14.9 ±0.8
1413.7		110 ± 11				2.91±0.29
1489.6		129 ± 21				3.33±0.53
1505.2	860 ± 260	280 ± 24	0			7.22±0.61
1622.8		161 ± 19				4.0 ±0.5
1651.0		204 ± 25				5.02±0.60
1664.4	580 ± 200	360 ± 25				8.8 ±0.6

$^{129}_{54}Xe$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1714.8	120 ± 120	117 ± 19	[1]			2.83±0.45
1734.2	360 ± 210	344 ± 24	1			8.24±0.58
1786.6	600 ± 360	219 ± 24				5.18±0.57
1814.2	750 ± 130	851 ± 38	1			20.0 ±0.9
1907.3	1700 ± 340	454 ± 36	[0]			10.4 ±0.8
1921.4	460 ± 180	533 ± 32	1			12.2 ±0.7
2013.8	490 ± 200	522 ± 39	1			11.6 ±0.8
2037.8	950 ± 330	605 ± 39	[1]			13.4 ±0.9
2090.7	760 ± 170	926 ± 60	1			20.3 ±1.3
2274.5	660 ± 385	382 ± 38				8.01±0.80
2305.9	420 ± 400	272 ± 35				5.67±0.74
2346.4	2140 ± 815	333 ± 50				6.87±1.0
2410.8	220 ± 220	159 ± 24				3.23±0.49
2437.6	540 ± 430	412 ± 54				8.35±1.1
2468.3	700 ± 295	654 ± 49	1			13.2 ±1.0
2565.9	6500 ± 455	5370 ±204	1			106 ±4
2639.9	1330 ± 730	775 ±116				15.1 ±2.3
2932.7	1240 ± 680	454 ± 64				8.39±1.2
2996.0		208 ± 40				3.8 ±0.7
3089.6	850 ± 375	1005 ± 80	1			18.1 ±1.5
3214.7	1870 ± 450	1925 ±154	1			33.9 ±2.7
3298.7	1680 ±1000	552 ± 88	[0]			9.60±1.5
3320.4	150 ± 150	427 ± 60	1			7.41±1.04
3468.0	4540 ± 680	2045 ±154	[0]			34.8 ±2.6
3631.1	1480 ± 560	1310 ±118	1			21.8 ±2.0
3818.5	6240 ± 750	3085 ±230	0			49.9 ±3.7
4002.6	1100 ± 880	983 ±127				15.5 ±2.0
4022.3	1220 ± 490	1935 ±155	1			30.5 ±2.4
4082.3	1000 ± 700	1470 ±147				23.0 ±2.3

THERMAL CROSS SECTIONS

σ_γ < 26 b
σ_γ = 0.42±0.08 b [11.8 day $^{131}Xe^m$]
σ_γ = 6.0±1.1 b [$^{131}Xe^g$]

RESONANCE PROPERTIES

I_γ^c < 14 b
S_0 = 2.1±0.7

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 4.08 S_n = 6605.6±3.3 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_n^0 (meV)
430.19	275 ± 170	170 ± 17	8.1 ± 0.8
941.37		50 ± 15	1.6 ± 0.5
1484.1	2430 ± 243	2330 ±120	60.4 ± 3.0
2431.5	1100 ± 385	2110 ±200	42.8 ± 4.1
2577.5		527 ±130	10.4 ± 2.5
2614.9		430 ±110	8.38± 2.10
2845.6	2300 ±1265	1675 ±400	32.3 ± 7.8
2980.4	2820 ± 733	2364 ±260	14.0 ± 4.8
3003.2	2080 ± 707	2154 ±260	39.1 ± 4.7
3257.3		1250 ±875	22.1 ±15.5
3563.9	4650 ± 980	4654 ±265	77.5 ± 7.8

$^{131}_{54}Xe$

THERMAL CROSS SECTIONS

σ_γ = 90±10 b

RESONANCE PROPERTIES

I_γ^c = 870±40 b
<D> = 55±7 eV

RESONANCE PARAMETERS

I^π = 3/2⁺ %Abn = 21.18 S_n = 8936.1±1.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
14.4 ±0.2	309	270 ± 11	2	93 ±16	72 ±3
46.0 ±0.2	125	13.6± 0.7		114 ±10	2.01±0.10
75.6 ±0.2	134 ± 16	13.0± 1.0	2	123 ±16	1.58±0.12
114.93	145 ± 15	39.3± 0.2	[2]	114 ±15	3.66±0.18
173.57	176 ± 28	27.9± 1.7	[1]	139 ±28	2.39±0.14
209.47	210 ± 53	104 ± 10	2	127 ±52	7.2 ±0.7
283.49	410 ± 55	245 ± 15	1		14.5 ±0.9
302.49		10.8± 2.2			0.62±0.13
362.60		5.7± 1.7			0.30±0.09
426.84	370 ± 50	210 ± 10	[1]		10.2 ±0.5
450.38	930 ± 65	973 ± 50	2		45.8 ±2.3
495.08		12.7± 2.5			0.57±0.11
557.59	210 ± 70	123 ± 6	[2]		5.19±0.26
651.35		32.1± 8.3			1.26±0.33
723.20	600 ± 85	330 ± 17	1		12.3 ±0.6
736.07	585 ± 70	482 ± 26	2	200 ±72	17.8 ±0.8
855.21		117 ± 11	[2]		4.0 ±0.4
976.31	610 ±100	352 ± 18	1		11.2 ±0.5
981.16		32.2± 6.4			1.02±0.20
992.98		73.2± 11.0			2.31±0.35
1034.4		118 ± 12			3.7 ±0.4
1068.2	540 ±115	326 ± 20	[1]		10.0 ±0.6
1302.8	410 ±165	354 ± 21	[2]		9.81±0.59
*1334.2		70.8± 11.3			1.94±0.31
1510.5	520 ±210	333 ± 27			8.55±0.68
1586.6		1275 ±220			32.0 ±5.4
1655.6	960 ±220	614 ± 40	2		15.1 ±1.0
1743.2		316 ± 28			7.6 ±0.7
1844.6	960 ±385	293 ± 35			6.8 ±0.8
1871.1	1640 ±150	1650 ± 66			38.1 ±1.5
1957.2		330 ± 25			7.5 ±0.6
1982.5	350 ±210	482 ± 39	2		10.8 ±0.9
1994.5	590 ±355	355 ± 36			7.9 ±0.8
2082.7	830 ±455	355 ± 55			7.7 ±0.9
2149.4	1360 ±180	1400 ± 75	2		30.1 ±1.5
2355.9	630 ±250	855 ± 60	2		17.6 ±1.2
2553.3	2200 ±440	1465 ±125	[1]		29.0 ±2.5
3101.6	1290 ± 52	1000 ±100			17.9 ±1.8
3945.3	7360 ±736	5240 ±314	[1]		83.6 ±5.0

* Isotopic assignment uncertain, possibly belongs to Xe-132.

$^{132}_{54}Xe$

THERMAL CROSS SECTIONS

σ_γ = 0.025±0.005 b [2.26 day $^{133}Xe^m$]
σ_γ = 0.36±0.07 b [5.27 day $^{133}Xe^g$]

RESONANCE PROPERTIES

I_γ^c = 0.8 b
S_0 ~ 0.34

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 26.89 S_n = 6453±9 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_n^0 (meV)
643.3	2500 ±150	2325 ±120	91.6±4.6
3030.7	640 ±255	595 ± 40	20.1±1.3
3853.9	2910 ±495	1150 ± 80	34.6±2.4

$^{133}_{54}Xe$

THERMAL CROSS SECTIONS

σ_γ = 190±90 b

$^{134}_{54}Xe$

THERMAL CROSS SECTIONS

σ_γ = 0.003±0.001 b [15.6 min $^{135}Xe^m$]
σ_γ = 0.250±0.020 b [$^{135}Xe^{g+m}$]

RESONANCE PROPERTIES

I_γ = 0.32 b

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 10.44 S_n = 6451±12 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
1000.6	46 ±7	1.4±0.2

$^{135}_{54}Xe$

[9.17 hr]

THERMAL CROSS SECTIONS

σ_γ =(2.65±0.20)×10^6 b

RESONANCE PROPERTIES

I_γ^c = 7634 b

RESONANCE PARAMETERS

S_n = 7992±11 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.084±0.001	25.7±0.3	90.7±0.7	88.7±1.0

$^{136}_{54}Xe$

THERMAL CROSS SECTIONS

σ_γ = 0.16±0.03 b [3.9 min ^{137}Xe]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Xe^{135}	activation	PR-CMA-21,10(72)	Santry
$Xe^{124,126,132,134}$	isom. ratio	YF,10,27(69)	Kardon
$Xe^{124,126,128,130}$	activation	NP,A120,329(68)	Kondaiah
$Xe^{132,134,136}$	activation	NP,A120,329(68)	Kondaiah
$Xe^{128,130,132}$	activation	NSE,31,545(68)	Tilbury
$Xe^{124,126}$	activation	DA,29,2167B(68)	Winn
Xe	$\sigma_t \bar{\sigma}_s$	PR,148,1303(66)	Krohn
Xe^{132}	activation	PRIVATE COMM.(65)	Eastwood
Xe^{126}	activation	NP,73,91(65)	Winter
$Xe^{124,126,136}$	activation	JIN,26,9(64)	Bresesti
Xe^{125}	mass separation	PR-CM-33,7(63)	Brown
Xe	diffraction	NB.GS.COMP,211(63)	Burns
$Xe^{124,126,128}$	mass separation	PRIVATE COMM.(63)	Eastwood
$Xe^{129,130,131}$	mass separation	PRIVATE COMM.(63)	Eastwood
$Xe^{132,134,136}$	mass separation	PRIVATE COMM.(63)	Eastwood
Xe	σ_t	JPR,24,21(63)	Genin
Xe^{135}	mass separation	CJP,37,531(59)	Fickel
Xe^{133}	mass separation	JIN,5,253(58)	Kennett
Xe^{124}	activation	JAP,29,1373(58)	Tobin
Xe^{135}	mass separation	SJA,3,1436(57)	Ivanov
Xe^{135}	σ_t	PR,102,823(56)	Bernstein
Xe^{135}	activation	JIN,2,271(56)	Freedman
Xe^{135}	mass separation	CJP,33,640(55)	Petruska
Xe	σ_t	PR,80,20(50)	Harris
Xe,$Xe^{126,129,130}$	mass separation	PR,80,296(50)	MacNamara
$Xe^{131,134,136}$	mass separation	PR,80,296(50)	MacNamara
Xe^{136}	activation	AECD-2274(48)	Way

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Xe^{131}	σ_γ(spectra)	14.1	PR/C,3,1678(71)	Gelletly
Xe	$\sigma_t \bar{\sigma}_s$	5-4082	CEA-N-1149(69)	Ribon
Xe,$Xe^{129,136}$	σ_t	5-126	PR,116,1516(59)	Mann
Xe^{135}	σ_t	0-0.3	PR,115,1693(59)	Smith
Xe^{135}	σ_t	0.012-0.20	PR,102,823(56)	Bernstein
Xe	σ_t	1.5-13.9	PR,89,904(53)	Harris

$_{55}Cs$

UNASSIGNED RESONANCES

E_0 (eV)	Γ_n (meV)
*42.3± 0.1	7 ± 2
*880 ±20	700 ±200

* Belongs to either Cs-135 or Cs-137

$^{133}_{55}Cs$

THERMAL CROSS SECTIONS

σ_γ = 29.0±1.5 b
σ_γ = 2.5±0.2 b [2.9 hr ^{134}Cs*]
a_{coh} = 5.5±0.2 fm

RESONANCE PROPERTIES

I_γ = 415±15 b
R' = 5.2±0.4 fm
<D> = 20±2 eV
S_0 = 0.7±0.1
S_1 = 3.9±1.0

RESONANCE PARAMETERS

I" = 7/2+ %Abn = 100 S_n = 6891.3±2.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
5.90±0.04	120 ±20	5.4 ± 0.4	3	115 ±20	2.2 ±0.3
22.6 ±0.3	127 ±40	6.6 ± 1.1	3	120 ±40	1.4 ±0.2
47.8 ±0.6	159 ±60	19 ± 3	3	140 ±60	2.8 ±0.4
83.1 ±1.5		9 ± 3	4	(110 ±30)	1.0 ±0.3
94.8 ±1.8		19 ± 6	3	(110 ±30)	2.0 ±0.6
126.1 ±0.2		110 ±11	4		9.8 ±1.0
142.2 ±0.3		6.6 ± 1.2			0.55±0.10
145.9 ±0.3		29 ± 2	4		2.4 ±0.2
181.5 ±0.3					0.18±0.05
192.50±0.15		0.28± 0.14			0.02±0.01
200.9 ±0.4		31 ± 7	4		2.2 ±0.5
207.30±0.17		2.9 ± 0.6			0.20±0.04
220.4 ±0.4		24 ± 3	4		1.6 ±0.2
234.4 ±0.4		430 ±45	4		28 ±3
238.40±0.20		13.8 ± 1.5			0.90±0.10
295.6 ±0.5		100 ±20	4		6 ±1
359.0 ±0.5		42 ± 6	4		2.2 ±0.3
401.2 ±0.5		260 ±40			13 ±2
413.50±0.23		58.9 ±10.2			2.90±0.50
415.53±0.24		4.1 ± 2.0			0.20±0.10
430.8 ±0.5		64 ± 4			3.1 ±0.2
469.89±0.28		102 ±13			4.70±0.60
511.6 ±0.6		125 ±15			5.5 ±0.6
519.67±0.33					4.70±0.30

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
560.30±0.37					3.30±0.20
568.39±0.38					0.80±0.04
585.52±0.39					7.00±1.00
622.59±0.43					0.04±0.04
646.28±0.46					2.00±0.10
684.44±0.50					0.10±0.04
712.31±0.53					0.12±0.04
726.61±0.54					4.40±0.40
738.00±0.56					0.04±0.04
762.87±0.59					2.80±0.20
795.72±0.62					10.80±1.00
807.56±0.64					0.40±0.08
821.00±0.65					0.06±0.06
832.71±0.67					0.20±0.06
863.92±0.71					6.20±0.40
872.34±0.72					0.66±0.06
906.57±0.76					3.50±0.20
914.11±0.77					0.08±0.04
917.16±0.77					0.08±0.06
970.48±0.84					0.20±0.10
986.44±0.86					1.20±0.40
994.15±0.87					2.50±0.60
1018.69±0.90					0.20±0.20
1021.38±0.91					5.30±1.00
1038.62±0.93					1.20±0.20
1069.63±0.97					1.60±0.24
1118.30±1.04					6.00±1.20
1134.91±1.06					3.40±0.70
1156.21±1.09					0.70±0.08
1176.99±1.12					2.00±0.30
1187.04±1.14					0.60±0.06
1239.7 ±0.6					6.60±1.20
1249.3 ±0.6					1.20±0.20
1267.6 ±0.6					10.00±2.00
1272.6 ±0.6					0.08±0.08
1280.1 ±0.6					5.00±1.00
1306.3 ±0.7					0.06±0.04
1312.8 ±0.7					0.06±0.04
1322.0 ±0.7					4.40±0.80
1329.3 ±0.7					4.00±0.80
1345.4 ±0.7					0.04±0.04
1389.8 ±0.7					1.00±0.10
1423.2 ±0.7					3.80±0.60
1429.1 ±0.8					0.32±0.10
1443.3 ±0.8					0.10±0.08
1453.1 ±0.8					5.40±1.00
1464.6 ±0.8					0.32±0.10
1480.9 ±0.8					0.14±0.08
1524.9 ±0.8					2.20±0.20
1533.1 ±0.8					0.44±0.10
1545.5 ±0.8					1.00±0.10
1583.8 ±0.9					0.10±0.10

$^{133}_{55}Cs$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1594.2 ±0.9					10.00±2.00
1616.3 ±0.9					3.00±0.60
1627.0 ±0.9					0.08±0.08
1664.6 ±0.9					2.20±0.20
1682.5 ±1.0					10.00±2.00
1705.5 ±1.0					3.00±0.40
1726.0 ±1.0					0.04±0.04
1734.8 ±1.0					1.20±0.12
1760.9 ±1.0					3.00±0.40
1809.6 ±1.1					0.80±0.20
1828.6 ±1.1					0.10±0.06
1843.0 ±1.1					0.12±0.06
1849.3 ±1.1					0.70±0.20
1853.7 ±1.1					0.30±0.20
1899.5 ±1.1					0.10±0.12
1915.5 ±1.2					0.30±0.20
1934.4 ±1.2					0.08±0.10
1954.0 ±1.2					2.00±0.20
2000.0 ±1.2					0.06±0.06
2051.0 ±1.0					0.70±0.20
2060.0 ±1.0					11.00±2.00
2090.0 ±1.0					0.10±0.10
2099.0 ±1.0					2.60±0.60
2114.0 ±1.0					0.04±0.04
2122.0 ±1.0					6.60±1.40
2133.0 ±1.0					0.10±0.10
2161.0 ±1.0					0.20±0.10
2172.0 ±1.0					0.50±0.10
2182.0 ±1.0					2.80±0.60
2197.0 ±1.0					1.00±0.20
2261.0 ±1.0					7.00±1.40
2280.0 ±2.0					4.80±1.00
2295.0 ±2.0					1.40±0.40
2312.0 ±2.0					4.60±1.00
2343.0 ±2.0					0.04±0.04
2352.0 ±2.0					0.04±0.04
2376.0 ±2.0					22.00±6.00
2387.0 ±2.0					0.20±0.20
2392.0 ±2.0					0.30±0.20
2429.0 ±2.0					4.00±0.80
2447.0 ±2.0					0.10±0.10
2458.0 ±2.0					0.04±0.04
2474.0 ±2.0					1.08±0.30
2492.0 ±2.0					0.10±0.10
2503.0 ±2.0					0.60±0.20
2524.0 ±2.0					0.04±0.04
2537.0 ±2.0					0.70±0.20
2561.0 ±2.0					2.40±0.60
2570.0 ±2.0					0.70±0.20
2591.0 ±2.0					0.30±0.10
2604.0 ±2.0					1.40±0.30
2623.0 ±2.0					0.10±0.10

$^{133}_{55}Cs$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
2683.0 ±2.0					2.40±0.60
2705.0 ±2.0					0.04±0.04
2723.0 ±2.0					11.00±2.00
2733.0 ±2.0					0.04±0.04
2755.0 ±2.0					12.00±2.00
2777.0 ±2.0					0.10±0.10
2794.0 ±2.0					5.20±1.00
2838.0 ±2.0					0.10±0.10
2876.0 ±2.0					0.04±0.04
2892.0 ±2.0					0.04±0.04
2898.0 ±2.0					3.60±1.00
2910.0 ±2.0					2.70±0.60
2925.0 ±2.0					0.04±0.04
2943.0 ±2.0					5.60±1.00
2982.0 ±2.0					1.80±0.40
3007.0 ±2.0					1.60±0.40
3016.0 ±2.0					4.80±1.00
3071.0 ±2.0					0.70±0.20
3095.0 ±2.0					0.30±0.10
3114.0 ±2.0					0.40±0.10
3120.0 ±2.0					6.00±2.00
3150.0 ±2.0					0.60±0.20
3190.0 ±3.0					20.00±4.00
3306.0 ±3.0					13.00±3.00
3335.0 ±3.0					3.70±0.80
3354.0 ±3.0					4.60±1.00
3373.0 ±3.0					1.80±0.40
3402.0 ±3.0					0.40±0.20
3422.0 ±3.0					6.00±1.00
3444.0 ±3.0					1.00±0.20
3480.0 ±3.0					26.00±6.00
3500.0 ±3.0					2.00±1.00

$^{134}_{55}Cs$

[2.06 yr]

THERMAL CROSS SECTIONS

σ_γ = 140±12 b

$^{135}_{55}Cs$

[2.3×10^6 yr]

THERMAL CROSS SECTIONS

σ_γ = 8.7±0.5 b

$^{136}_{55}Cs$

[13 day]

THERMAL CROSS SECTIONS

σ_γ^c = 1.3 b

RESONANCE PROPERTIES

I_γ^c = 76 b
<D> = 58±12 eV

RESONANCE PARAMETERS

$I^\pi = 5^-$ S_n = 8276.4±3.1 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	$2g\Gamma_n^0$ (meV)
66.3± 0.5	50 ± 25	6.1 ± 3.1
135.7± 1.25	630 ± 125	54.1 ±10.7
181.0± 1.8	4.3± 4.3	0.32± 0.32
187 ± 2	4.2± 4.2	0.31± 0.31
231 ± 3	81 ± 81	5.3 ± 5.3
274 ± 4	314 ± 314	19 ±19
533 ±10	808 ± 808	35 ±35
633 ±12	146 ± 146	58 ±58
876 ±20	1390 ±1390	47 ±47

$^{137}_{55}Cs$

[30.1 yr]

THERMAL CROSS SECTIONS

σ_γ = 0.110±0.033 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Cs^{133}	diffraction	ZK,134,308(71)	Chadwik
Cs^{133}	diffraction	ACR,A27,494(71)	Cox
Cs^{133}	activation	JIN,30,349(68)	Sims
Cs^{133}	pile osci.	66PARIS,1,479(66)	Carre
Cs^{133}	diffraction	ACR,20,315(66)	Zivadinovic
Cs^{133}	σ_t	BAP,10,12(65)+	Hickman
Cs^{133}	isom. ratio	NP,60,241(64)	Bishop
Cs^{133}	activation	JNE,13,141(61)	Brown
Cs^{133}	activation	JIN,17,180(61)	Keisch
Cs^{133}	activation	CJC,38,2528(60)	Baerg
Cs^{133}	activation	KAPL-2000-121,33(60)	Fehr
Cs^{133}	activation	NSE,8,378(60)	Lyon
Cs^{137}	activation	JNE,12,16(60)	Stupegia
Cs^{133}	pile osci.	JNE,12,32(60)	Tattersall
$Cs^{133,134}$	mass separation	JIN,5,259(58)	Bayly
Cs^{133}	mass separation	58GENEVA,15,459(58)	Bidinosti
Cs^{135}	σ_t	NRDC-107(58)	Cocking
$Cs^{134,135}$	activation	PIC-2,16,54(58)	Eastwood
Cs^{133}	pile osci.	PR,83,644(51)	Pomerance
Cs^{133}	diffraction	PR,81,527(51)	Shull
Cs^{133}	pile osci.	PR,80,342(50)	Harris
Cs^{137}		BNL-C-9,89(49)	Engelkemeier
Cs^{135}	activation	PR,75,1473(49)	Sugarman
Cs^{133}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Cs^{133}	σ_γ(spectra)	5.9-359	AERE-PR/NP,18,23(72)	Thomas
Cs^{136}	σ_t	0.01-5000	PRIVATE COMM.(70)	Vertebnyi
Cs^{133}	σ_t	1.7-1100	70HELSINKI,1,679(70)	Yung
$Cs^{135,137}$	σ_t	42-700	70HELSINKI,1,679(70)	Yung
Cs^{133}	σ_t	5.9-407	PRIVATE COMM.(69)	Yung
Cs^{133}	σ_t	142-3500	PR/B,137,S47(65)	Garg
Cs^{133}	σ_t	22-530	PR,99,10(55)	Harvey
Cs^{133}	σ_t	5.9	PR,93,1030(54)	Landon

$_{56}$Ba

THERMAL CROSS SECTIONS

σ_γ = 1.2±0.1 b
σ_p = 4.3±1.0 b
a_{coh} = 5.30±0.15 fm

RESONANCE PROPERTIES

I_γ = 7.5±1.0 b

UNASSIGNED RESONANCES

E_0 (eV)	$ag\Gamma_n$ (meV)	$ag\Gamma_n^0$ (meV)
1046	3.8	0.11
1065	2.3	0.07
1674	25	0.61
1700	5	0.12
1751	29	0.69
1866	8	0.185
1954	34.5	0.78
1977	4.7	0.106
1986	5.3	0.118

THERMAL CROSS SECTIONS

σ_γ = 2.5±0.3 b [14.5 min ^{131}Ba^m]
σ_γ = 11±3 b [11.6 day ^{131}Ba^g]

RESONANCE PROPERTIES

I_γ^c = 150±30 b
<D> = 56±7 eV
S_0 = 2.6±0.6

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 0.101 S_n = 7494±15 keV

E_0 (eV)	Γ_n (meV)	J	ℓ	Γ_γ (meV)	Γ_n^0 (meV)
Bound level					
46.3±0.1	35 ± 4	1/2	0	100	5.1± 0.6
57.9±0.1	175 ± 20	1/2	0	120 ±20	23.0± 2.6
136.2±0.3	495 ±100			75	42.5± 8.6
184.5±0.4	200 ± 40			135	14.7± 2.9
287 ±0.7	60		(1)	00	3.5
336	245			(1000)	13.4
358	6			(100)	0.3
380	1325 ±150	1/2	0		68.0± 7.7
445	200 ± 50			130	9.5± 2.4
558	12			(100)	0.6
585	2600 ±300	1/2	0		107 ±12
698	335			(100)	12.7
713	70			(100)	2.6
744	550			(100)	20.2
837	1150			(100)	39.7
850	615			(100)	21.1
903	550 ± 50				18.3± 1.7
1098	200			(100)	6.0
1172	210			(100)	6.1
1250	6			(100)	0.2
1266	110			(100)	3.1
1416	900			(100)	23.9
1468	230			(100)	6.0
1482	130			(100)	3.4
1534	270			(100)	6.9
1576	300			(100)	7.6
1599	315			(100)	7.9
1685	260			(100)	6.3
1721	455			(100)	11.0
1784	400			(100)	9.5
1824	210			(100)	4.9
1934	1150			(100)	26.2
2095	800			(100)	17.5
2121	285			(100)	6.2
2155	4125			(100)	9.2

$^{132}_{56}$Ba

THERMAL CROSS SECTIONS

σ_γ = 8.5±1.0 b
σ_γ = 0.68 b [39 hr ^{133}Ba^m]

No resonances have been discovered in energy interval 3-1000ev

$^{134}_{56}Ba$

THERMAL CROSS SECTIONS

σ_γ = 0.158±0.024 b [29 hr $^{135}Ba^m$]
σ_γ = 2.0±1.6 b [$^{135}Ba^{g+m}$]

RESONANCE PROPERTIES

I_γ^c = 23±5 b
<D> = 255±75 eV
S_0 = 0.25±0.13

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 2.42 S_n = 6975.2±2.6 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
101.8±0.3	230 ±15	150 ± 10	80 ±18	13.7 ±0.9
263 ±1		0.7± 0.5		0.04±0.03
329 ±1		2.1± 0.9		0.12±0.05
501 ±1		48 ± 5		2.1 ±0.2
975 ±1		65 ± 15		1.6 ±0.2
1226 ±1		720 ±100		20.5 ±2.9
1620 ±1		300 ±280		7.5 ±7.0
1892 ±1		150 ±130		3.5 ±3.0

THERMAL CROSS SECTIONS

σ_γ = 0.0139±0.0007 b [0.307 sec ^{136}Ba^{m}]
σ_γ = 5.8±0.9 b [^{136}Ba^{g+m}]

RESONANCE PROPERTIES

I_γ = 100±50 b
R' = 5.8±0.8 fm
<D> = 45±5 eV
S_0 = 1.0±0.3

RESONANCE PARAMETERS

1^n = 3/2$^+$ %Abn = 6.59 S_n = 9107.1±0.8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level						
24.4±0.1	124 ± 5	10.7± 0.3	1	0	110 ± 5	2.17± 0.06
82.0±0.6	253 ± 6	185 ± 10	2		105 ±10	20.4 ±101
86.8±0.8	174 ± 6	74 ± 6	2		115 ± 7	7.9 ± 0.6
104.3±0.8	270 ± 20	125 ± 10	2		106 ± 2	12.2 ± 1.0
219 ±1		4.8± 1.0				0.32± 0.07
223 ±1		40 ± 6	2			2.7 ± 0.4
243 ±1		3.2± 1.2				0.21± 0.08
293 ±2	390 ± 30	355 ± 30	2		106 ±25	21.1 ± 1.8
315 ±1	173 ± 20	96 ± 8	2		96 ±22	5.4 ± 0.5
378 ±2	300 ± 30	138 ± 12	1		116 ±30	7.1 ± 0.6
406 ±1	630 ± 60	610 ± 50	2			30.3 ± 2.5
434 ±2		23 ± 3	2			1.1 ± 0.1
467 ±3		90 ± 8	2			4.2 ± 0.4
649 ±3		122 ± 12	1			4.8 ± 0.5
651 ±3		132 ± 12	2			5.2 ± 0.5
671 ±3		10 ± 6				0.4 ± 0.2
722 ±3		52 ± 16				1.9 ± 0.6
834 ±3		20 ± 10				0.7 ± 0.4
882 ±3	1300 ±150	1360 ±120	2			45.8 ± 4.0
942 ±3		300 ± 60				9.8 ± 2.0
1031 ±3		340 ± 80				10.6 ± 2.5
1157 ±4		280 ± 80				8.2 ± 2.3
1202 ±4		1110 ±220				32 ± 6
1280 ±4		320 ± 70				9 ± 2
1397 ±4		1130 ±300				30 ± 8
1405 ±4		330 ±100				8.8 ± 2.7
1629						
1726						
1876						
2000						

$^{136}_{56}$Ba

THERMAL CROSS SECTIONS

σ_γ = 0.010±0.001 b [2.6 min ^{137}Ba^m]
σ_γ = 0.4±0.4 b [^{137}Ba^{g+m}]

RESONANCE PROPERTIES

I_γ^c = 1.3±0.3 b

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 7.81 S_n = 6902.1±2.2 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
449 ± 1	2.9± 0.7	0.14± 0.03
511 ± 2	150 ± 30	6.7 ± 1.3
1644 ± 3	84 ± 21	6.6 ± 1.7
2156		
2319		
2468		
4708		
7310 ±200	120000 ±20000.	140 ±23

$^{137}_{56}$Ba

THERMAL CROSS SECTIONS

σ_γ = 5.1±0.1 b

RESONANCE PROPERTIES

I_γ^c = 4±1 b
R' = 5.8±0.8 fm
<D> = 230±65 eV
S_0 = 0.33±0.17

RESONANCE PARAMETERS

I^π = 3/2$^+$ %Abn = 11.32 S_n = 8611.3±0.8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	$2g\Gamma_n^0$ (meV)
126.9±0.8		0.26± 0.14		0.023±0.012
420 ±2	750 ±100	850 ± 70	2	41.5 ±3.4
577 ±2	680 ± 70	470 ± 40	1	19.6 ±1.7
1053 ±3		23 ± 15		0.71 ±0.46
1099 ±3		40 ± 32		1.2 ±1.0
1199 ±3		430 ±260		12.4 ±7.5
1350 ±3		1200 ±120		32.7 ±3.3
1737 ±3		780 ±100		18.7 ±2.4

$^{138}_{56}$Ba

THERMAL CROSS SECTIONS

σ_γ = 0.35±0.15 b

RESONANCE PROPERTIES

I_γ = 0.2±0.1 b
S_0 = 1.8±0.6

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 71.66 S_n = 4723.4±0.7 keV

E_0 (keV)	Γ_n (eV)	ℓ	Γ_n^0 (eV)	E_0 (keV)	Γ_n (eV)	ℓ	Γ_n^0 (eV)
31.7±0.5	190 ± 20	0	1.07	*95	<30		
*32.5±0.5	28 ± 12			*96	<30		
*36.5±1.0	<20			105 ±1.0	370 ± 35	0	1.140
39.8±1.0	100 ± 10	0	0.497	111.5±1.0	150 ± 70	(0)	0.449
51.0±1.0	275 ± 50	0	1.218	112.5±1.0	160 ± 80	0	0.447
*53.5±1.0	30 ± 25			*114 ±1	125 ± 80		
62.5±1.0	130 ± 40	(0)	0.520	116 ±1	650 ± 50	0	1.904
61.0±1.0	60 ± 40	(0)	0.245	118.5±1.0	120 ± 70	(0)	0.348
59.5±1.0	70 ± 30	(0)	0.281	*121 ±1	180 ±120		
55.5±1.0	50 ± 30	(0)	0.212	123 ±1	250 ±100	(0)	0.745
68.5±0.5	460 ± 40	0	1.751	124 ±1	150 ± 75	(0)	0.443
*70.0±0.5	50 ± 40			*126 ±1	60 ± 50		
73.5±0.5	130 ± 40	0	0.480	129 ±1	500 ±175	(0)	1.45
*76.5±1.0	50 ± 30			135.5±1	3300 ±300	0	8.97
*79.3±0.5	160 ± 40	0	0.567	148.5±1	800 ±200	0	2.08
*81.0±0.5	<30			155 ±1	900 ±200	(0)	2.29
*84	<30			170 ±2	450 ±100	(0)	1.09
*88	<30			174 ±2	80 ± 50	(0)	0.192
*86.5	<30			189 ±2	800 ±400	(0)	1.84
*91	<30			192 ±2	2050 ±400	0	4.68
*94	<30						

* Resonances are questionable or their isotopic assignment uncertain, above 130 kev peaks may not be resolved

$^{139}_{56}$Ba [83.3 min]

THERMAL CROSS SECTIONS

σ_γ = 6±1 b

$^{140}_{56}$Ba [12.79 day]

THERMAL CROSS SECTIONS

σ_γ = 1.6±0.3 b

RESONANCE PROPERTIES

I_γ = 13.6±1.4 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ba	diffraction	ACR,B28,956(72)	Jacobson
Ba^{138}	activation	CJP,46,2473(68)	Ricabarra
Ba^{130}	activation	NSE,31,545(68)	Tilbury
Ba^{135}	activation	NYO-3664,6(68)	Winn
Ba^{136}	isom. ratio	EN,14,228(67)	Foglio
Ba^{140}	mass separation	ORNL-4164,1(67)	Halperin
$Ba^{136,138}$	activation	NSE,22,373(65)	Kramer
Ba^{130}	activation	NYO-10175(64)	Arino
Ba^{132}	activation	JIN,25,1079(63)	Lyon
$Ba^{132,134}$	activation	NP,41,372(63)	Mangal
$Ba^{132,134,136}$	activation	NP,20,183(60)	Hans
$Ba^{130,138}$	activation	NSE,8,378(60)	Lyon
Ba^{140}	activation	58GENEVA,16,54(58)	Eastwood
$Ba^{130,132}$	cross section ratio	PR,101,149(56)	Beggs
$Ba^{134,135,136}$	pile osci.	PR,88,412(52)	Pomerance
$Ba^{137,138}$	pile osci.	PR,88,412(52)	Pomerance
Ba	pile osci.	PR,83,643(51)	Pomerance
Ba	pile osci.	PR,80,342(50)	Harris
Ba	pile osci.	PPS/A,63,1175(50)	Colmer
Ba^{139}	mass separation	PR,76,617(49)	Yaffe
Ba^{139}		AECD-2274(48)	Way
Ba^{132}	activation	PR,72,1160(47)	Katcoff
Ba^{138}	activation	PR,72,888(47)	Seren
Ba	absorption	PR,69,411(46)	Coltman

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Ba,Ba^{130}	σ_γ	20-2155	BAP,17,17(72)+	Berman
$Ba^{134,135,136,137}$	σ_z	4-2000	NP,177,393(71)	VanDeVijver
Ba	σ_t	24-2066	NP/A,134,118(69)	Alves
Ba	σ_γ(spectra)	24.5-287	CZJ/B,19,901(69)	Becvar
Ba,$Ba^{130,132}$	σ_t	3-1000	UFZ,14,227(69)	Vertebnyi
Ba	$\sigma_t \sigma_\gamma \bar{\sigma}_s$	24-285	65ANTWERP,188(65)	Kim
Ba	σ_γ(SI)	24-285	65ANTWERP,188(65)	Kim
Ba	σ_γ(spectra)	24-516	ZET,49,80(65)	Urbanec
Ba^{135}	σ_γ	24-318	64PARIS,673(64)	Bollinger
Ba,Ba^{136}	σ_t	6000-192000	AP,14,387(61)	Bilpuch
Ba,Ba^{135}	σ_t	24	PR,108,353(57)	Stolovy
Ba,Ba^{135}	σ_t	24-515	PRIVATE COMM.(56)	Pilcher

$^{138}_{57}La$

[1.1×10^{11} yr]

THERMAL CROSS SECTIONS

σ_γ^c = 172 b

RESONANCE PROPERTIES

I_γ^c = 413 b

RESONANCE PARAMETERS

$I^\pi = 5^-$ %Abn = 0.089 S_n = 8777.8±3.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
2.99±0.01	1.30± 0.05	95 ±6	0.75±0.03
21.0 ±0.1	4.2 ± 0.2		0.92±0.05
67.1 ±0.3	16 ± 1		1.9 ±0.1
90.2 ±0.4	19 ± 1		2.0 ±0.1
131.5 ±0.7	53 ± 3		4.6 ±0.3
220 ±1	140 ±15		9.5 ±1.0
240 ±2	310 ±30		20 ±2
261 ±2	357 ±35		22 ±2
307 ±3	630 ±50		36 ±3
356 ±3	230 ±40		12 ±2

THERMAL CROSS SECTIONS

σ_γ = 9.0±0.3 b
$\bar{\sigma}_a$ = 9.3±0.7 b
a_{coh} = 8.3±0.3 fm

RESONANCE PROPERTIES

I_γ = 12.2±0.6 b
R' = 4.9±0.3 fm
<D> = 240±10 eV
S_0 = 0.6±0.2
S_1 = 0.7±0.3

RESONANCE PARAMETERS

I^π = 7/2$^+$ %Abn = 99.91 S_n = 5161.1±1.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
-37.5		4		(56.5)	115	
0.734± 0.005	.000073± .00001		1	45 ±5	.000085± .00001	
72.17 ± 0.03	31.5 ± 1.0	3	0	60 ±4	3.71 ± 0.12	
243.8 ± 0.2	0.21 ± 0.10				0.014 ± 0.007	22
339.3 ± 0.2	0.32 ± 0.16				0.017 ± 0.09	10
617.1 ± 0.5	28 ± 2		[1]		1.12 ± 0.08	36
701.9 ± 0.3	7.4 ± 0.8				0.28 ± 0.03	
874.8 ± 0.4	20 ± 2				0.67 ± 0.07	
904.2 ± 0.4	7.6 ± 1.0				0.25 ± 0.03	
962.0 ± 0.4	15.9 ± 1.0				0.51 ± 0.03	
1179.8 ± 0.6	1860 ±100	3	0		54.1 ± 2.9	
1207.5 ± 0.6	12.1 ± 1.8				0.35 ± 0.05	
1255.4 ± 0.6	19.4 ± 1.8				0.55 ± 0.06	
1425.4 ± 0.7	3.5 ± 1.0				0.093 ± 0.026	
1431.5 ± 0.7	5.2 ± 0.4				0.14 ± 0.01	
1634.8 ± 0.7	27 ± 2				0.67 ± 0.05	
1649.4 ± 0.9	16.8 ± 2.0				0.41 ± 0.04	
1824.4 ± 0.5	7.3 ± 2.0				0.17 ± 0.05	
1915 ± 0.6	14 ± 4				0.32 ± 0.09	
1969.5 ± 0.6	9.0 ± 1.0				0.20 ± 0.02	
2116.0 ± 0.7	3100 ±300	3	0		67.3 ± 6.5	
2149.7 ± 0.7	1030 ±100	4	0		22.2 ± 2.2	
2175.2 ± 0.7	20.2 ± 2.0				0.43 ± 0.04	
2379.5 ± 0.8	74 ± 8		[0]		1.52 ± 0.16	

E_0 (eV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
2467.7 ± 0.8	920 ±120		[0]		18.5 ± 2.4	
2663.2 ± 0.9	59 ± 8				1.14 ± 0.15	
2854.6 ± 1.0	410 ± 50		[0]		7.7 ± 0.9	
2997.5 ± 1.1	12000 ±800	[4]	0		219 ±15	
3286.5 ± 1.3	1840 ±200		0		32.1 ± 3.5	
3420.8 ± 1.4	17 ± 4				0.29 ± 0.07	
3481.8 ± 1.4	14000 ±500	4	0		237.3 ± 8.5	
3726.0 ± 1.6	210 ± 30		[0]		3.4 ± 0.5	
3749.5 ± 1.6	5140 ±400				83.9 ± 6.5	
4271.4 ± 1.9	63 ± 10				0.96 ± 0.15	
4356.8 ± 2.0	4950 ±500				75.0 ± 7.5	
4611.5 ± 2.1	100 ± 16				1.5 ± 0.2	
4646.0 ± 2.2	3510 ±360		[0]		51.5 ± 5.3	
4729.5 ± 2.2	120 ± 20				1.7 ± 0.3	
4810.7 ± 2.3	140 ± 20		[0]		2.0 ± 0.3	
5177.6 ± 2.6	117 ± 20				1.6 ± 0.2	
5347.5 ± 2.7	1400 ±180		0		19.1 ± 2.5	
5517.4 ± 2.8	230 ± 20		[0]		3.1 ± 0.3	
5517.4 ± 2.8	220 ± 20				2.96 ± 0.30	
5827.3 ± 3.2	1200 ±400				15.7 ± 0.5	
5839.5 ± 3.1	160 ± 80				2.1 ± 1.0	
5854.8 ± 3.1	140 ± 80				1.8 ± 0.4	
5973.1 ± 3.2	380 ± 60				5.0 ± 0.8	
6329.6 ± 3.5	100 ± 40				1.3 ± 0.5	
6455.5 ± 3.6	4100 ±200		0		51.0 ± 2.5	
6552.5 ± 3.6	1750 ±200		0		21.6 ± 2.5	
6856.8 ± 3.9	3580 ±400		0		43.2 ± 4.8	
6982.9 ± 4.0	480 ±140		[1]		5.8 ± 1.7	
6983.0 ± 4.0	300 ± 50		[1]		3.6 ± 0.6	
7047.2 ± 4.1	120 ± 20				1.4 ± 0.2	
7087.9 ± 4.1	260 ± 50				3.1 ± 0.6	
7128.9 ± 4.1	3180 ±500		0		37.7 ± 5.9	
7432.0 ± 4.3	260 ± 60		[0]		3.0 ± 0.7	
7457.1 ± 4.4	2400 ±260		0		27.8 ± 3.0	
7541.6 ± 4.5	230 ± 40		[1]		2.6 ± 0.5	
7894.2 ± 4.8	270 ± 40		[0]		3.0 ± 0.5	
8020.6 ± 4.9	2000 ±300		0		22.3 ± 3.4	
8060.0 ± 5.0	360 ± 80				4.0 ± 0.9	
8165.1 ± 5.1	220 ± 50				2.4 ± 0.6	
8350.0 ± 5.2	455 ± 80		[1]		5.0 ± 0.9	
8514.3 ± 5.4	5000 ±400		0		54.2 ± 4.3	

$^{139}_{57}La$

E_0 (eV)		$2g\Gamma_n$ (meV)		J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)		$g\Gamma_n^1$ (meV)
8661.4	± 5.5	440	±100		[1]		4.7	± 1.1	
8670.0	± 5.5	160	± 60				1.8	± 0.6	
8812.3	± 5.7	200	± 30				2.14	± 0.32	
8903.6	± 5.8	7100	±600				75.3	± 6.4	
9210.4	± 6.1	100	± 20				1.04	± 0.21	
9295.7	± 6.1	220	± 20				2.3	± 0.21	
9597.3	± 6.4	100	± 40				1.0	± 0.4	
9662.0	± 6.5	380	± 60				3.9	± 0.6	
9873.5	± 6.7	1350	±180		[1]		13.6	± 1.8	
9981.8	± 6.8	4000	±400		0		40.0	± 4.0	
10190	±10	4600	±400		0		45.5	± 4.0	
10375	±10	700	±200		0		6.9	± 2.0	

THERMAL CROSS SECTIONS

σ_γ = 2.7±0.3 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
La^{139}	activation	JNE,25,129(71)	Ryves
La^{139}	activation	JIN,30,1353(68)	Orvini
$La^{139,140}$		ORNL-4155,16(67)	Gillette
$La^{139,140}$	mass separation	JIN,29,584(67)	O'Brien
$La^{139,140}$	mass separation	ORNL-3994,4(66)	O'Brien
La	diffraction	JCP,35,1950(61)	Atoji
La^{139}	activation	NSE,8,378(60)	Lyon
La	pile osci.	AERE-R/R-2333(57)	Cummins
La	σ_t diffraction	PR,91,597(53)	Koehler
La	pile osci.	PR,88,412(52)	Pomerance
La	pile osci.	JPR,12,584(51)	Benoist
La	pile osci.	PR,83,641(51)	Pomerance
La	pile osci.	PR,80,342(50)	Harris
La^{140}		JCP,17,421(49)	Katcoff
La^{139}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
La	σ_t	23-10218	CU-292(71)	Hacken
La	polarization	0.01-40	YF,10,47(69)	Ivanenko
La	σ_γ(spectra)	0.7	69STUDSVIK,105(69)	Kane
La	σ_t	72-31080	NP/A,123,561(69)	Morgenstern
La	σ_γ(spectra)	0.7-73	BAP,14,513(69)	Wasson
La	$\sigma_t\sigma_\gamma$(spectra)	0.7-10352	PR,159,1050(67)	Shwe
La	σ_t	72-36980	PRIVATE COMM.(66)	Garg
La^{138}	σ_t	0.2-356	65ANTWERP,77(65)	Harvey
La^{138}	σ_t	0.2-356	ORNL-3924,28(65)	Harvey
La^{138}	$\sigma_t\sigma_\gamma$	21-357	PRIVATE COMM.(64)	Block
La	σ_t	72-9000	JPR,24,997(63)	Bianchi
La,La^{138}	σ_t	0.7-73	ORNL-2718,26(59)	Block
La	σ_t	73	PR,108,353(57)	Stolovy

$_{58}$Ce

THERMAL CROSS SECTIONS

σ_γ = 0.63±0.15 b
$\bar{\sigma}_s$ = 4.7±0.3 b
a_{coh} = 4.82±0.06 fm

RESONANCE PROPERTIES

I_γ = 3.0±0.8 b
S_0 = 1.0±0.5

$^{136}_{58}$Ce

THERMAL CROSS SECTIONS

σ_γ = 0.95±0.25 b [34.4 hr ^{137}Ce^m]
σ_γ = 6.3±1.5 b [9 hr ^{137}Ce^g]

RESONANCE PROPERTIES

I_γ^c = 70±7 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.193 S_n = 7640± keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
56.3± 0.5	66 ± 25	8.1 ± 3.1
135.7± 1.25	630 ± 125	54.1 ±10.7
181.0± 1.8	4.3± 4.3	0.32± 0.32
187.0± 2.0	4.2± 4.2	0.31± 0.31
232 ± 3	8.1± 8.1	5.3 ± 5.3
274 ± 4	314 ± 314	19 ±19
533 ±10	810 ± 810	35 ±35
633 ±12	1460 ±1460	58 ±58
876 ±20	1390 ±1390	47 ±47

$^{138}_{58}$Ce

THERMAL CROSS SECTIONS

σ_γ = 0.015±0.005 b [55 sec ^{139}Ce^m]
σ_γ = 1.1±0.3 b [140 day ^{139}Ce^g]

$^{140}_{58}Ce$

THERMAL CROSS SECTIONS

σ_γ = 0.57±0.04 b
$\bar{\sigma}_s$ = 4.0±0.6 b
a_{coh} = 4.7±0.1 fm

RESONANCE PROPERTIES

I_γ = 0.47±0.05 b
<D> ~ 3 keV
S_0 = 1.0±0.4

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 88.48 S_n = 5428.5±0.6 keV

E_0 (eV)
22500
43000
56000

$^{141}_{58}Ce$

[32.53 day]

THERMAL CROSS SECTIONS

σ_γ = 29±3 b

RESONANCE PROPERTIES

I_γ = 0.48 b

$^{142}_{58}Ce$

THERMAL CROSS SECTIONS

σ_γ = 0.95±0.05 b
$\bar{\sigma}_s$ = 3.7±0.2 b
a_{coh} = 4.5±0.2 fm

RESONANCE PROPERTIES

I_γ = 0.73±0.04 b
<D> ~ 1 keV
S_0 = 1.2±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 11.07 S_n = 5178±7 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
1290 ± 80	50300	1400
1640 ±240	8000	200
2740 ±250	16800	320
4380 ±500		

$^{143}_{58}Ce$

[33.0 hr]

THERMAL CROSS SECTIONS

σ_γ = 6.0±0.7 b

$^{144}_{58}Ce$

[284.4 day]

THERMAL CROSS SECTIONS

σ_γ = 1.0±0.1 b

RESONANCE PROPERTIES

I_γ = 2.6±0.3 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Ce^{140,142}$	σ_t	70HELSINKI,651(70)	Vertebnyi
Ce^{142}	activation	CJP,46,2473(68)	Ricabarra
$Ce^{140,142}$	activation	JIN,29,2155(67)	Alstad
Ce	diffraction	AERE-R-4939(65)	Valentine
$Ce^{140,141}$	activation	NSE,20,302(64)	Lantz
Ce^{136}	isom. ratio	PR,129,769(63)	Keisch
Ce^{144}	activation	NSE,13,289(62)	Lantz
Ce^{138}	activation	PR,128,761(62)	Sehgal
Ce	diffraction	JCP,35,1950(61)	Atoji
Ce^{142}	activation	NSE,8,378(60)	Lyon
Ce^{138}	activation	PR,103,190(56)	Ketelle
Ce^{142}	activation	CJC,34,1023(56)	Roy
Ce^{143}	activation	CJC,34,238(56)	Roy
Ce^{136}	activation	PR,100,169(55)	Brosi
$Ce,Ce^{140,142}$	diffraction	PR,91,597(53)	Koehler
$Ce^{136,138,140,142}$	pile osci.	PR,88,412(52)	Pomerance
Ce^{138}	activation	PR,79,467(50)	Moses
$Ce^{140,142}$	activation	JCP,17,421(49)	Katcoff
Ce^{142}	activation	ZN,1,179(46)	Bothe

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
$Ce,Ce^{136,138,140}$	σ_t	0.066-5.0	UFZ,15,2050(70)	Vertebnyi
Ce^{142}	σ_t	0.066-5.0	UFZ,15,2050(70)	Vertebnyi
$Ce^{140,142}$	σ_t	1.4-60	AP,8,211(59)	Newson
Ce	σ_t	5-55	PR,102,1580(56)	Newson
Ce	σ_t	24-3200	PR,88,83(52)	Miller

THERMAL CROSS SECTIONS

σ_γ = 11.5±0.3 b
σ_γ = 3.9±0.5 b [14.6 min $^{142}Pr^m$]
σ_γ = 7.6±0.4 b [19.2 hr $^{142}Pr^g$]
$\bar{\sigma}_s$ = 3.3±0.5 b
σ_p = 3.0±0.6 b
a_{coh} = 4.4±0.4 fm

RESONANCE PROPERTIES

I_γ = 14.1±0.2 b
R' = 4.9±0.5 fm
<D> = 75±4 eV
S_0 = 1.72±0.25

RESONANCE PARAMETERS

I^π = 5/2⁺ %Abn = 100 S_n = 5843.8±0.9 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level						
85.2± 0.2	91 ± 6	6.9 ± 0.5	2	0	83 ± 6	0.75 ± 0.05
112.4± 0.2		0.39± 0.07	2			0.037± 0.007
218.7± 0.3	1190 ±120	1260 ± 130	3	0	71 ±15	85 ± 8
235.2± 0.3	968 ±100	1020 ± 100	3	0	93 ±15	67 ± 7
359.5± 0.4	1280 ±150	1420 ± 115	3	0	60 ±10	75 ± 6
387.9± 0.4	150 ± 30	57 ± 6	[3]		82 ±25	2.9 ± 0.3
415.0± 0.5		1.2 ± 0.4				0.06 ± 0.02
470.0± 0.5		3.4 ± 0.6				0.16 ± 0.03
519.4± 0.5	1080 ±100	840 ± 80	2	0	80 ±15	37 ± 4
635.8± 0.5	2612 ±130	2920 ± 130	3	0	110 ±30	116 ± 5
721.1± 1.0	2970 ±150	2415 ± 125	2	0	70 ±15	90 ± 5
845.2± 1.0	4730 ±300	5430 ± 350	3	0	83 ±15	187 ±12
899.9± 1.0		6.9 ± 1.0				0.23 ± 0.03
931.3± 1.0		6.1 ± 1.8				0.20 ± 0.06
956.8± 1.0	3830 ±190	3090 ± 185	2	0	107 ±20	100 ± 6
1018.0± 1.0		2.6 ± 1.3				0.08 ± 0.04
1119.5± 1.0	1210 ±200	1285 ± 100	3	0	110 ±30	38.5 ± 3.0
1284.7± 1.0		6 ± 2				0.20 ± 0.07
1330.0± 1.0		5.5 ± 1.8				0.15 ± 0.05
1363.7± 1.0		107 ± 7		[1]		2.9 ± 0.2
1384.0± 1.5		11 ± 2				0.30 ± 0.05

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1484.0± 1.5		5200 ± 385		0		135 ±10
1528.8± 1.5		8 ± 2				0.20 ± 0.05
1537.0± 1.5		12 ± 4				0.3 ± 0.1
1672.0± 1.5		70 ± 15				1.7 ± 0.3
1715.4± 1.5		3440 ± 290	3	0		83 ± 7
1880.7± 1.5		170 ± 40	[2]			4 ± 1
2036.0± 1.5		180 ± 20				4.0 ± 0.5
2096.5± 1.5		7560 ± 165	[3]	0		165 ±10
2132.0± 2.0		1090 ± 90	[3]	0		23.6 ± 2.0
2324.0± 2.0		15 ± 5				0.3 ± 0.1
2355.5± 1.5		97 ± 20				2.0 ± 0.4
2452.5± 2.0		1710 ± 100	3	0		34.5 ± 2.0
2498.0± 2.0		10 ± 5				0.2 ± 0.1
2575.0± 2		23 ± 5				0.45 ± 0.10
2605.0± 2.0		270 ± 25				5.3 ± 0.5
2706.0± 3.0		10 ± 5				0.2 ± 0.1
2789.0± 3.0		10 ± 5				0.2 ± 0.1
2834.5± 3.0		160 ± 16				3.0 ± 0.3
2926.0± 3.0		560 ± 50	[3]			10.3 ± 0.9
2943.5± 3.0		33 ± 11				0.6 ± 0.2
2975.0± 3.0		270 ± 60				5.0 ± 2.0
2998.0± 3.0		1315 ± 220	3	0		240 ±40
3078.0± 3.0		17 ± 11				0.3 ± 0.2
3156.0± 3.0		500 ± 100	[2]	0		9 ± 2
3222.0± 3.0		24 ± 8				0.4 ± 0.1
3395.0± 3.0		160 ± 50		[1]		2.8 ± 0.8
3473.0± 3.0		940 ± 120	[3]	0		16.0 ± 2.0
3582.0± 3.0		450 ± 90				7.5 ± 1.5
3602.5± 3.0		7730 ±1210	[2]	0		128 ±20
3725.5± 3.5		55 ± 6				0.9 ± 0.1
3780.0± 3.5		8860 ± 615	3	0		144 ±10
3901.0± 3.5		1820 ± 125				29.0 ± 2.0
3960.0± 3.0		32 ± 13				0.5 ± 0.2
4001.0± 3.0		650 ± 95	[2]			10.3 ± 1.5
4395.0± 4.0		245 ± 33				3.7 ± 0.5
4474.0± 4.0		220 ± 33				3.3 ± 0.5
4520.5± 4.0		930 ± 255	[3]	0		13.8 ± 3.8
4541.0± 4.0		5460 ± 675	[3]	0		81 ±10
4586.0± 4.0		6100 ± 610	[2]	0		90 ± 9
4670.0± 4.0		1230 ± 140		0		18 ± 2
4973.0± 4.0		1015 ± 280				14.4 ± 4.0

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
5007.0± 4.0		495 ± 140				7 ± 2
5039.0± 5.0		170 ± 28				2.4 ± 0.4
5137.0± 5.0		1400 ± 180		[1]		
5245.0± 5.0		3435 ± 290	[3]	0		47.4 ± 4.0
5350.0± 5.0		620 ± 80		[1]		
5596.0± 5.0		11120 ± 700	[2]	0		149.0 ±11.7
5643.0± 5.0		820 ± 100				11.0 ± 1.3
5729.0± 5.0		3410 ± 150	[3]	0		45 ± 2
5784 ± 6						0.3 ± 0.1
5802 ± 6						0.3 ± 0.1
5914 ± 6						6.0 ± 1
5954 ± 6						5.0 ± 0.5
5998 ± 7						0.3 ± 0.1
6073 ± 7						0.4 ± 0.1
6255 ± 7						5 ± 1
6286 ± 7						4 ± 1
6329 ± 7						5 ± 1
6456 ± 7						0.6 ± 0.3
6582 ± 8						6 ± 1
6711 ± 8						60 ±15
6726 ± 8						40 ±12
6779 ± 8						0.8 ± 0.4
6927 ± 8						5 ± 1
7076 ± 9						4.0 ± 1.0
7169 ± 9						50 ±10
7221 ± 9						3.0 ± 0.5
7347 ± 9						100 ±25
7391 ± 9						0.4 ± 0.2
7483 ± 9						4.0 ± 1.0
7558 ±10						0.5 ± 0.2
7667 ±10						6 ± 2
7593 ±10						4 ± 2
7779 ±10						44 ±10
7830 ±10						1.0 ± 0.2
7903 ±10						5.0 ± 1
7960 ±10						0.4 ± 0.2
8010 ±10						0.8 ± 0.3
8062 ±11						60 ±15
8119 ±11						1.0 ± 0.5
8229 ±11						36 ± 8
8291 ±11						0.5 ± 0.2

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
8333 ±11						2 ± 1
8387 ±11						2 ± 1
8502 ±11						3 ± 1
8555 ±12						14 ± 2
8804 ±12						90 ±16
8925 ±12						56 ±20
9113 ±12						36 ± 8
9258 ±12						100 ±25
9338 ±12						
9443 ±13						112 ±30
9544 ±13						
9557 ±13						60 ±15
9621 ±13						160 ±40
9792 ±13						
9822 ±13						10 ± 2
9899 ±13						
10049 ±13						50 ±10

$^{142}_{59}Pr$

[19.16 hr]

THERMAL CROSS SECTIONS

σ_γ = 20±3 b

$^{143}_{59}Pr$

[13.58 day]

THERMAL CROSS SECTIONS

σ_γ = 89±10 b

RESONANCE PROPERTIES

I_γ = 190±25 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pr^{141}	isom. ratio	PR,173,1133(68)	Kern
Pr^{141}	isom. ratio	PL/B,24,400(67)	Kern
Pr^{141}	σ_t	NP/A,95,683(67)	Zimmerman
Pr^{141}	σ_t	BAP,10,12(65)	Hickman
Pr^{141}	activation	NSE,8,378(60)	Lyon
Pr^{143}	activation	CJP,37,907(59)	Roy
Pr^{141}	pile osci.	AERE-R/R-2333(57)	Cummins
Pr^{142}	activation	JCP,23,2108(55)	Smith
Pr^{141}	σ_t diffraction	PR,91,597(53)	Koehler
Pr^{141}	pile osci.	PR,83,641(51)	Pomerance
Pr^{141}	pile osci.	PR,79,11(50)	Harris
Pr^{141}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pr^{141}	σ_γ(spectra)	85-635	69STUDSVIK,651(69)	Becvar
Pr^{141}	σ_t	85-5724	NP/A,123,561(69)	Morgenstern
Pr^{141}	σ_γ(spectra)	0-957	BAP,14,514(69)	Mughabghab
Pr^{141}	σ_t	85-10049	PR,166,1234(68)	Wynchank
Pr^{141}	σ_γ	85-1890	PRIVATE COMM.(64)	Block
Pr^{141}	$\sigma_t \bar{\sigma}_s \sigma_\gamma$	50-942	ZET,47,43(64)	Wang
Pr^{141}	σ_t	85-1120	JPR,24,997(63)	Bianchi
Pr^{141}	σ_t	981-2940	CR,253,859(61)	Corge
Pr^{141}	σ_t	85-930	JPR,22,719(61)	Corge
Pr^{141}	σ_t	216-232	CR,252,3233(61)	Julien
Pr^{141}	activation		KAPL-2000-121,33(60)	Fehr
Pr^{141}	σ_t	85-364	PRIVATE COMM.(56)	Pilcher

$_{60}$Nd

THERMAL CROSS SECTIONS

σ_γ = 50.5±2.0 b
$\bar{\sigma}_s$ = 16±1 b
σ_t = 66.5±2.3 b
σ_{pm} = 4±1 b
a_{coh} = 7.2±0.2 fm

RESONANCE PROPERTIES

I_γ = 45±5 b
S_0 = 2.8±0.4

$^{142}_{60}$Nd

THERMAL CROSS SECTIONS

σ_γ = 18.7±0.7 b
$\bar{\sigma}_s$ = 7.5±0.5 b
σ_t = 26.2±0.9 b
a_{coh} = 7.7±0.3 fm

RESONANCE PROPERTIES

I_γ^c = 9±1 b
<D> = 415±70 eV
S_0 = 1.4±0.4

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 27.11 S_n = 6125.5±1.4 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
218.6± 0.2	0.90± 0.05	0.061± 0.004
235.0± 0.2	0.80± 0.05	0.052± 0.004
636.4± 0.6	1.50± 0.25	0.595± 0.010
956.8± 1.0	1.80± 0.40	0.582± 0.013
1119.5± 1.0	1.45± 0.30	0.043± 0.009
1485.0± 2.0	1.00± 0.25	0.026± 0.007
1687.0± 2.0	60 ± 10	1.46 ± 0.14
2528.5± 2.5	9700 ± 300	193.0 ± 5.1
2636.8± 3.0	20.0 ± 7.5	0.389± 0.146
2767.0± 3.0	62.5 ± 20.0	1.19 ± 0.38
4145 ± 5	5.5 ± 2.0	0.086± 0.031
4532 ± 5	7700 ± 350	121.7 ± 5.2
4948 ± 5	105 ± 20	1.50 ± 0.3
5426 ± 6	110 ± 15	1.49 ± 0.20
5491 ± 6	3500 ± 200	47.2 ± 2.7
5669 ± 6	110 ± 15	1.46 ± 0.20
5982 ± 6	1393 ± 75	18.0 ± 1.0
6927 ± 7	525 ± 150	6.31 ± 1.80
7246 ± 8	500 ± 150	5.86 ± 1.76
8261 ± 8	500 ± 150	5.50 ± 1.65

$^{142}_{60}Nd$

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
8423 ± 9	1900 ± 200	20.7 ± 2.18
8806 ± 9	500 ± 150	5.33 ± 1.60
9885 ±10	11780 ± 1250	118.5 ± 12.6
10961 ±12	10500 ± 1000	100.3 ± 9.6
13524 ±15	4200 ± 1000	36.1 ± 8.6
13663 ±15	89225 ± 9000	763.4 ± 77.0
15461 ±15	12850 ± 1500	103.3 ± 12.0
16258 ±20	54200 ± 5000	425.1 ± 39.2
17074 ±20	2630 ± 500	20.1 ± 3.8
19365 ±20	46500 ± 5000	334.1 ± 35.9
21250 ±25	24380 ± 2500	167.3 ± 17.2
22090 ±25	11978 ± 1250	80.6 ± 8.4
25137 ±30	4200 ± 1000	26.5 ± 6.3
25905 ±30	25670 ± 3000	159.5 ± 18.6
26702 ±30	21050 ± 2500	128.8 ± 15.3
30570 ±35	364650 ±50000.	2086 ±286
31050 ±35	29000 ± 5000	164.6 ± 28.4

THERMAL CROSS SECTIONS

σ_γ = 325±10 b
$\bar{\sigma}_s$ = 75±7 b
σ_a = 17.4±1.6 mb [$^{140}Ce^{0+}$]
σ_t = 400±13 b

RESONANCE PROPERTIES

I_γ^c = 140±30 b
<D> = 32±3 eV
S_0 = 3.1±0.5

RESONANCE PARAMETERS

I^π = 7/2⁻ %Abn = 12.17 S_n = 7817.4±0.9 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-6 ±1			3		86 ±15	68 ±15
55.33±0.05	112 ± 10	41.3± 1.0	4	0	75 ±10	5.54 ± 0.13
127.4 ±0.1	460 ± 25	340 ± 20	3	0	70 ±10	30.1 ± 1.8
135.5 ±0.1	129 ± 14	56 ± 5	3	0	65 ±14	4.01 ± 0.43
158.9 ±0.1	1054 ± 80	1100 ± 80	4	0	76 ± 3	87.3 ± 6.4
179.5 ±0.2	730 ± 30	575 ± 25	3	0	74 ± 5	42.9 ± 1.9
186.6 ±0.2	1454 ±100	1350 ±100	4	0	76 ± 4	196.1 ± 7.3
306.2 ±0.3	756 ± 40	770 ± 40	4	0	72 ± 5	44.0 ± 2.3
324.4 ±0.3	994 ± 40	818 ± 40	3	0	59 ± 7	45.0 ± 2.2
337.2 ±0.3	807 ± 60	750 ± 60	4	0	57 ± 4	40.8 ± 3.2
350.4 ±0.3	954 ± 40	770 ± 40	(3)	0	85 ± 5	41.2 ± 1.6
401.3 ±0.4	1200 ±100	1088 ± 60		0	81 ± 4	53.9 ± 2.5
408.0 ±0.4	640 ± 30	500 ± 30	3	0	69 ± 4	24.8 ± 1.5
446.3 ±0.4	1860 ±100	1960 ± 50		0	80 ± 5	92.8 ± 2.4
506.8 ±0.5		20 ± 2				0.9 ± 0.1
523.3 ±0.5	340 ± 30	220 ± 20			83 ±11	16.8 ± 0.9
555.6 ±0.5	240 ± 25	70 ± 20	4			2.9 ± 0.8
576.2 ±0.6		5.9± 0.9	3			0.245± 0.036
657.6 ±0.7	556 ± 20	420 ± 15	3	0	76 ± 4	16.4 ± 0.6
708.3 ±0.7	456 ± 20	340 ± 15	3	0	67 ± 5	12.8 ± 0.6
778.0 ±0.8		1300 ± 50	(4)		76 ± 5	46.6 ± 1.4
803.3 ±0.8		16.3± 1.5				0.575± 0.053
816.4 ±0.8		10.2± 1.0				0.372± 0.034
839.8 ±0.8	870 ± 40	810 ± 30	(4)		66 ± 5	27.9 ± 1.0
852.6 ±0.9		25.8± 1.3				0.884± 0.045

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
971.6 ±1.0		59.2± 3.8				1.90 ± 0.10
984.6 ±1.0		500 ± 25			*65 ± 6	15.9 ± 0.8
1007.7 ±1.0					*59 ± 2	
1027.4 ±1.0		250 ± 10			*67 ± 5	8.00 ± 0.31
1082.4 ±1.0		100 ± 10	(4)		80 ± 5	3.84 ± 0.30
1125.0 ±1.0		500 ± 25			*60 ± 5	14.9 ± 0.8
1165.0 ±2.0		31 ± 2				0.91 ± 0.06
1211.2 ±2.0		1430 ± 70				41.1 ± 2.0
1263.0 ±2.0		5478 ±120			*75 ± 4	153.9 ± 3.4
1274.8 ±2.0		1755 ± 70			*64 ± 6	49.17 ± 1.68
1307.8 ±2.0		2200 ± 50			*78 ± 7	60.85 ± 1.38
1433.8 ±1.5		980 ± 50			*58 ± 6	25.9 ± 1.3
1462.0 ±2.0		179 ± 10			*65 ± 6	4.58 ± 0.26
1472.0 ±2.0		754 ± 30			*64 ± 7	19.7 ± 0.8
1511.7 ±1.5		255 ± 10			*73 ± 5	6.56 ± 0.26
1558.1 ±1.5		668 ± 20			*80 ± 8	16.7 ± 0.5
1584.2 ±1.5		1920 ±100			*73 ± 7	48.2 ± 2.5
1653.8 ±2.0		945 ± 30			*84 ± 8	23.2 ± 0.7
1668.5 ±2.0		3390 ±100			*73 ± 8	83.0 ± 2.5
1724.3 ±2.0		790 ± 40			*68 ± 7	19.03 ± 0.96
1724.3 ±2.0		790 ± 40				19.02 ± 0.96
1761.1 ±2.0		1270 ± 60				30.26 ± 1.43
1850.0 ±2.0		2000 ±100			*62 ±10	46.5 ± 2.3
1911.5 ±2.0		1510 ± 80			*129 ±12	34.5 ± 1.8
1963.8 ±2.0		120 ± 20				2.71 ± 0.45
2004.7 ±2.0					*62.2± 8.2	
2038.0 ±2.0		1855 ± 80				41.4 ± 1.8
2129.1 ±2.0		8400 ±400				182.1 ± 8.7
2173.0 ±2.0		1280 ± 60				27.5 ± 1.3
2224.6 ±2.5		740 ± 40				15.7 ± 0.9
2292.7 ±2.5		505 ± 30				10.6 ± 0.6
2348.7 ±2.5		605 ± 40				12.5 ± 0.8
2432.1 ±2.5		5600 ±300				113.6 ± 6.1
2465.5 ±2.5		1975 ±100				39.8 ± 2.0
2631.7 ±3.0		2840 ±100				55.4 ± 2.0
2713.0 ±3.0		720 ± 40				13.8 ± 0.8
2760.1 ±3.0		6340 ±300				120.7 ± 5.7
2819.8 ±3.0		325 ± 30				6.1 ± 0.6
2872.6 ±3.0		3270 ±120				61.0 ± 2.2
2912.5 ±3.0		1085 ± 60				20.1 ± 1.1
3041.0 ±3.0		2830 ±100				51.3 ± 1.8

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
3070.8 ±3.0		1035 ± 60				18.7 ± 1.1
3117.4 ±3.0		555 ± 50				9.9 ± 0.9
3184.0 ±3.0		2380 ±100				42.2 ± 1.8
3195.0 ±3.0		560 ± 50				9.9 ± 0.9
3232.1 ±3.0		1570 ± 80				27.6 ± 1.4
3292.8 ±3.5		1625 ± 90				28.3 ± 1.6
3384.0 ±4.0		2300 ±100				39.5 ± 1.7
3426.0 ±4.0		215 ± 30				3.7 ± 0.5
3461.0 ±4.0		975 ± 60				16.6 ± 1.0
3509.0 ±4.0		1690 ±100				28.5 ± 1.7
3566.0 ±4.0		250 ± 50				4.2 ± 0.8
3629.0 ±4.0		1670 ±100				27.7 ± 1.7
3703.0 ±4.0		2370 ±120				39.0 ± 2.0
3715.0 ±4.0		2060 ±120				33.8 ± 2.0
3778.0 ±4.0		440 ± 60				71.6 ± 1.0
3836.0 ±4.0		225 ± 45				3.6 ± 0.7
3882.0 ±4.0		1120 ± 80				18.0 ± 1.3
3954.0 ±4.0		550 ± 60				8.8 ± 1.0
4017.0 ±4.0		4300 ±200				69.1 ± 3.2
4028.0 ±4.0		1770 ±120				27.9 ± 1.9
4059.0 ±4.0		2340 ±120				36.7 ± 1.9
4109.0 ±5.0		215 ± 60				3.4 ± 0.9
4132.0 ±5.0		970 ±100				15.1 ± 1.6
4141.0 ±5.0		910 ±100				14.1 ± 1.6
4203.0 ±5.0		6480 ±300				100 ± 5
4243.0 ±5.0		1240 ±100				19.0 ± 1.5
4333.0 ±5.0		3240 ±150				49.2 ± 2.3
4395.0 ±5.0		230 ± 50				3.5 ± 0.8
4415.0 ±5.0		540 ± 75				8.1 ± 1.1
4473.0 ±5.0		730 ± 90				10.9 ± 1.4
4516.0 ±5.0		240 ± 60				3.6 ± 0.9
4555.0 ±5.0		250 ± 50				3.7 ± 0.7
4596.0 ±5.0		750 ±100				11.1 ± 1.5
4607.0 ±5.0		1160 ±100				17.1 ± 1.5
4686.0 ±5.0		2630 ±150				38.4 ± 2.2
4743.0 ±5.0		720 ± 70				10.5 ± 1.1
4838.0 ±5.0		5450 ±300				78.4 ± 4.3
4891.0 ±5.0		6200 ±300				88.7 ± 4.3
4987.0 ±5.0		5070 ±300				71.8 ± 4.3
5012.0 ±5.0		1780 ±180				25.1 ± 2.5
5128.0 ±5.0		3400 ±200				47.5 ± 2.7

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
5180.0 ±5.0		8150 ±400				113.2 ± 5.6
5235.0 ±5.0		2350 ±200				32.5 ± 2.8
5313.0 ±6.0		950 ±100				13.0 ± 1.4
5440.0 ±6.0		5570 ±250				75.5 ± 3.4
5503.0 ±6.0		255 ± 80				3.4 ± 1.1

[a] $2g\Gamma_\gamma$

[b] $2g\Gamma_n\Gamma_\gamma/\Gamma$

THERMAL CROSS SECTIONS

σ_γ = 3.6±0.3 b
a_{coh} = 2.4±0.1 fm

RESONANCE PROPERTIES

I_γ^c = 5.0±0.5 b
<D> = 540±65 eV
S_0 = 3.9±1.0

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 23.85 S_n = 5760.4±1.6 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
373.8± 0.4	17500 ±2000	16250 ± 500		841 ±26
733.7± 0.8	750 ± 50	625 ± 30	78 ±12	23.1 ± 1.1
1277.3± 1.5	36000 ±3600	32300 ±1000		903.6 ±28.0
1628.0± 2.0	4480 ± 300	4330 ± 250	150 ±80	107.5 ± 6.2
1975.0± 2.0	16580 ±2000	15000 ± 750		346.9 ±16.9
2762.0± 3.0		4030 ± 200		76.7 ± 3.8
3538.1± 4.0		15500 ± 750		267.3 ±12.6
3749.0± 4.0		1360 ± 60		22.2 ± 1.0
4738.0± 5.0		275 ± 50		3.5 ± 0.7
4929 ± 5		24200 ±1000		346 ±15
5648 ± 6		3360 ± 200		44.7 ± 2.7
6106 ± 6		13000 ±1000		166.4 ±12.8
6788 ± 7		48000 ±2500		582.6 ±30.4
7048 ± 7		3443 ± 350		41.0 ± 4.1
7473 ± 8		5160 ± 500		59.7 ± 5.8
8186 ±10		14315 ± 750		158.2 ± 8.3
8846 ±10		3100 ± 500		33.0 ± 5.3
9372 ±10		36300 ±1750		375 ±18
9735 ±10		47850 ±2500		485 ±25
10712 ±15		58500 ±2500		565 ±24
11244 ±15		18530 ± 750		175 ± 7
11641 ±15		15900 ±1000		147 ± 9
12177 ±15		4275 ± 750		39 ± 7
13242 ±15		61800 ±4000		537 ±35
13577 ±15		14130 ±1000		121.3 ± 8.6
13997 ±15		40950 ±2500		346.1 ±21.1
14480 ±15		2870 ± 750		23.85± 6.2
15243 ±15		2223 ± 750		18.0 ± 6.1
16317 ±20		58660 ± 250		459.3 ±19.6
16716 ±20		26150 ±1500		202.3 ±11.6
16830 ±20		33850 ±2000		261.0 ±15.5
17537 ±20		10795 ±1250		81.5 ± 9.4
18191 ±20		8385 ±1000		62.2 ± 7.4
18430 ±20		40780 ±2500		300.4 ±18.4
19407 ±20		28545 ±2000		204.9 ±14.4

$^{145}_{60}Nd$

THERMAL CROSS SECTIONS

σ_γ = 42±2 b
σ_α < 0.1 mb

RESONANCE PROPERTIES

I_γ = 240±35 b
<D> = 19±2 eV
S_0 = 4.2±0.5

RESONANCE PARAMETERS

I^π = 7/2⁻ %Abn = 8.30 S_n = 7565.4±0.9 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
4.35±0.02	52 ± 5	1.2± 0.1	3		51 ± 5	0.57± 0.04
42.51±0.05	411 ± 15	310 ± 15	3		57 ± 2	47.6 ± 2.3
85.62±0.08		12.3± 0.9	4	0		1.33± 0.10
96.0 ±0.1	80 ± 10	5.1± 0.2	3	0	74 ±10	0.52± 0.02
102.95±0.10	188 ± 7	115 ± 5	3	0	47 ± 5	11.3 ± 0.5
103.45±0.10		39.0± 1.2	4	0	65 ±10	3.83± 0.12
147.1 ±0.2	115 ± 15	21.0± 1.5	3	0		1.73± 0.12
151.4 ±0.2	89 ± 8	14.7± 0.5	4	0		1.20± 0.04
169.7 ±0.2		3.0± 0.2	[4]			0.23± 0.02
189.2 ±0.2	75 ± 5	33 ± 2	3	0	38 ± 3	2.4 ± 0.2
232.6 ±0.2	101 ± 20	6.6± 0.4	4	0		0.43± 0.03
242.1 ±0.2	113 ± 6	70 ± 3	4	0	51 ± 4	4.5 ± 0.2
248.4 ±0.2		3.8± 0.4	3			0.24± 0.03
258.9 ±0.2	133 ± 6	100 ± 5	4	0	44 ± 3	6.2 ± 0.3
274.8 ±0.2	179 ± 9	147 ± 8	4	0	48 ± 3	8.9 ± 0.9
306.2 ±0.3		58 ± 12	[3]		35 ± 5	3.3 ± 0.7
311.1 ±0.3	385 ± 16	303 ± 15	[3]	0	39 ± 4	17.2 ± 0.9
318.5 ±0.3	80 ± 30	12.0± 1.0				0.67± 0.06
342.5 ±0.3	165 ± 30	58 ± 3	[4]			3.1 ± 0.2
376.6 ±0.3		11.2± 0.6				0.58± 0.03
390.5 ±0.4		46 ± 8	4			2.3 ± 0.4
397.7 ±0.4	125 ± 50	27 ± 2	3			1.35± 0.10
403.6 ±0.4	450 ± 50	220 ± 20	4			10.9 ± 1.0
406.2 ±0.4		130 ± 5				6.45± 0.24
445.8 ±0.4		200 ± 20			*51 ± 4	9.5 ± 1.0
464.6 ±0.5	840 ± 40	655 ± 35	[3]		58 ± 5	30.4 ± 1.6
487.1 ±0.5	340 ± 15	355 ± 15	[3]		58 ± 4	16.1 ± 0.7
497.2 ±0.5	500 ± 30	400 ± 20			*55 ± 4	17.9 ± 0.9
505.4 ±0.5	950 ± 90	770 ± 40			*50 ± 3	34.3 ± 1.8
516.6 ±0.5	250 ±100	21.2± 1.6				0.93± 0.07
541.5 ±0.5		585 ± 50			*57 ± 5	25.1 ± 2.2
568.6 ±0.6	1100 ±100	1190 ± 60			*54 ± 6	49.9 ± 2.5
590.8 ±0.6		12.6± 1.5				0.52± 0.06
605.7 ±0.7		8.5± 1.5				0.35± 0.06
638.9 ±0.6	482 ± 30	420 ± 20	(3)		62 ± 6	16.6 ± 0.8
647.8 ±0.6	276 ± 30	134 ± 5				5.26± 0.20
659.0 ±0.6		17.4± 4.0				0.68± 0.16
667.1 ±0.7		5.6± 2.0				0.22± 0.08

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
688.8 ±0.7	120 ± 60	34.0± 1.5				1.30± 0.06
695.5 ±0.7	60 ± 30	61 ± 3				2.31± 0.11
709.0 ±0.7		34 ± 3				1.28± 0.13
715.9 ±0.7		60 ± 30				2.2 ± 1.1
756.3 ±0.7		760 ± 50			*55 ± 6	27.6 ± 1.8
762.5 ±0.7	300 ± 25	290 ± 15				10.5 ± 0.5
785.7 ±0.8		3.5± 0.6				0.13± 0.02
820.5 ±0.8	165 ± 40	92 ± 4				3.2 ± 0.1
828.1 ±0.8	375 ± 40	360 ± 15				12.5 ± 0.5
848.4 ±0.8		2600 ±300			*97 ± 8	89.3 ±10.4
880.8 ±0.9		27 ± 2				0.91± 0.07
885.0 ±0.9		50 ± 2				1.68± 0.07
902.2 ±0.9	590 ± 50	465 ± 20			*55 ± 6	15.5 ± 0.7
913.9 ±0.9	870 ± 90	705 ± 30			*57 ± 5	23.3 ± 1.0
919.7 ±0.9		62 ± 6			(50)	2.0 ± 0.2
938.6 ±0.9		66 ± 3				2.2 ± 0.1
945.4 ±1.0		430 ± 25			*49 ± 5	14.0 ± 0.7
972.6 ±1.0		494 ± 20			*61 ± 4	15.9 ± 0.6
977.7 ±1.0	510 ± 60	360 ± 15			*83 ± 7	11.5 ± 0.5
1007.4±1.0	850 ±100	960 ± 50				30.3 ± 1.6
1009.2±1.0	910 ±100	605 ± 30				19.0 ± 0.9
1052.5±1.0	850 ± 90	660 ± 30				20.3 ± 0.9
1055.2±1.0	350 ± 40	340 ± 15	[4]			10.5 ± 0.5
1093.2±1.0	270 ± 60	260 ± 15	[4]		49 ± 8	7.9 ± 0.5
1117.1±1.0	360 ± 50	270 ± 15				8.1 ± 0.5
1141.1±1.0	1400 ±150	1090 ± 50				32.3 ± 1.5
1163.6±2.0		142 ± 14			(50)	4.2 ± 0.4
1192.5±2.0		59.6± 3.0				1.7 ± 0.9
1194.5±2.0		163 ± 10				4.7 ± 0.3
1238.1±2.0		138 ± 5			*56 ± 6	3.9 ± 0.1
1268.6±2.0		69 ± 10			(50)	1.9 ± 0.3
1289.0±2.0		385 ± 15				10.7 ± 0.4
1303.7±2.0	900 ±100	1060 ± 50	[4]		48 ± 5	29.4 ± 1.4
1313.0±2.0		78 ± 8			(50)	1.3 ± 0.1
1328.8±2.0		9.4± 3.4				2.6 ± 0.9
1357.7±2.0		5.4± 3.6				0.15± 0.10
1379.0±2.0	610 ± 60	465 ± 20			51 ± 6	12.5 ± 0.5
1397.0±2.0		198 ± 3				0.53± 0.08
1403.0±2.0	760 ± 80	760 ± 40			69 ± 8	20.3 ± 1.1
1430.0±2.0	930 ±100	800 ± 40	[3]		40 ± 7	21.2 ± 1.1
1448.0±2.0		210 ± 10	[4]		63 ± 8	5.5 ± 0.3
1494.0±2.0		87 ± 9			(50)	2.3 ± 0.2
1523.9±1.5		405 ± 15				10.4 ± 0.4
1542.0±1.5		360 ± 10				9.2 ± 0.3
1553.9±1.5		210 ± 15				5.3 ± 0.4
1562.7±1.5	445 ±100	405 ± 20				10.3 ± 0.5
1575.6±1.5	1630 ±100	1745 ± 50				44.0 ± 1.3
1611.0±1.5		350 ± 20				8.7 ± 0.5
1649.6±1.5		130 ± 15				3.2 ± 0.4
1658.0±2.0	1240 ±120	1125 ± 50				27.6 ± 1.2
1675.4±2.0		72 ± 7				1.8 ± 0.2
1689.4±2.0		50 ± 5				1.2 ± 0.1

$^{145}_{60}Nd$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1707.6±2.0	1200 ±120	1205 ± 50				29.2 ± 1.2
1727.0±2.0		455 ± 20				10.9 ± 0.5
1791.0±2.0		810 ± 40				19.1 ± 1.0
1797.4±2.0	2100 ±200	2850 ± 80				67.2 ± 1.9
1806.7±2.0	3900 ±120	500 ± 30				11.8 ± 0.7
1816.2±2.0		1010 ± 50				23.7 ± 1.2
1851.5±2.0	2600 ±200	2320 ±100				53.9 ± 2.3
1887.0±2.0	1540 ±150	1190 ± 50				27.4 ± 1.2
1900.3±2.0		1600 ±100				3.7 ± 0.2
1910.5±2.0	650 ±150	500 ±250				11.4 ± 0.6
1917.4±2.0	1180 ±150	1020 ± 50				23.3 ± 1.1
1924.9±2.0	410 ±150	530 ± 25				12.1 ± 0.6
1947.0±2.0		123 ± 10				2.8 ± 0.2
1986.0±2.0	1810 ±200	1490 ± 60				33.4 ± 1.3
1998.0±2.0		197 ± 10				4.4 ± 0.2
2022.5±2.0		2365 ±100				52.6 ± 2.2
2068.1±2.0		525 ± 25				11.5 ± 0.5
2101.0±2.0		55 ± 15				1.2 ± 0.3
2132.6±2.0		620 ± 40				13.4 ± 0.9
2143.4±2.0		325 ± 25				7.0 ± 0.5
2157.2±2.0		390 ± 20				8.4 ± 0.4
2183.6±2.0		89 ± 15				1.9 ± 0.3
2192.6±2.0		1520 ± 80				32.5 ± 1.7
2225.4±2.5		500 ± 25				10.6 ± 0.5
2267.0±2.5		114 ± 15				2.4 ± 0.3
2283.3±2.5		495 ± 30				10.4 ± 0.6
2294.4±2.5		620 ± 35				12.9 ± 0.7
2329.2±2.5		470 ± 30				9.7 ± 0.6
2345.3±2.5		805 ± 40				16.6 ± 0.8
2396.4±2.5		630 ± 40				12.9 ± 0.8
2421.5±2.5		680 ± 40				13.8 ± 0.8
2443.1±2.5		440 ± 30				8.9 ± 0.6
2465.6±2.5		3160 ±100				63.6 ± 2.0
2485.6±2.5		90 ± 20				1.8 ± 0.4
2511.1±2.5		2525 ±100				50.4 ± 2.0
2541.7±3.0		3490 ±150				69.2 ± 3.0
2569.7±3.0		2385 ±120				47.0 ± 2.4
2604.0±3.0		560 ± 60				11.0 ± 1.2
2683.2±3.0		410 ± 45				7.9 ± 0.9
2735.4±3.0		420 ± 50				8.0 ± 1.0
2744.4±3.0		620 ± 60				11.8 ± 1.1
2754.0±3.0		600 ± 60				11.4 ± 1.1
2781.4±3.0		5660 ±400				107 ± 8
2788.8±3.0		3190 ±300				60.4 ± 5.7
2840.8±3.0		4625 ±250				86.8 ± 4.7
2882.1±3.0		2700 ±150				50.2 ± 2.7
2891.8±3.0		1095 ±100				20.4 ± 1.9
2916.8±3.0		940 ±100				17.4 ± 1.9
2930.6±3.0		7640 ±300				141.1 ± 5.5
2993.3±3.0		1360 ±100				24.9 ± 1.8
3021.8±3.0		3100 ±150				56.3 ± 2.7
3047.0±3.0		1230 ±100				22.3 ± 1.8

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
3064.2±3.0		415 ± 60				7.5 ± 1.1
3074.0±3.0		950 ± 30				1.7 ± 5.4
3108.5±3.0		480 ± 50				8.6 ± 0.9
3118.3±3.0		1620 ± 80				29.0 ± 1.4
3166.1±3.0		1500 ± 75				26.7 ± 1.3
3219.4±3.0		910 ± 60				16.0 ± 1.1
3241.8±3.5		880 ±100				15.5 ± 1.7
3252.0±3.5		1980 ±120				34.7 ± 2.1
3287.5±3.5		2200 ±100				38.4 ± 1.7
3306.0±3.5		950 ± 80				16.5 ± 1.4
3327.0±4.0		1100 ± 30				1.9 ± 0.5
3347.0±4.0		30 ± 15				0.52± 0.6
3369.0±4.0		460 ± 45				7.9 ± 0.8
3405.0±4.0		3600 ±100				61.7 ± 1.7
3453.0±4.0		810 ± 60				13.8 ± 1.0
3477.0±4.0		1480 ± 80				25.1 ± 1.4
3515.0±4.0		1680 ±100				28.3 ± 1.7
3528.0±4.0		1500 ±120				25.3 ± 2.0
3591.0±4.0		560 ± 60				9.3 ± 1.0
3608.0±4.0		580 ± 60				9.7 ± 1.0
3662.0±4.0		1510 ±150				25.0 ± 2.5
3681.0±4.0		1500 ±100				24.7 ± 1.7
3697.0±4.0		550 ± 60				9.0 ± 1.0
3744.0±4.0		3270 ±120				53.4 ± 2.0
3795.0±4.0		1450 ±100				23.5 ± 1.6
3817.0±4.0		1770 ±120				28.6 ± 1.9
3855.0±4.0		1010 ±100				16.3 ± 1.6
3873.0±4.0		7440 ±200				119.6 ± 3.2
3903.0±4.0		520 ± 60				8.3 ± 1.0
3956.0±4.0		5030 ±250				80.0 ± 4.0
3981.0±4.0		8170 ±400				129.5 ± 6.3
4004.0±4.0		3060 ±200				48.4 ± 3.2
4067.0±4.0		2000 ±150				31.3 ± 2.4
4118.0±5.0		570 ± 90				8.9 ± 1.4
4167.0±5.0		440 ± 60				6.8 ± 0.9
4209.0±5.0		1230 ±120				19.0 ± 1.9
4228.0±5.0		900 ±100				13.8 ± 1.5
4245.0±5.0		3770 ±150				57.9 ± 2.3
4263.0±5.0		420 ± 60				6.4 ± 0.9
4307.0±5.0		3460 ±150				52.7 ± 2.3
4344.0±5.0		2000 ±120				30.3 ± 1.0
4365.0±5.0		1950 ±150				29.5 ± 2.3
4414.0±5.0		60 ± 40				0.9 ± 0.6
4439.0±5.0		1400 ±100				21.0 ± 1.5
4493.0±5.0		1400 ±100				20.9 ± 1.5
4525.0±5.0		1500 ±100				22.3 ± 1.5
4562.0±5.0		440 ± 60				6.5 ± 0.9
4613.0±5.0		1700 ±100				2.5 ± 1.5
4637.0±5.0		520 ± 60				7.6 ± 0.9

* $2g\Gamma_\gamma$

$^{146}_{60}$Nd

THERMAL CROSS SECTIONS

σ_γ = 1.4±0.1 b
a_{coh} = 8.7±0.2 fm

RESONANCE PROPERTIES

I_γ = 3.2±0.5 b
<D> = 210±25 eV
S_0 = 2.3±0.6

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 17.22 S_n = 5302.3±2.8 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
359.5± 0.3	99 ± 9	44 ± 3	55 ±8	2.3 ± 0.1
625.0± 0.6		5.0± 0.3		0.25± 0.02
723.4± 0.8		10.5± 0.3		0.40± 0.01
809.5± 1.0	1135 ±100	1080 ± 100	55 ±8	38.2 ± 3.5
953.0± 2.0		5.0± 0.5		0.16± 0.02
1168.0± 2.0		12750 ±1000		373 ± 29
1504.4± 3.0		3000 ± 100		77.4 ± 2.6
1819.0± 4.0		1560 ± 50		36.6 ± 1.2
2032.0± 3.0		3880 ± 200		82.4 ± 4.4
2599.0± 3.0		32600 ± 500		639.5 ± 9.8
2770.0± 3.0		65 ± 20		1.2 ± 0.3
2982 ± 6		3580 ± 200		64.7 ± 3.7
3250 ± 5		2190 ± 200		38.4 ± 3.5
3656 ± 5		25675 ± 790		424.6 ± 12.4
3969 ± 4		4910 ± 200		77.9 ± 3.2
4000 ± 4		12300 ± 400		194.5 ± 6.3
4033 ± 4		420 ± 60		6.6 ± 0.9
4047 ± 4		320 ± 60		5.0 ± 0.9
5075 ±10		3490 ± 150		49.0 ± 2.1
5191 ±10		2640 ± 150		36.6 ± 2.1
5467 ±10		6370 ± 250		86.7 ± 3.4
6382 ± 7		10400 ± 900		130.0 ± 6.2
6631 ± 7		14500 ± 790		177.9 ± 9.2
7037 ± 7		2860 ± 150		34.1 ± 18
7914 ± 8		3610 ± 200		30.6 ± 2.2
8501 ±10		2315 ± 225		25.1 ± 2.5
9313 ±10		5135 ± 600		53.2 ± 6.2
9724 ±10		2100 ± 250		21.3 ± 2.5
9868 ±10		19480 ±1000		196.1 ±100.1
10757 ±10		27325 ±1500		263.5 ± 14.5
10857 ±15		5730 ± 500		55.0 ± 4.8
11526 ±15		2330 ± 300		21.7 ± 2.8
12548 ±15		1700 ± 300		15.2 ± 2.2
12657 ±15		2680 ± 350		23.8 ± 3.1
13203 ±15		2050 ± 300		17.8 ± 2.6
13434 ±15		3120 ± 350		26.9 ± 3.0
13567 ±15		44650 ±1500		383.3 ± 12.9
14227 ±15		4300 ± 500		36.0 ± 4.2

$^{146}_{60}Nd$

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
14495 ±15		8250 ± 750		68.5 ± 6.3
15362 ±20		1800 ± 400		14.5 ± 3.2
16267 ±20		10880 ±1000		85.3 ± 7.8
16375 ±20		1930 ± 400		15.1 ± 3.1
17050 ±20		13900 ±1250		106.5 ± 9.6
17323 ±20		13955 ±1250		106.5 ± 9.5

$^{148}_{60}Nd$

THERMAL CROSS SECTIONS

σ_γ = 2.5±0.2 b

RESONANCE PROPERTIES

I_γ = 19±1 b
<D> = 72±6 eV
S_0 = 3.0±0.6

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 5.73 S_n = 5068±11 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
94.9± 0.1		0.53 ± 0.05		0.054± 0.005
155.4± 0.1	1720 ±200	1650 ± 200	70 ± 8	148.4 ±16.0
172.4± 0.2		0.41 ± 0.03		0.03 ± 0.002
184.5± 0.2		0.065± 0.05		0.050± 0.002
252.9± 0.2		0.4 ± 0.1		0.025± 0.005
287.5± 0.3	3220 ±200	3160 ± 200	58 ± 6	184.5 ±11.8
398.3± 0.4		380 ± 30	65 ±10	19.0 ± 1.5
514.0± 0.5		1.9 ± 0.3		0.084± 0.011
628.5± 0.6		0.85 ± 0.25		0.034± 0.010
714.9± 0.8	2424 ± 60	2350 ± 50	74 ±11	87.9 ± 1.4
779.3± 0.8		7.5 ± 1.5		0.27 ± 0.05
871.9± 0.9		260 ± 60		8.8 ± 2.0
905.0± 0.9		6.9 ± 0.5		0.23 ± 0.02
1054.1± 1.0		2530 ± 150		77.9 ± 4.3
1176.2± 1.2		2650 ± 150		77.3 ± 4.6
1208.8± 2.0		36.4 ± 2.5		1.05 ± 0.072
1244.0± 2.0		8.0 ± 0.5		0.23 ± 0.02
1299.0± 2.0		3.3 ± 1.0		0.90 ± 0.03
1344.3± 1.5		1815 ± 110		49.6 ± 3.0
1388.0± 2.0		8.9 ± 1.5		0.24 ± 0.04
1533.5± 1.5		3690 ± 150		94.4 ± 3.8
1793.7± 2.0		112.5 ± 7.5		2.7 ± 0.2
2028.3± 2.0		505 ± 25		11.2 ± 0.6
2177.7± 2.0		5875 ± 250		125.9 ± 5.4
2376.9± 2.0		3400 ± 150		69.7 ± 3.1
2429.5± 2.0		2050 ± 150		41.6 ± 3.1

$^{148}_{60}Nd$

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
2562.3± 2.0		9000 ±1000		178 ±20
2784.8± 3.0		1410 ± 50		22.9 ± 1.0
2990.0± 3.0		2170 ± 100		39.7 ± 1.8
3485.0± 3.0		665 ± 30		11.3 ± 0.5
3814.0± 4.0		430 ± 30		7.0 ± 0.5
3892.0± 4.0		19150 ± 750		307.0 ±12.0
4077.0± 4.0		17545 ± 400		196.5 ± 6.3
4271.0± 5.0		7200 ± 400		110.2 ± 6.1
4423.0± 5.0		1490 ± 75		22.4 ± 1.1
4655.0± 5.0		4865 ± 250		71.3 ± 3.7
4694.0± 5.0		900 ± 50		13.1 ± 0.7
4840.0± 5.0		45.0 ± 7.5		0.65 ± 0.11
5179.0± 5.0		45.0 ± 7.5		0.65 ± 0.11
5293.0± 6.0		3775 ± 150		51.9 ± 2.0
5464.0± 6.0		1590 ± 150		21.5 ± 1.0
5676.0± 6.0		1030 ± 75		13.7 ± 1.0
5792.0± 6.0		255 ± 90		3.35 ± 1.18
6098.0± 6.0		5355 ± 250		68.5 ± 3.2
6491.0± 6.0		495 ± 100		6.1 ± 1.2
6644.0± 6.0		3670 ± 150		45.0 ± 1.8
7062.0± 7.0		14090 ± 500		167.7 ± 6.0
7302.0± 7.0		4000 ± 200		46.8 ± 2.3
7378.0± 7.0		2805 ± 200		32.7 ± 2.3
7671.0± 8.0		14000 ± 500		160 ± 6
8646 ± 9		24250 ±1000		260.8 ±10.8
8774 ± 9		7000 ± 350		74.7 ± 3.7
9049 ± 9		8300 ± 400		87.3 ± 4.2
9390 ± 9		4760 ± 350		49.1 ± 3.6
9600 ±10		1710 ± 250		17.5 ± 2.5
9676 ±10		3210 ± 300		32.6 ± 3.1
9973 ±10		3695 ± 300		37.0 ± 3.0
10081 ±10		2250 ± 250		22.4 ± 2.5
10279 ±10		2005 ± 250		19.8 ± 2.5
10409 ±11		3440 ± 300		33.7 ± 2.9
10852 ±10		9275 ± 500		89.0 ± 4.8
10905 ±12		4780 ± 500		45.8 ± 4.8
11125 ±12		1550 ± 300		14.7 ± 2.8
11347 ±12		2600 ± 300		24.4 ± 2.8
11462 ±12		5350 ± 500		50.0 ± 4.7
11924 ±12		3130 ± 300		28.7 ± 2.7

THERMAL CROSS SECTIONS

σ_γ = 1.2±0.2 b

RESONANCE PROPERTIES

I_γ = 14±2 b
<D> = 120±8 eV
S_0 = 3.2±0.6

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 5.62 S_n = 5309±8 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
78.8± 0.1	70 ± 10	18.4 ± 0.5	52 ± 10	2.09 ± 0.06
265.9± 0.2		0.40± 0.05		0.025± 0.003
313.2± 0.3	491 ± 18	425 ± 15	66 ± 10	24.0 ± 0.8
459.0± 0.5		1.50± 0.25		0.70 ± 0.01
486.0± 0.5	1074 ± 55	1000 ± 50	74 ± 11	41.7 ± 2.3
662.7± 0.7		17.8 ± 0.75		0.69 ± 0.03
769.2± 0.7	570 ± 20	486 ± 15	84 ± 13	17.5 ± 0.5
953.5± 1.0		6.1 ± 0.8		0.20 ± 0.02
1032.2± 1.0	1622 ± 55	1540 ± 50	82 ± 12	47.9 ± 1.5
1150.6± 1.0		8.25± 0.5		0.24 ± 0.02
1331.0± 2.0	715 ±100	485 ± 25		13.3 ± 0.7
1468.0± 2.0		1250 ± 50		32.6 ± 1.4
1713.4± 2.0		2125 ± 100		51.3 ± 2.4
1771.0± 2.0		1900 ± 100		45.1 ± 2.4
1861.9± 2.0		300 ± 100		7.0 ± 1.3
2326.7± 2.5	310 ±100	278 ± 15		5.8 ± 0.3
2521.5± 2.5		1300 ± 50		25.9 ± 1.0
2619.9± 3.0	420 ±150	340 ± 15	80 ±151	6.5 ± 0.3
2730.2± 3.0		11300 ± 500		216 ±10
2849.9± 3.0		3500 ± 150		65.5 ± 2.8
3178.5± 3.0		565 ± 25		10.0 ± 0.4
3296.2± 3.5		12.5 ± 5.0		0.22 ± 0.09
3444.0± 4.0		898 ± 30		15.3 ± 0.5
3502.0± 4.0		4080 ± 100		68.9 ± 1.7
3820.0± 4.0		7045 ± 150		114.0 ± 2.4
3986.0± 4.0		250 ± 15		4.0 ± 0.3
4254 ± 5		845 ± 40		13.0 ± 0.6
4337 ± 5		3.3 ± 1.0		0.49 ± 0.15
4465 ± 5		1738 ± 50		26.0 ± 0.7
4651 ± 5		2310 ± 100		33.9 ± 1.5
4753 ± 5		215 ± 20		3.1 ± 0.3
4934 ± 5		428 ± 40		6.1 ± 0.6
4962 ± 5		330 ± 20		4.7 ± 0.3
5043 ± 5		550 ± 30		7.7 ± 0.4
5141 ± 5		110 ± 40		1.5 ± 0.5
5185 ± 5		113 ± 40		1.5 ± 0.5
5331 ± 6		2080 ± 100		28.5 ± 1.4
5468 ± 6		4350 ± 150		58.8 ± 2.0
5657 ± 6		113 ± 15		1.5 ± 0.2

$^{150}_{60}Nd$

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
5856 ± 6		12200 ±2000		158 ±26
6123 ± 6		9965 ± 450		127 ± 6
6329 ± 6		8980 ± 600		113 ± 8
6699 ± 7		855 ± 150		10.5 ± 1.8
6800 ± 7		465 ± 150		5.6 ± 1.8
6853 ± 7		3425 ± 300		41.4 ± 3.6
7060 ± 7		1255 ± 250		14.9 ± 3.0
7158 ± 7		5575 ± 500		65.9 ± 5.9
7404 ± 7		500 ± 150		5.8 ± 1.7
7533 ± 7		14000 ± 750		161.3 ± 8.6
7589 ± 8		34600 ±1250		397.2 ±14.4
7660 ± 8		960 ± 300		11.0 ± 3.4
7824 ± 8		3990 ± 500		45.1 ± 5.7
8082 ± 8		8640 ± 600		96.1 ± 6.7
8166 ± 8		7275 ± 600		80.5 ± 6.6
8284 ± 8		7370 ± 600		81.0 ± 6.6
8438 ± 8		565 ± 150		61.5 ± 1.6
8743 ± 9		10315 ± 300		110.3 ± 3.2
8953 ± 9		16715 ± 500		176.7 ± 5.3
9175 ± 9		450 ± 100		4.7 ± 1.0
9303 ± 9		12385 ± 500		128.4 ± 5.4
9529 ±10		6900 ± 300		70.7 ± 3.1
9906 ±10		3190 ± 300		32.0 ± 3.0
10010 ±10		2725 ± 300		27.2 ± 3.0
10315 ±10		3400 ± 400		33.5 ± 3.9
10389 ±10		25165 ± 750		246.9 ± 7.4
10998 ±10		3110 ± 400		29.7 ± 3.8
11147 ±10		5340 ± 500		50.6 ± 4.7
11262 ±15		3850 ± 400		36.3 ± 3.8
11647 ±15		7050 ± 500		65.4 ± 4.5
11932 ±15		2400 ± 300		22.0 ± 2.7
12119 ±15		12320 ± 750		111.9 ± 6.8
12456 ±15		1430 ± 300		12.8 ± 2.7
12747 ±15		2355 ± 400		20.9 ± 3.5
13083 ±15		10410 ± 500		91.1 ± 4.4
13312 ±15		2260 ± 300		19.6 ± 2.6
13378 ±15		25185 ±1000		217.7 ± 8.6
13537 ±15		2565 ± 500		22.0 ± 4.3
13844 ±15		1130 ± 200		9.6 ± 1.7

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Nd	σ_γ	NIM,86,83(70)	Malik
$Nd^{143,145}$	σ_α	NP/A,141,193(70)	Okamoto
Nd^{143}	σ_α	PL/B,26,662(68)-	Beg
$Nd^{142-,45}$	activation	JIN,30,897(68)	Cabell
$Nd^{146,148,150}$	activation	JIN,29,2155(67)	Alstad
Nd^{143}	σ_α	YF,1,252(65)	Andreev
Nd^{148}	activation	ANS,7,270(64)	Ruiz
$Nd^{143,145}$	σ_α	PL,1,289(62)	Cheifetz
$Nd^{143,145}$	pile osci.	JNE,12,32(60)	Tattersall
Nd^{150}	activation	NP,12,261(59)	Sehgal
Nd,Nd^{143}	σ_t	JNE,7,199(58)	Hay
Nd^{145}	σ_t	NRDC-103(58)	Hay
Nd,$Nd^{142,144,146}$	diffraction	PR,91,597(53)	Koehler
$Nd^{143,145}$	mass analys.	PR,90,447(53)	Walker
Nd	pile osci.	CEA-137(52)	Ailloud
Nd	pile osci.	JPR,13,171(52)	Ailloud
$Nd^{142-146,148,150}$	pile osci.	PR,88,412(52)	Pomerance
Nd	diffraction	PR,91,597(53)	Koehler
Nd	pile osci.	PR,80,342(50)	Harris
$Nd^{143,145}$	mass analys.	PR,76,300(49)	Hess
Nd	σ_t	PR,71,556(47)	Sturm
Nd^{148}	activation	ZN,1,179(46)	Bothe

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Nd^{143}	σ_γ(spectra)	55-845	PR/C,5,2030(72)	Stolovy
Nd^{145}	σ_γ(spectra)	4.3-663	PR/C,5,2030(72)	Stolovy
Nd^{143}	σ_γ(spectra)	55-446	NP/A,185,229(72)	Weigmann
Nd^{143}	σ_γ(spectra)	0-658	71KNOX,785(71)	Cauvin
Nd^{145}	σ_γ(spectra)	4.3-405	71KNOX,785(71)	Cauvin
Nd^{143}	σ_γ	55-2004	71KNOX(71)	Rohr
Nd^{145}	σ_γ	43-1494	71KNOX(71)	Rohr
Nd^{142}	σ_t	218-31050	CEA-N-1459(71)	Tellier
Nd^{143}	σ_t	55-5503	CEA-N-1459(71)	Tellier
Nd^{144}	σ_t	373-19407	CEA-N-1459(71)	Tellier
Nd^{145}	σ_t	42.5-4637	CEA-N-1459(71)	Tellier
Nd^{146}	σ_t	360-31036	CEA-N-1459(71)	Tellier
Nd^{148}	σ_t	94.9-23046	CEA-N-1459(71)	Tellier
Nd^{150}	σ_t	78.2-24730	CEA-N-1459(71)	Tellier
Nd^{143}	σ_α	4.4-102	NP/A,154,177(70)	Kvitek
Nd^{145}	σ_α	0-705	NP/A,154,177(70)	Kvitek
Nd	$\sigma_t\sigma_\gamma$	4-945	NP/A,134,118(69)	Alves
Nd	σ_γ	4.3-566	JNE,23,369(69)	Migneco
Nd^{142}	$\sigma_t\sigma_\gamma$	1685-9987	YF,8,639(68)	Karzhavina
Nd^{143}	$\sigma_t\sigma_\gamma$	55.4-840	YF,8,639(68)	Karzhavina
Nd^{144}	$\sigma_t\sigma_\gamma$	374-13540	YF,8,639(68)	Karzhavina
Nd^{145}	$\sigma_t\sigma_\gamma$	42.6-1010	YF,8,639(68)	Karzhavina
Nd^{146}	$\sigma_t\sigma_\gamma$	361-6723	YF,8,639(68)	Karzhavina
Nd^{148}	$\sigma_t\sigma_\gamma$	155-8781	YF,8,639(68)	Karzhavina
Nd^{150}	$\sigma_t\sigma_\gamma$	78.9-3843	YF,8,639(68)	Karzhavina
Nd	$\sigma_t\sigma_\gamma$	4.3-128	JPR,24,999(63)	Bianchi
Nd	$\sigma_t\sigma_\gamma$	4.4-193	BAP,7,288(62)+	Amram
Nd	σ_γ	4.4-193	ANL-6589(62)+	Carpenter
Nd	σ_t	0.01-10	JNE,7,199(58)	Hay
Nd^{143}	σ_t	56-190	PRIVATE COMM.(56)	Stolovy
Nd^{145}	σ_t	4.4-96	PRIVATE COMM.(56)	Stolovy

$^{146}_{61}$Pm

[5.53 yr]

THERMAL CROSS SECTIONS

σ_γ = 8400±1680 b

$^{147}_{61}$Pm

[2.62 yr]

THERMAL CROSS SECTIONS

σ_γ = 181±7 b
σ_γ = 96.0±1.8 b [5.37 day ^{148}Pm^g]
σ_γ = 85±5 b [41.3 day ^{148}Pm^m]
σ_t = 205±7 b

RESONANCE PROPERTIES

I_γ = 1274±66 b [5.37 day ^{148}Pm^g]
I_γ = 1026±280 b [41.3 day ^{148}Pm^m]
<D> = 6.8±1.5 eV
S_0 = 3.1±0.8

RESONANCE PARAMETERS

I^π = 7/2$^+$ S_n = 5900±10 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-1.8		(80)	1.95
5.36±0.01	34.3 ± 1.9	70 ±6	14.8 ±0.8
6.57±0.01	1.8 ± 0.2	79 ±8	0.69±0.08
6.92±0.01	4.6 ± 0.3	64 ±6	1.74±0.10
15.11±0.05	1.2 ± 0.1	63 ±8	0.31±0.02
19.5 ±0.1	4.20± 0.18		0.95±0.04
29.2 ±0.1	1.7 ± 0.3		0.31±0.06
35.4 ±0.1	0.42± 0.12		0.07±0.02
38.1 ±0.1	24.7 ± 1.9		4.0 ±0.3
39.9 ±0.1	15.8 ± 1.3		2.5 ±0.2
45.6 ±0.2	24.3 ± 2.0		3.6 ±0.3
48.1 ±0.2	18.7 ± 1.0		2.7 ±0.2
52.3 ±0.2	2.2 ± 0.2		0.30±0.03
55.7 ±0.2	1.5 ± 0.6		0.20±0.08
65.4 ±0.2	54.2 ± 4.9		6.7 ±0.6
82.5 ±0.2	27.2 ± 3.6		3.0 ±0.4
85.4 ±0.2	30.5 ± 4.6		3.3 ±0.5
95.2 ±0.3	24.4 ± 4.9		2.5 ±0.5
99.5 ±0.3	36.9 ± 5.0		3.7 ±0.5
115.1 ±0.3	64.4 ±10.7		6.0 ±1.0
131.1 ±0.3	183.2 ±34.4		16.0 ±3.0
140.5 ±0.5	2.4 ± 1.6		0.3 ±0.2
144.6 ±0.5	10.6 ± 8.4		0.9 ±0.7
147.9 ±0.5	94.8 ±12.2		7.8 ±1.0
153.9 ±0.5	49.6 ±12.4		4.0 ±1.0
173.2 ±0.7	322 ±53		24.5 ±4.0

$^{147}_{61}Pm$

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
178.8 ±0.7	16.0 ± 6.7		1.2 ±0.5
188.9 ±0.7	118 ±26		8.6 ±1.9
192.2 ±0.7	121 ±25		8.7 ±1.8
208.4 ±0.8	137 ±33		9.5 ±2.3
211.2 ±0.8	132 ±32		9.1 ±2.2
220.3 ±1.0	107 ±30		7.2 ±2.0
230.3 ±1.0	100 ±27		6.6 ±1.8
239.1 ±1.0	230 ±60		14.9 ±3.9
247.9 ±1.0	38 ±17		2.4 ±1.1
275.3 ±1.2	141 ±41		8.5 ±2.5
284.0 ±1.2	163 ±46		9.7 ±2.7
297.0 ±1.5	59 ±19		3.4 ±1.1
316.5 ±1.5	125 ±32		7.0 ±1.8

$^{148m}_{61}Pm$

[41.3 day]

THERMAL CROSS SECTIONS

σ_γ = 22000±2500 b

RESONANCE PROPERTIES

I_γ^c = 3600±2400 b

RESONANCE PARAMETERS

S_n = 7266±10 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.169	81 ±4	0.588±.032	79.6±4	1.43±0.08

$^{148g}_{61}Pm$

[5.37 day]

THERMAL CROSS SECTIONS

σ_γ = 2000±1000 b

$^{149}_{61}Pm$

[53.1 hr]

THERMAL CROSS SECTIONS

σ_γ = 1400±300 b

$^{151}_{61}Pm$

[28.4 hr]

THERMAL CROSS SECTIONS

σ_γ < 700 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pm^{147}	σ_t	NSE,43,58(71)	Codding
Pm^{147}	σ_t	KAPL-3974(71)	Kirouac
Pm^{147}	activation	CJP,49,108(71)	Mowatt
Pm^{147}	activation	JIN,32,3433(70)	Cabell
Pm^{147}	σ_t	68WASH,2,687(68)	Kirouac
$Pm^{149,151}$	depletion	68WASH,2,1291(68)	Mowatt
$Pm^{147,148,148M}$	mass spectrometry	JIN,29,2147(67)	Fenner
Pm^{146}	activation	JIN,29,2117(67)	Pinajian
Pm^{149}	activation	AE,19,188(65)	Kondurov
$Pm^{149G,148M}$	mass spectrometry	PR-CM-35,102(63)	Mathews
$Pm^{147,148G,148M}$	activation	NSE,12,519(62)	Schuman
Pm^{147}	activation	62VIENNA,239(62)	Stoughton
Pm^{147}	mass spectrometry	58GENEVA,15,459(58)	Bidinosti
Pm^{147}	σ_t	58GENEVA,16,150(58)	Harvey
Pm^{147}	mass spectrometry	AE,3,11(57)	Gorshkov
Pm^{147}	activation	PR,72,85(47)	Parker

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pm^{147}	σ_t	0.01-250	NSE,43,58(71)	Codding
Pm^{147}	σ_t	0-317	KAPL-3974(71)	Kirouac
Pm^{148}	σ_t	0.17-7.5	KAPL-3974(71)	Kirouac
Pm^{147}	σ_t	5.4-316	RPI-328-171,29(69)	Eiland
Pm^{148}	σ_t	0.17-7.5	PRIVATE COMM.(69)	Kirouac
Pm^{147}	σ_t	0.01-192	68WASH,2,687(68)	Kirouac
Pm^{147}	σ_t	1.0-50.3	ORNL-2610,22(58)	Block
Pm^{147}	σ_t	1.0-50.3	58GENEVA,16,150(58)	Harvey

$_{62}$Sm

THERMAL CROSS SECTIONS

σ_γ = 5800±100 b

RESONANCE PROPERTIES

I_γ = 1400±200 b
S_0 = 3.2±0.4

$^{144}_{62}$Sm

THERMAL CROSS SECTIONS

σ_γ ~ 0.7 b

$^{145}_{62}$Sm

[340 day]

THERMAL CROSS SECTIONS

σ_γ ~ 110 b

$^{147}_{62}$Sm

THERMAL CROSS SECTIONS

σ_γ = 64±5 b
$\bar{\sigma}_s$ = 11±7 b
σ_α = 0.18±0.02 mb [$^{144}Nd^{0+}$]
σ_α = 0.57±0.04 mb [$^{144}Nd^{2+}$]
σ_t = 75±6 b

RESONANCE PROPERTIES

I_γ = 714±50 b
<D> = 7.4±0.7 eV
S_0 = 4.6±0.4

RESONANCE PARAMETERS

I^π = 7/2$^-$ %Abn = 15.0 S_n = 8140.2±1.2 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_α (meV)
-2.0			(66)	2.97	
3.42±0.02	1.15± 0.03	3	66 ± 3	0.62± 0.02	2.5 ±0.3
18.30±0.05	79 ± 1	4	78 ± 5	18.5 ± 0.2	0.36±0.01
27.7 ±0.1	6.0 ± 0.3	3		1.15± 0.06	0.36±0.06
29.9 ±0.1	13.0 ± 0.5	3	61 ±16	2.38± 0.09	0.52±0.05
32.1 ±0.1	44.0 ± 1.2	4	78 ±26	7.77± 0.21	0.26±0.02
39.7 ±0.1	82.6 ± 1.8	4		13.1 ± 0.29	0.27±0.02
40.6 ±0.1	4.4 ± 0.2	3		0.69± 0.03	

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_α (meV)
49.3 ±0.2	17.0 ± 0.6			2.42± 0.09	0.15±0.06
57.9 ±0.2	37.6 ± 0.8	3	41 ± 9	4.94± 0.11	0.43±0.05
65.2 ±0.2	6.0 ± 1.2	4		0.74± 0.15	
65.4 ±0.2	4.0 ± 0.8			0.50± 0.10	
76.4 ±0.2	16.3 ± 0.6	4		1.86± 0.07	0.05±0.05
80.0 ±0.3	2.8 ± 0.3	4		0.31± 0.03	0.33±0.03
83.4 ±0.3	66.2 ± 3.0	3		7.25± 0.33	2.3 ±0.1
94.9 ±0.3	17 ± 4			1.76± 0.41	
99.5 ±0.3	242 ± 12			24.3 ± 1.2	0.14±0.07
103.1 ±0.3	166 ± 10	3		16.3 ± 1.0	1.2 ±0.2
107.2 ±0.3	44.0 ± 1.4	4		4.25± 0.14	0.57±0.27
123.9 ±0.3	162 ± 4	3		14.6 ± 0.4	0.94±0.09
140.5 ±0.4	77 ± 2			6.5 ± 0.2	
143.6 ±0.4	2.0 ± 0.2			0.17± 0.02	
151.7 ±0.4	140 ± 5			11.4 ± 0.4	0.68±0.034
161.0 ±0.4	51 ± 3			4.0 ± 0.2	0.58±0.02
162.4 ±0.4	12 ± 2			0.94± 0.16	
163.8 ±0.4	88 ± 10	4		6.9 ± 0.8	0.58±0.02
172.0 ±0.4	14 ± 1	4		1.1 ± 0.8	
180.0 ±0.4	3.3 ± 0.6			0.25± 0.05	
185.0 ±0.4	328 ± 16	3		24.1 ± 1.2	10 ±6
191.3 ±0.5	10.8 ± 1.4			0.78± 0.10	
193.5 ±0.5	2.6 ± 0.6			0.19± 0.04	
198.3 ±0.5	8.4 ± 0.9			0.60± 0.06	
206.0 ±0.6	200 ± 10			13.9 ± 0.7	
221.8 ±0.6	115 ± 5			7.72± 0.34	
226.0 ±0.6	190 ± 20			12.6 ± 1.3	
229.0 ±0.6	2.5 ± 0.4			0.17± 0.03	
240.9 ±0.6	10.0 ± 2.0			0.64± 0.13	
241.8 ±0.6	14.2 ± 0.2			0.91± 0.01	
248.3 ±0.7	145 ± 7			9.20± 0.44	
257.5 ±0.7	90 ± 10			5.6 ± 0.6	
264.3 ±0.7	68 ± 6			4.2 ± 0.4	
267.3 ±0.7	192 ± 6			11.7 ± 0.4	
271.8 ±0.7	82 ± 4			4.97± 0.24	
275.1 ±0.7	14 ± 2			0.84± 0.12	
284.1 ±0.8	22 ± 2			1.3 ± 0.1	
291.0 ±0.8	40 ± 3			2.3 ± 0.2	
308.0 ±0.8	5.0 ± 1.2			0.28± 0.07	
312.0 ±0.8	12 ± 4			0.68± 0.23	
321.0 ±0.8	7 ± 2			0.39± 0.11	
331.5	70 ± 4			3.8 ± 0.2	
336.6	66 ± 4			3.6 ± 0.2	
341.4	76 ± 12			4.1 ± 0.7	
351.0	52 ± 6			2.8 ± 0.3	
360.4	300 ± 30			15.8 ± 1.6	
363.0	21 ± 10			1.1 ± 0.5	
380.4	400 ± 20			20.5 ± 1.0	
383.8	112 ± 10			5.71± 0.51	
392.4	120 ± 10			6.06± 0.51	
398.5	86 ± 10			4.3 ± 0.5	
400.5	90 ± 10			4.5 ± 0.5	

$^{147}_{62}Sm$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_n (meV)
406.5	28 ± 6			1.4 ± 0.3	
413.8	52 ± 8			2.6 ± 0.4	
420.0	200 ± 30			9.76± 1.46	
423.7	50 ± 20			2.42± 0.97	
437.8	180 ± 30			8.60± 1.43	
441.7	36 ± 10			1.71± 0.48	
460.7	118 ± 20			5.5 ± 0.9	
464.8	62 ± 16			2.9 ± 0.7	
478.1	136 ± 20			6.2 ± 0.9	
481.8	186 ± 20			8.5 ± 0.9	
488.9	114 ± 16			5.2 ± 0.7	
498.5	130 ± 30			5.8 ± 1.3	
501.7	244 ± 40			10.9 ± 1.8	
516	440 ± 40			19.4 ± 1.8	
532	88 ± 20			3.8 ± 0.9	
535	84 ± 40			3.6 ± 1.7	
541	520 ± 80			22.4 ± 3.4	
549	224 ± 40			9.6 ± 1.7	
556	700 ±100			29.7 ± 4.2	
562	200 ± 40			8.4 ± 1.7	
567	210 ± 40			8.8 ± 1.7	
570	32 ± 20			1.34± 0.84	
577	132 ± 30			5.5 ± 1.2	
583	154 ± 30			6.4 ± 1.2	
591	86 ± 30			3.5 ± 1.2	
600	170 ± 40			6.9 ± 1.6	
609	169 ± 40			6.6 ± 1.6	
617	124 ± 50			5.0 ± 2.0	
621	460 ±100			18.5 ± 4.0	
626	184 ± 40			7.4 ± 1.6	
636	46 ± 20			1.8 ± 0.8	
648	104 ± 40			4.1 ± 1.6	
653	224 ± 80			8.8 ± 3.1	
656	76 ± 40			3.0 ± 1.6	
663	76 ± 40			3.0 ± 1.6	
673	74 ± 40			2.9 ± 1.5	
682	178 ± 60			6.8 ± 2.3	
687	224 ± 80			8.5 ± 3.1	
692	52 ± 40			2.0 ± 1.5	
701	94 ± 40			3.6 ± 1.5	
718	164 ± 60			6.1 ± 2.2	
722	102 ± 60			3.8 ± 2.2	
733	324 ±100			12.0 ± 3.7	
738	366 ±100			13.5 ± 3.7	
749	124 ± 60			4.5 ± 2.2	
757	314 ±100			11.4 ± 3.6	
763	368 ±120			13.3 ± 4.3	
769	870 ±200			31 ± 7	
800	144 ± 60			5.1 ± 2.1	
812	580 ±160			20 ± 6	
825	440 ±120			15 ± 4	
840	210 ± 60			7 ± 2	

$^{147}_{62}Sm$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_n (meV)
859	2200 ±400			75 ±14	
880	680 ±160			23 ± 5	
901	830 ±160			28 ± 5	
928	350 ±160			11.5 ± 5.3	
936	700 ±300			23 ±10	
940	960 ±400			31 ±13	
949	540 ±200			18 ± 6	
967	220 ± 80			7.1 ± 2.6	
989	560 ±200			18 ± 6	
996	280 ±100			9 ± 3	
1034	830 ±300			26 ± 9	
1046	380 ±140			12 ± 4	
1058	740 ±200			23 ± 6	
1069	780 ±200			24 ± 6	
1077	190 ±100			6 ± 3	
1090	880 ±200			27 ± 6	
1109	640 ±200			19 ± 6	
1120	1140 ±300			34 ± 9	
1137	670 ±300			20 ± 9	
1161	250 ±100			7 ± 3	

$^{148}_{62}Sm$

THERMAL CROSS SECTIONS

σ_γ = 2.7±0.6 b

RESONANCE PROPERTIES

I_γ = 27±14 b

$^{149}_{62}Sm$

THERMAL CROSS SECTIONS

σ_γ = 41000±2000 b
σ_n = 5.23±0.17 mb ($^{148}Nd^{0+}$)
σ_a = 38.7±0.5 mb ($^{148}Nd^{2+}$)

RESONANCE PROPERTIES

I_γ^* = 3103 b
$\langle D \rangle$ = 2.3±0.3 eV
S_0 = 5.1±0.9

RESONANCE PARAMETERS

I^π = 7/2⁻ Abn = 13.8 S_n = 7985.2±0.8 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_a (meV)
-0.285		3		1.83	
0.0976±0.003	0.600± 0.009	4	60.5±0.6	1.92 ±0.03	.060±0.025
0.872 ±0.003	0.835± 0.045	4	59.7±1.0	0.894±0.045	0.04 ±0.007
4.95 ±0.03	2.50 ± 0.25	4	66.7±3.0	1.13 ±0.11	0.043±0.009
6.44 ±0.05	0.63 ± 0.28	3		0.25 ±0.11	0.072±0.015
8.95 ±0.07	9.4 ± 1.6	4	60.3±6.0	3.13 ±0.54	0.042±0.006
12.05 ±0.08	1.4 ± 0.2	3		0.41 ±0.06	0.22 ±0.05
14.9 ±0.1	5.9 ± 0.5	4		1.52 ±0.13	0.060±0.015
15.9 ±0.1	0.30 ± 0.04	3		0.08 ±0.01	
17.1 ±0.1	2.8 ± 0.4	4		0.68 ±0.01	0.054±0.030
23.2 ±0.1	1.2 ± 0.2	4		0.25 ±0.04	
24.6 ±0.1	0.36 ± 0.07			0.07 ±0.01	
25.2 ±0.1	15 ± 3	3		2.99 ±0.60	0.23 ±0.30
26.1 ±0.1	4.4 ± 0.5	4		0.86 ±0.10	
27.9 ±0.1	0.30 ± 0.06	3		0.06 ±0.01	
29.8 ±0.1	4.7 ± 1.6	3		0.86 ±0.29	
30.7 ±0.1	10 ± 3	4		1.80 ±0.54	0.28 ±0.06
33.9 ±0.1	6.7 ± 1.0	4		1.15 ±0.17	0.13 ±0.07
40.2 ±0.1	23.6 ± 2.8	3		3.72 ±0.44	1.0 ±0.1
41.3 ±0.1	42.5 ± 3.8	3		6.63 ±0.59	0.67 ±0.09
44.3 ±0.1	90 ±27	4		13.5 ±4.1	
45.1 ±0.2	23 ± 6	4		3.42 ±0.89	0.03 ±0.03
49.5 ±0.2	10 ± 3	3		1.42 ±0.43	
50.5 ±0.2	2.2 ± 0.4	(4)		0.31 ±0.06	
51.6 ±0.2	41 ± 4	4		5.71 ±0.56	0.11 ±0.06
57.4 ±0.2	37.6 ± 4.6	4		4.96 ±0.61	
59.8 ±0.2	70 ± 7	4		9.1 ±0.9	
60.9 ±0.2	2.3 ± 0.6	3		0.29 ±0.08	
62.1 ±0.2	50 ± 5	4		6.34 ±0.63	
64.8 ±0.2	65 ± 7	4		8.07 ±0.87	
68.2 ±0.2	28.2 ± 5.2	4		3.41 ±0.63	
70.7 ±0.2	82.4 ±14.6	3		9.80 ±1.74	
73.0 ±0.2	134.4 ±25.4	4		15.73 ±2.97	
74.7 ±0.2	29 ± 6	(4)		3.36 ±0.69	
75.3 ±0.2	27 ± 5	3		3.11 ±0.58	
76.9 ±0.9	4.5 ± 0.8			0.51 ±0.09	
83.8 ±0.2	20 ± 5			2.19 ±0.55	

E_0 (eV)		$2g\Gamma_n$ (meV)		J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)		Γ_a (meV)
87.7	±0.3	22	± 4			2.35	±0.43	
90.5	±0.3	75	±11			7.88	±1.6	
92.1	±0.3	57	±17			5.94	±1.77	
*95.6	±0.3	(130)				(13.3)		
*96.3	±0.3							
98.1	±0.3	(22)				(2.2)		
99.5	±0.3	(12)				1.2		
101.6	±0.3	2.8	± 0.5			0.28	±0.05	
104.7	±0.3	20	± 4	[4]		1.95	±0.39	
107.0	±0.3	12	± 2			1.2	±0.2	
109.2	±0.3	16	± 2	[4]		1.5	±0.3	
111.2	±0.3	13	± 2			1.2	±0.2	
115.3	±0.3	10	± 2	[3]		0.93	±0.20	
117.0	±0.3	3.2	± 1.2			0.28	±0.11	
119.4	±0.3	19	± 4			1.7	±0.4	
121.7	±0.3	1.7	± 0.8			0.15	±0.07	
125.4	±0.3	33	± 8	[3]		2.9	±0.7	
127.1	±0.3	2.6	± 0.4			0.23	±0.04	
129.9	±0.3	4.7	± 0.6	3		0.42	±0.05	
134.3	±0.4	180	±60	[3]		15	±5	
140.2	±0.4	1.7	± 0.3	[3]		0.14	±0.03	
144.2	±0.4	31	± 6			2.6	±0.5	
*145.7	±0.4	(160)				(13)		
*146.9	±0.4							
149.5	±0.4	8.6	± 1.4			0.62	±0.12	
154.7	±0.4	54	±16			4.3	±1.3	
157.5	±0.4	19	± 4			1.5	±0.3	
158.7	±0.4	4.0	± 0.5			3.2	±0.4	
168.3	±0.5	20	± 4			1.5	±0.3	
173.5	±0.5	(3.6)				(0.27)		
174.7	±0.5	(3.6)				(0.27)		
177.8	±0.5	(70)				(5.3)		
179.9	±0.5	(70)				(5.3)		
185.4	±0.5	52	±48			3.8	±3.5	
188.0	±0.5	44	±26			3.2	±1.9	
192.9	±0.5	12	± 3			0.87	±0.22	
195.0	±0.5	2.2	± 0.4			0.16	±0.03	
197.4	±0.5	20	± 6			1.4	±0.4	
201.1	±0.6	(8.0)				(0.56)		
203.7	±0.6	44	±26			3.1	±1.8	
210.9	±0.6	10	± 2			0.69	±0.14	
214.7	±0.6	17	± 5			1.2	±0.3	
218.2	±0.6	9	± 2			0.61	±0.14	
225.6	±0.6	31	±10			2.1	±0.7	
228.2	±0.6	25	± 8			1.6	±0.5	
230.1	±0.6	52	±30			3.4	±2.0	
234.0	±0.6	8	± 3			0.5	±0.2	
238.4	±0.6	(8.0)				(0.52)		
240.1	±0.7	14	± 3			0.9	±0.2	
244.3	±0.7	30	±11			1.9	±0.7	
248.7	±0.7	18	± 5			1.1	±0.3	

* Doublet.

$^{150}_{62}Sm$

THERMAL CROSS SECTIONS

σ_γ = 102±5 b
σ_t = 133±8 b

RESONANCE PROPERTIES

I_γ = 310±15 b
<D> = 68±10 eV
S_0 = 3.6±0.3

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 7.4 S_n = 5596±1 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
-3.2		(60)	3.97
20.7	46.9± 1.5	60 ±6	10.3 ±0.3
48.1	18.1± 0.6		2.61±0.09
111.4	13.9± 1.3		1.32±0.12
139.9	5.2± 1.1		0.44±0.09
216.5	14.9± 2.5		1.0 ±0.2
266.9	730 ± 30		45 ±2
311.9	317 ± 20		18 ±1
380.2	1228 ± 70		63 ±3.6
463.7	410 ± 50		19 ±2
502	139 ± 25		6.2 ±1
556	597 ± 60		25.3 ±2.5
721	258 ± 45		10 ±2
735	970 ±100		36 ±4
832	1470 ±150		51 ±5
943	1015 ±150		33 ±5
1023	242 ± 80		7.6 ±2.5
1168	1970 ±200		58 ±6
1225	810 ±200		23 ±6
1356	1220 ±150		33 ±4
1409	2935 ±350		78 ±9
1512	550 ±200		14 ±5
1563	785 ±260		20 ±7

$^{151}_{62}Sm$ [93 yr]

THERMAL CROSS SECTIONS

σ_γ = 15000±1800 b

RESONANCE PROPERTIES

I_γ = 3300±700 b
<D> = 1.3±0.2 eV
S_0 = 4.0±1.8

RESONANCE PARAMETERS

I^π = 7/2⁻ S_n = 8258±1 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-0.015±0.015	120 ±20			0.26±0.03
1.103±0.002	80 ± 5	0.68±0.04	79.3± 5	0.65±0.04
1.711±0.004	60 ±11	0.29±0.026	59.7±11	0.22±0.02
2.047±0.003	69 ±10	0.52±0.03	68.5±10	0.36±0.02
4.10 ±0.02		0.57±0.1		0.28±0.05
4.19 ±0.02		0.43±0.14		0.21±0.07
5.33 ±0.05		0.46±0.23		0.20±0.1
6.44 ±0.03		4.9 ±0.5		1.94±0.2
10.49 ±0.05		12.6 ±1.6		3.9 ±0.5
11.33 ±0.06		5.05±1.4		1.5 ±0.4
12.75 ±0.08		2.5 ±1.4		0.7 ±0.4

$^{152}_{62}Sm$

THERMAL CROSS SECTIONS

σ_γ = 206±6 b
a_{coh} = -5.0±0.6 fm

RESONANCE PROPERTIES

I_γ = 3000±200 b
R' = 8.2±0.7 fm
<D> = 51.8±4.3 eV
S_0 = 2.2±0.4

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 26.7 S_n = 5867.0±0.4 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
8.047±0.007	195 ± 5	130 ± 5	68 ± 7	45.8 ±1.8
62.20 ±0.06		4 ± 2	(65)	0.51±0.25
87.70 ±0.09	270 ± 19	205 ± 18	65 ±25	21.9 ±2
154.1 ±0.2	235 ± 15	142 ± 18		11.4 ±1.5
165.2 ±0.2	70 ± 10	19 ± 2	51 ±10	1.4 ±0.15

$^{152}_{62}Sm$

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
237.2 ±0.2	510 ± 34	420 ± 30		27 ±2
314.7 ±0.3	230 ± 22	135 ± 20		7.6 ±1.1
327.2 ±0.3	290 ± 25	205 ± 20		11.3 ±1.1
385.1 ±0.4	85 ± 7	40 ± 6		2.04±0.3
415.8 ±0.4	115 ± 8	57 ± 5		2.80±0.25
505.9 ±0.5	279 ± 4	195 ± 15		8.7 ±0.7
587.1 ±0.5	240 ± 20	159 ± 16		6.6 ±0.7
641.9 ±0.5	455 ± 30	380 ± 20		15.0 ±0.8
768.7 ±0.6	585 ± 35	490 ± 25		17.7 ±0.9
775.4 ±0.6	2350 ±150	2300 ±150		8.3 ±5
792.5 ±0.6	175 ± 10	115 ± 8		4.1 ±0.3
852.9 ±0.4	475 ± 25	395 ± 30		13.5 ±1
928.7 ±0.4		6 ± 3		0.2 ±0.1
952.3 ±0.4	490 ± 20	410 ± 30		13.3 ±1
986.4 ±0.5	270 ± 20	205 ± 22		6.5 ±0.7
1047.6 ±0.6	300 ± 20	220 ± 25		6.8 ±0.8
1081.8 ±0.7		33 ± 5		1.0 ±0.15
1113.2 ±0.8		36 ± 4		1.14±0.12
1228.1 ±0.6		414 ± 28		11.8 ±0.8
1239.5 ±0.6		510 ± 32		14.5 ±0.9
1314.4 ±0.6		250 ± 22	73 ±25	6.8 ±0.6
1402.4 ±0.7		1120 ± 75		30 ±2
1427.2 ±0.7		1250 ±115		33 ±3
1501.9 ±0.8		97 ± 12		2.5 ±0.3
1541.3 ±0.8		389 ± 76		9.9 ±2.0
1600.6 ±0.9		320 ± 48		8.0 ±1.2
1691.8 ±0.5		1110 ± 85		27 ±2
1730.0 ±0.6		140 ± 50		3.4 ±1.2
1750.3 ±0.6		8.4± 8.4		0.2 ±0.2
1806.9 ±0.6		100 ± 40		2.4 ±0.9
1875.6 ±0.6		8.6± 4.3		0.2 ±0.1
1954.8 ±0.7		390 ± 50		8.8 ±1.1
1987.0 ±1.0		13 ± 10		0.3 ±0.2
2046.6 ±0.7		27 ± 9		0.6 ±0.2
2121.5 ±0.7		850 ± 92		18.5 ±2.0
2196.7 ±0.8		9 ± 5		0.2 ±0.1
2237.1 ±0.8		280 ± 38		5.9 ±0.8
2310.5 ±0.9		270 ± 38		5.6 ±0.8
2367.8 ±0.9		200 ± 30		4.1 ±0.6
2392.5 ±0.9		180 ± 30		3.7 ±0.6
2456.3 ±1.0		400 ± 40		8.1 ±0.8
2490.0 ±1.0		10 ± 5		0.2 ±0.1
2522.0 ±1.0		45 ± 20		0.9 ±0.4
2582.6 ±1.0		150 ± 30		3.0 ±0.6
2648.5 ±1.1		2265 ±210		44 ±4
2656.9 ±1.1		1190 ±155		23 ±3
2695.8 ±1.1		410 ± 60		7.9 ±1.2
2854.0 ±2.0		32 ± 11		0.6 ±0.2
2912.1 ±1.1		1350 ±160		25 ±3
2925.0 ±1.2		60 ± 22		1.1 ±0.4
2966.6 ±1.2		460 ±170		8.4 ±1.3
2985.5 ±1.2		1200 ±165		22 ±3

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
3030.7 ±1.2		610 ± 85		11.1 ±1.5
3104.0 ±2.0		180 ± 40		3.2 ±0.7
3157.9 ±1.3		490 ± 62		8.7 ±1.1
3258.7 ±1.3		550 ± 70		9.6 ±1.2
3288.2 ±1.3		1090 ±120		19.0 ±2.1
3315.5 ±1.4		120 ± 30		2.1 ±0.5
3433.5 ±1.4		1145 ±120		19.5 ±2.0
3464.0 ±1.4		450 ± 70		7.6 ±1.2
3512.0 ±1.5		682 ± 90		11.5 ±1.5
3537.8 ±1.5		2440 ±300		41 ±5
3609.4 ±1.6		130 ± 40		2.2 ±0.7
3665.0 ±1.6		2300 ±240		38 ±4
3826.6 ±1.6		300 ± 40		4.8 ±0.6
3925.7 ±1.7		690 ± 90		11.0 ±1.4
4028.4 ±1.7		380 ± 50		6.0 ±0.8
4075.5 ±1.8		220 ± 50		3.4 ±0.8
4101.5 ±1.8		762 ±100		11.9 ±1.6
4172.6 ±1.9		4070 ±390		63 ±6
4215.3 ±1.9		570 ± 80		8.8 ±1.2
4320.3 ±1.9		1010 ±130		15.4 ±2.0
4405.0 ±2.0		60 ± 27		0.9 ±0.4
4523.0 ±2.0		410 ± 60		6.1 ±0.9
4557.0 ±2.0		380 ± 60		5.6 ±0.9
4590.0 ±2.0		280 ± 47		4.1 ±0.7
4651.0 ±2.0		560 ± 60		8.2 ±0.9
4668.0 ±2.0		1570 ±140		23 ±2
4725.0 ±2.0		68 ± 28		1.0 ±0.4
4777.0 ±2.0		510 ± 70		7.4 ±1.0
4923.0 ±2.0		760 ±115		10.8 ±1.6
4946.0 ±3.0		390 ± 63		5.5 ±0.9
4985.0 ±3.0		1625 ±215		23 ±3
5073.0 ±3.0		2140 ±285		30 ±4
5100.0 ±3.0		270 ± 70		3.8 ±1.0

$^{154}_{62}Sm$

THERMAL CROSS SECTIONS

σ_γ = 5.5±1.1 b
a_{coh} = 8.0±1.0 fm

RESONANCE PROPERTIES

I_γ^c = 30±10 b
R' = 8.2±0.7 fm
<D> = 115±14 eV
S_0 = 1.8±0.5

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 22.8 S_n = 5814.0±2.0 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
93.01±0.09	210 ± 20	139 ± 19	71 ±28	14.4 ± 2
261.1 ±0.2	230 ± 19	157 ± 21	73 ±28	9.7 ± 1.3
341.5 ±0.3	80 ± 15	15 ± 3	65 ±15	0.81± 0.16
457.3 ±0.4	250 ± 15	100 ± 20	90 ±25	7.48± 0.94
617.8 ±0.5	260 ± 20	175 ± 18	85 ±27	7.04± 0.7
704.7 ±0.5	840 ± 50	760 ± 55		28.6 ± 2
828.7 ±0.4	3200 ±150	3100 ±200		108 ± 7
1075.5±0.5		14.5± 2.5		0.44± 0.08
1181.5±0.6	155 ± 23	72 ± 4	83 ±23	2.10± 0.12
1282.9±0.7	610 ± 30	510 ± 35	100 ±46	14.2 ± 1.0
1472.1±0.8	820 ± 40	710 ± 40		18.5 ± 1.0
1556 ±1	2080 ±100	1980 ±120		50 ± 3
1647 ±1	3100 ±105	3020 ± 80		74 ± 2
1734.0±0.5		80 ± 13		1.9 ± 0.3
1768.8±0.6	670 ± 25	570 ± 24	100 ±35	13.6 ± 0.6
1847.8±0.6	1650 ± 78	1590 ± 85		37 ± 2
2056.5±0.7		150 ± 30		3.31± 0.66
2106.9±0.7	2550 ± 90	2450 ±140		53 ± 3
2452.2±0.8	1400 ± 70	1320 ±135		26.7 ± 2.7
2492 ±0.9		56 ± 10		1.1 ± 0.2
2529.5±1.0		2565 ±755		51 ±15
2834.1±1.0		192 ± 32		3.6 ± 0.6
2862.7±1.1		70 ± 11		1.3 ± 0.2
2987.8±1.2		1420 ±165		26 ± 3
3046.8±1.2		1435 ±165		26 ± 3
3540.7±1.4		180 ± 80		3.0 ± 1.3
4060.5±1.7		590 ± 85		9.3 ± 1.3
4213.0±1.8		3375 ±520		52 ± 8
4415.0±2.0		3790 ±530		57 ± 8
4550.0±2.0		420 ± 67		6.2 ± 1.0
4757.0±2.0		2280 ±275		33 ± 4
4920.0±2.0		1825 ±210		26 ± 3
5075.0±3.0		1230 ±170		17.3 ± 2.4

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Sm^{147,148}$	mass spectrometry	JMS,6,435(71)	Dobrozemsky
$Sm^{147,149}$	σ_α	NP/A,141,193(70)-	Macfarlane
$Sm^{147,149}$	σ_α	NP/A,141,193(70)	Okamoto
Sm	σ_t	JPJ,26,225(69)	Asami
Sm^{148}	σ_γ	PHY,40,567(69)	Reddingius
Sm^{148}	mass spectrometry	AAEC/TM-443(68)	Whittim
Sm	local osci.	KE,10,25(67)	Albert
Sm^{147}	mass spectrometry	JIN,29,2147(67)	Fenner
Sm^{147}	mass spectrometry	NSE,28,139(67)	Forman
$Sm^{147,149}$	σ_α	PL/B,24,142(67)	Oakey
Sm^{149}	σ_α	YF,1,252(65)	Andreev
Sm^{149}	σ_α	BAP,10,724(65)	Beg
Sm	pile osci.	NUK,6,245(64)	Sokolowski
Sm^{151}	σ_t	NSE,17,371(63)	Pattenden
Sm^{152}	σ_t	NSE,12,63(62)	Bernabei
Sm^{152}	activation	JIN,24,749(62)	Cabell
$Sm^{147,149}$	σ_α	PL,1,289(62)	Cheifetz
Sm^{149}	σ_α	PR,127,1665(62)	Macfarlane
$Sm^{144,145}$	activation	PR,127,943(62)	Nurmia
$Sm^{149,150}$	mass spectrometry	JIN,17,6(61)	Aitken
Sm	pulsed n	NSE,9,132(61)	Meadows
$Sm^{147,152}$	pile osci.	JNE,12,32(60)	Tattersall
Sm	pile osci.	AERE-R/R-2516(59)	Jovitt
$Sm^{149,151}$	mass spectrometry	58GENEVA,15,446(58)	Anikina
Sm^{149}	mass spectrometry	58GENEVA,15,459(58)	Bidinosti
Sm^{152}	σ_t	NRDC-104(58)	Pattenden
$Sm^{149,152}$	σ_t	53GENEVA,16,44(58)	Pattenden
Sm	mass spectrometry	JNE,4,33(57)	Aitken
Sm, Sm^{149}	pile osci.	AERE-R/R-2333(57)	Cummins
$Sm^{144,147,148,150}$	mass spectrometry	THESIS(56)	Walker
$Sm^{149,151}$	mass spectrometry	CJC,33,830(55)	Melaika
$Sm^{152,154}$	$\bar{\sigma}_s$ diffraction	PR,91,597(53)	Koehler
Sm	local osci.	PR,83,641(51)	Pomerance
Sm	pile osci.	PR,80,342(50)	Harris
$Sm^{152,154}$	activation	PR,72,888(47)	Seren
Sm^{152}	activation	ZN,1,179(46)	Bothe
Sm	σ_t	PR,49,453(36)	Mitchell
Sm	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Sm^{147}	σ_γ	18.3-423	YF,15,401(72)	Karzhavina
Sm^{149}	σ_γ	15.8-249	YF,15,401(72)	Karzhavina
Sm^{152}	$\sigma_t \sigma_\gamma$(SI)	8.0-5100	PRIVATE COMM.(72)	Rahn
Sm^{154}	$\sigma_t \sigma_\gamma$(SI)	93.0-5075	PRIVATE COMM.(72)	Rahn
Sm^{147}	multiplicity	18-185	71KNOX,2,785(71)	Cauvin
Sm^{149}	multiplicity	5-185	71KNOX,2,785(71)	Cauvin
Sm^{147}	σ_t	3.4-249	NSE,43,58(71)	Codding

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Sm^{147}	σ_t	0.01-1161	71KNOX,2,673(71)+	Eiland
Sm^{150}	σ_t	0.01-1563	71KNOX,2,673(71)+	Eiland
Sm^{147}	$\sigma_t\sigma_\gamma$	18.3-423	JINR-P3-5655(71)	Karzhavina
Sm^{149}	$\sigma_t\sigma_\gamma$	15.8-249	JINR-P3-5655(71)	Karzhavina
Sm^{147}	σ_γ	3.4-123	JINR-P3-6092(71)	Karzhavina
Sm^{149}	σ_γ	4.93-64.7	JINR-P3-6092(71)	Karzhavina
Sm^{149}		0.098-34	BAP,15,1667(70)+	Becvar
Sm^{147}	σ_α	3.4-183	NP/A,154,177(70)	Kvitek
Sm^{149}	σ_α	0.098-100	NP/A,154,177(70)	Kvitek
Sm^{147}	σ_α	3.4-184	JINR-P3-5553(70)	Wilhem
Sm^{149}	σ_t	0.098	JPJ,26,225(69)	Asami
Sm^{149}	σ_t	0.097-0.87	CNAEM-52(68)	Akyuz
Sm^{149}	σ_γ	thermal	NP/A,97,187(67)	Dakovski
Sm^{149}	σ_t	0.098-0.87	PRIVATE COMM.(67)	Ertek
Sm^{147}	$\bar{\sigma}_s$	3.4-18.3	NP/A,97,657(67)	Poortmans
Sm^{149}	$\bar{\sigma}_s$	0.098-0.87	NP/A,97,657(67)	Poortmans
Sm^{149}	σ_α	0.004-0.1	NP,82,331(66)	Poortmans
Sm	σ_t	0.86-4.9	AE,16,523(64)	Begzhanov
Sm^{152}	σ_t	8.0	NSE,12,63(62)	Bernabei
Sm^{147}	σ_γ	3.4-39.9	ANL-6589(62)+	Carpenter
Sm^{149}	σ_γ	0.86-45	ANL-6589(62)+	Carpenter
Sm^{147}	σ_α	3.4-27	PL,1,289(62)	Cheifetz
Sm^{149}	σ_α	thermal	PL,1,289(62)	Cheifetz
Sm^{149}	σ_α	thermal	PR,127,1665(62)	Macfarlane
Sm^{149}	polarization	0.098-8.9	PR,128,1287(62)	Marshak
Sm^{149}	σ_t	0.098-0.87	58GENEVA,16,44(58)	Pattenden
Sm^{147}	σ_t	3.4	AERE-NP/M,87(58)	Pattenden
Sm^{152}	σ_t	8.0	CJP,39,1193(61)	Chrien
Sm^{152}	ratio	8.0	CJP,39,1184(61)	Walker
Sm	σ_t	4-50	PRIVATE COMM.(59)	Pilcher
Sm^{149}	σ_t	0.098-17.0	PR,109,1219(58)	Marshak
Sm^{152}	σ_t	8.0	PRIVATE COMM.(58)	Simpson
Sm^{147}	$\sigma_\gamma\bar{\sigma}_s$	3.4-161	NP,5,294(58)	Bowey
Sm^{149}	$\sigma_\gamma\bar{\sigma}_s$	5.0-182	NP,5,294(58)	Bowey
Sm^{150}	$\sigma_\gamma\bar{\sigma}_s$	21-48	NP,5,294(58)	Bowey
Sm^{152}	$\sigma_\gamma\bar{\sigma}_s$	8-174	NP,5,294(58)	Bowey
Sm^{149}	σ_t	0.89-12	BAP,2,218(57)+	Harvey
Sm^{147}	σ_t	18.3-95	BAP,2,42(57)+	Simpson
Sm^{149}	σ_t	12-95	BAP,2,42(57)+	Simpson
Sm^{150}	σ_t	20-44	BAP,2,42(57)+	Simpson
Sm^{149}	polarization	0.094	PR,95,105(54)	Roberts
Sm^{147}	σ_t	3.4-19.1	PR,96,1014(54)	Sailor
Sm^{149}	σ_t	0.098-17.2	PR,96,1014(54)	Sailor
Sm^{150}	σ_t	21	PR,96,1014(54)	Sailor
Sm^{152}	σ_t	8.2	PR,96,1014(54)	Sailor
Sm	$\bar{\sigma}_s$	0.098	CJP,31,432(53)	Brockhouse
Sm	σ_t	0.098	PR,71,757(47)	Sturm
Sm	σ_t	0.098	PR,70,557(46)	Borst

$_{63}$Eu

THERMAL CROSS SECTIONS

σ_γ = 4600±100 b
$\bar{\sigma}_s$ = 8.0±1.0 b
$\sigma_{pa}{}^c$ = 4.5 b
a_{coh} = 6.2±0.3 fm

RESONANCE PROPERTIES

I_γ = 2430±200 b
R' = 8.8±0.4 fm
S_0 = 3.1±0.3
S_1 = 0.8±0.4

$^{151}_{63}$Eu

THERMAL CROSS SECTIONS

σ_γ = 9200±100 b
σ_γ = 4.0±2.0 b [96 min ^{152}Eu^{m2}]
σ_γ = 3300±200 b [9.3 hr ^{152}Eu^{m1}]
σ_γ = 5900±200 b [12.4 yr ^{152}Eu^{g}]
σ_a = 0.009±0.002 mb

RESONANCE PROPERTIES

I_γ = 3300±300 b
R' = 8.8±0.4 fm
<D> = 0.7±0.2 eV
S_0 = 3.7±0.5
S_1 = 1.0±0.8

RESONANCE PARAMETERS

I^π = 5/2$^+$ %Abn = 47.8 S_n = 6305.2±0.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-0.00361		3	95.7	0.125±0.005
0.321 ±0.001	0.0833±0.0023	3	79.5± 2	0.147±0.004
0.461 ±0.001	0.777 ±0.021	3	87 ± 2	1.145±0.030
1.055 ±0.003	0.219 ±0.005	3	85 ± 3	0.214±0.005
1.832 ±0.01	0.0338±0.0081			0.025±0.006
2.717 ±0.005	0.24 ±0.02		93 ± 3	0.145±0.009
3.366 ±0.006	1.83 ±0.09	2	93 ± 3	1.00 ±0.05
3.710 ±0.006	0.79 ±0.04		93 ± 3	0.41 ±0.02
4.78 ±0.01	0.15 ±0.02			0.07 ±0.0[illegible]
5.38 ±0.02	0.17 ±0.02		108 ±12	0.075±0.007
5.98 ±0.01	0.34 ±0.05		100 ±15	0.14 ±0.02
7.05 ±0.02	0.53 ±0.53			0.02 ±0.02
7.29 ±0.02	2.19 ±0.24		88 ±12	0.81 ±0.09
7.44 ±0.02	1.88 ±0.22		85 ± 9	0.69 ±0.08
9.07 ±0.02	1.02 ±0.10		104 ±12	0.34 ±0.034
10.47 ±0.03	1.97 ±0.10		91 ± 9	0.61 ±0.03

$^{151}_{63}$Eu

E_0 (eV)		$2g\Gamma_n$ (meV)		J	Γ_γ (meV)		$2g\Gamma_n^0$ (meV)	
10.94	±0.03	0.66	±0.07		98	±11	0.20	±0.02
11.23	±0.04							
12.23	±0.04	0.93	±0.07		88	± 9	0.266	±0.019
12.65	±0.04	2.38	±0.18		88	± 7	0.67	±0.05
13.66	±0.05	0.44	±0.07		115	±12	0.12	±0.02
14.76	±0.05	1.92	±0.08		76	± 9	0.50	±0.02
15.18	±0.05	2.10	±0.20		79	± 9	0.54	±0.05
17.75	±0.06	1.35	±0.08		104	±11	0.32	±0.02
19.10	±0.07	4.98	±0.39		133	±18	1.14	±0.09
19.70	±0.07							
21.0	±0.07							
21.3	±0.07							
21.69	±0.07	1.94	±0.19		82	±12	0.42	±0.04
22.21	±0.08	2.83	±0.38		66	±15	0.60	±0.08
22.75	±0.08	1.53	±0.10		89	± 9	0.32	±0.02
24.25	±0.09							
24.58	±0.09	7.93	±0.54		99	± 9	1.60	±0.11
25.17	±6.11	0.60	±0.20				0.12	±0.04
25.60	±0.11	0.51	±0.23		89	±17	0.10	±0.04
26.22	±0.12							
26.72	±0.12	7.03	±0.62		78	± 9	1.36	±0.12
27.43	±0.12	0.63	±0.11		97	± 8	0.12	±0.02
27.75	±0.12							
28.09	±0.12	0.32	±0.11		90	±15	0.06	±0.02
29.23	±0.05	4.54	±0.32		79	±11	0.84	±0.06
30.22	±0.06	3.62	±0.36		86	± 6	0.66	±0.06
30.81	±0.06	0.67	±0.11		99	±14	0.12	±0.02
31.59	±0.06	1.69	±0.11		97	± 7	0.30	±0.02
32.65	±0.06							
33.51	±0.06	0.46	±0.12				0.08	±0.02
33.88	±0.06							
34.57	±0.06	0.35	±0.12				0.06	±0.02
35.05	±0.07	3.20	±0.36		90	± 8	0.54	±0.06
36.09	±0.07	5.05	±0.36		78	± 7	0.84	±0.06
37.01	±0.07	5.60	±0.37		78	±89	0.92	±0.06
37.78	±0.07	3.44	±0.25		92	± 8	0.56	±0.04
39.20	±0.07	1.00	±0.38				0.16	±0.06
39.37	±0.07	4.02	±0.63		79	± 9	0.64	±0.10
39.94	±0.08	1.26	±0.13		79	± 9	0.20	±0.02
40.42	±0.08							
41.35	±0.08	27.01	±2.96		80	±12	4.20	±0.46
42.12	±0.09	1.04	±0.39				0.16	±0.06
43.19	±0.09	5.65	±0.39		84	± 9	0.86	±0.06
44.43	±0.09	3.60	±0.40		89	± 8	0.54	±0.06
45.42	±0.10	1.42	±0.27		99	±18	0.21	±0.04
46.41	±0.10	10.36	±3.00		85	±19	1.52	±0.44
47.04	±0.11	17.01	±2.06		99	±12	2.48	±0.30
48.75	±0.13							
49.23	±0.14							
50.04	±0.15	0.99	±0.42				0.14	±0.06
50.58	±0.12	23.04	±1.99		102	±10	3.24	±0.28
51.61	±0.12							

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
52.41 ±0.12	4.05 ±1.01			0.56 ±0.14
52.70 ±0.12	4.79 ±1.02		80 ±15	0.66 ±0.14
53.25 ±0.13	0.88 ±0.15			0.12 ±0.02
53.94 ±0.14	4.55 ±0.29		88 ±10	0.62 ±0.04
54.90 ±0.14				
55.26 ±0.07	3.87 ±0.30		96 ± 8	0.52 ±0.04
56.18 ±0.07	3.45 ±0.30		98 ± 9	0.46 ±0.04
57.36 ±0.07	18.93 ±1.67		83 ± 8	2.50 ±0.22
59.85 ±0.08	6.44 ±0.61		108 ±11	0.84 ±0.08
60.85 ±0.08	5.77 ±0.62		96 ± 8	0.74 ±0.08
62.41 ±0.08	3.95 ±0.47		86 ± 7	0.50 ±0.06
63.91 ±0.09	2.56 ±0.48		100 ±10	0.32 ±0.06
67.91 ±0.10	18.00 ±0.82		100 ± 9	2.18 ±0.10
69.09 ±0.10	1.00 ±0.33			0.12 ±0.04
70.75 ±0.10	4.54 ±0.67		78 ±10	0.54 ±0.08
71.41 ±0.10	6.08 ±0.68		84 ± 9	0.72 ±0.08
72.41 ±0.11	2.21 ±0.34		93 ±10	0.26 ±0.04
73.33 ±0.11	1.20 ±0.34			0.14 ±0.04
74.16 ±0.11	1.50 ±0.31			0.174±0.036
75.76 ±0.11	4.18 ±0.52		90 ±10	0.48 ±0.06
77.45 ±0.12	8.80 ±0.53		98 ± 9	1.00 ±0.06
78.05 ±0.12	0.53 ±0.35			0.06 ±0.0[illegible]
78.66 ±0.12	17.03 ±1.60		73 ± 8	1.92 ±0.18
79.51 ±0.12	5.53 ±0.71		64 ±13	0.62 ±0.08
80.29 ±0.12	8.24 ±1.08		81 ± 9	0.92 ±0.12
81.08 ±0.13	23.95 ±1.98		101 ±12	2.66 ±0.22
83.07 ±0.13	3.28 ±0.37		95 ±10	0.36 ±0.04
84.00 ±0.13	14.85 ±0.73		99 ±12	1.62 ±0.08
85.67 ±0.14	4.81 ±0.56		84 ±18	0.52 ±0.06
87.70 ±0.14	1.31 ±0.38			0.14 ±0.04
88.63 ±0.14	1.13 ±0.38			0.12 ±0.04
89.34 ±0.15	14.56 ±0.76		104 ±13	1.54 ±0.08
90.18 ±0.15	4.94 ±0.60		85 ±14	0.52 ±0.06
91.13 ±0.15	4.77 ±0.57		94 ±10	0.50 ±0.06
93.36 ±0.15	28.02 ±1.93		112 ±13	2.9 ±0.2
96.29 ±0.16	18.45 ±1.96		112 ±14	1.88 ±0.20
97.70 ±0.16	1.98 ±0.40			0.20 ±0.04
98.61 ±0.16	15.49 ±0.99		108 ±13	1.56 ±0.10

$^{152g}_{63}$Eu
[4.8 yr]

THERMAL CROSS SECTIONS

σ_γ = 2300±1000 b

$^{153}_{63}Eu$

THERMAL CROSS SECTIONS

σ_γ = 390±30 b
σ_s = 8.0±0.2 b

RESONANCE PROPERTIES

I_γ = 1635±200 b
R' = 8.8±0.4 fm
<D> = 1.3±0.2 eV
S_0 = 2.5±0.2
S_1 = 0.6±0.4

RESONANCE PARAMETERS

I^π = 5/2⁺ %Abn = 52.2 S_n = 6438±10 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1.728±0.005	0.057±0.003		93 ± 5	0.043 ±0.0026
2.457±0.005	1.30 ±0.02	3	91 ± 2	0.830 ±0.011
3.293±0.006	0.92 ±0.18		96 ± 3	0.505 ±0.1
3.942±0.006	1.10 ±0.03		97 ± 2	0.555 ±0.015
4.75 ±0.01	0.061±0.014			0.037 ±0.008
6.16 ±0.02	0.68 ±0.03		119 ±10	0.272 ±0.014
8.86 ±0.02	3.72 ±0.18		104 ± 5	1.25 ±0.06
11.62 ±0.03	3.92 ±0.24		96 ±10	1.15 ±0.07
12.45 ±0.04	0.16 ±0.01		90 ±25	0.046 ±0.002
13.22 ±0.04	0.32 ±0.06			0.089 ±0.016
15.26 ±0.04	0.42 ±0.06			0.108 ±0.015
16.33 ±0.05	0.030±0.014			0.0075±0.0035
16.73 ±0.05	1.47 ±0.17		89 ±15	0.36 ±0.042
17.60 ±0.06	0.59 ±0.42			0.14 ±0.10
18.01 ±0.06	4.71 ±0.38		92 ±15	1.11 ±0.09
18.73 ±0.07	3.25 ±0.39		100 ±10	0.75 ±0.09
20.02 ±0.07	9.80 ±0.58		100 ±15	2.19 ±0.13
22.54 ±0.08	3.04 ±0.38		84 ±12	0.64 ±0.08
23.66 ±0.09	2.72 ±0.34		87 ±12	0.56 ±0.07
26.2 ±0.2	0.30 ±0.08			0.059 ±0.016
28.63 ±0.12	1.82 ±0.11		78 ±15	0.34 ±0.02
29.90 ±0.05	0.30 ±0.11			0.055 ±0.02
31.21 ±0.06	2.35 ±0.22		118 ±13	0.42 ±0.04
32.45 ±0.06	0.28 ±0.11			0.049 ±0.02
33.05 ±0.06				
34.53 ±0.06	5.17 ±0.59		90 ±12	0.88 ±0.10
36.62 ±0.07	4.24 ±0.61		106 ±14	0.70 ±0.10
37.76 ±0.07	4.42 ±0.61		94 ±12	0.72 ±0.10
38.30 ±0.07	5.94 ±0.37		81 ±11	0.96 ±0.06
41.15 ±0.08	1.48 ±0.08		69 ±20	0.23 ±0.013
42.15 ±0.09	4.80 ±0.58		77 ±14	0.74 ±0.09
43.16 ±0.09	3.15 ±0.39		96 ± 8	0.48 ±0.06
44.82 ±0.09	0.70 ±0.10			0.105 ±0.015
45.79 ±0.10	1.35 ±0.14		99 ±15	0.20 ±0.02
47.11 ±0.11	2.06 ±0.14		94 ±11	0.30 ±0.02
47.93 ±0.11	6.23 ±0.42			0.90 ±0.06

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
49.30 ±0.11	0.14 ±0.14			0.02 ±0.02
49.50 ±0.11	0.28 ±0.14			0.04 ±0.02
50.00 ±0.12	2.97 ±0.28		92 ± 7	0.42 ±0.04
50.74 ±0.12	7.41 ±0.57		113 ±14	1.04 ±0.08
52.31 ±0.13	12.15 ±0.87		108 ±15	1.68 ±0.12
53.07 ±0.14	2.77 ±0.44		119 ±14	0.38 ±0.06
54.29 ±0.14	12.38 ±0.74			1.68 ±0.10
55.19 ±0.07	0.26 ±0.11		95 ±20	0.035 ±0.015
55.57 ±0.07	1.94 ±0.15			0.26 ±0.02
58.40 ±0.08				
58.97 ±0.08	1.23 ±0.15		85 ± 8	0.16 ±0.02
59.72 ±0.08	2.78 ±0.31		102 ±15	0.36 ±0.04
60.92 ±0.08	32.00 ±2.03		78 ±13	4.10 ±0.26
62.55 ±0.08	5.22 ±0.63		105 ±13	0.66 ±0.08
63.70 ±0.09	7.34 ±0.80		93 ±20	0.92 ±0.10
64.09 ±0.09	13.92 ±0.96		116 ±15	1.74 ±0.12
65.25 ±0.09				
65.90 ±0.09				
66.94 ±0.09	3.76 ±0.65		86 ±17	0.46 ±0.08
68.15 ±0.09	5.12 ±0.66		87 ±12	0.62 ±0.08
70.04 ±0.10	3.01 ±0.34		100 ±14	0.36 ±0.04
71.35 ±0.10	1.18 ±0.17			0.14 ±0.02
73.68 ±0.11	0.34 ±0.17			0.04 ±0.02
75.47 ±0.11	0.52 ±0.35			0.06 ±0.04
76.93 ±0.11	14.38 ±0.53		106 ±13	1.64 ±0.06
80.29 ±0.12	4.84 ±0.54		103 ±19	0.54 ±0.06
81.24 ±0.13	3.97 ±0.54		96 ±14	0.44 ±0.06
82.99 ±0.13	3.64 ±0.55		86 ± 9	0.40 ±0.06
84.00 ±0.13	0.73 ±0.55			0.08 ±0.06
86.99 ±0.14	12.31 ±0.56		68 ± 7	1.32 ±0.06
87.70 ±0.14	4.87 ±0.37		105 ±16	0.52 ±0.04
89.34 ±0.15	1.32 ±0.38			0.14 ±0.04
90.75 ±0.15	4.19 ±0.38		79 ±13	0.44 ±0.04
92.01 ±0.15				
92.80 ±0.15	2.31 ±1.15			0.24 ±0.12
93.26 ±0.15	41.91 ±4.06		88 ±20	4.34 ±0.42
94.76 ±0.15	0.78 ±0.39			0.08 ±0.04
95.15 ±0.15	2.34 ±0.20			0.24 ±0.02
96.86 ±0.16	2.95 ±0.98			0.30 ±0.10
97.10 ±0.16	26.01 ±5.91		99 ±15	2.64 ±0.60

$^{154}_{63}$Eu [16 yr]

THERMAL CROSS SECTIONS

σ_γ = 1500±400 b

$^{155}_{63}$Eu [4.65 yr]

THERMAL CROSS SECTIONS

σ_γ = 4040±125 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Eu^{151}	σ_c activation	NP/A,172,489(71)	Poortmans
Eu^{151}	activation	JNE,25,129(71)	Ryves
Eu^{155}	depletion	CJP,48,1933(70)	Movatt
Eu^{153}	$\bar{\sigma}_s$	70HELSINKI,1,651(70)	Vertebnyi
Eu,Eu^{151}	local osci.	KE,10,25(67)	Albert
$Eu^{151,153}$	activation	JIN,29,2671(67)	Sims
Eu	σ_a	YF,1,252(65)	Andreev
Eu	σ_c	PRIVATE COMM.(65)	Ohno
Eu^{151}	isom. ratio	PR/B,137,763(65)	Takahashi
Eu^{151}	isom. ratio	PR,129,769(63)	Keisch
Eu	diffraction	PR,126,2262(62)	Arnold
Eu	diffraction	PR,127,120(62)	Nereson
Eu	diffraction	PR,124,1848(61)	Arnold
Eu	σ_c	ADP,7,50(61)	Mohne
Eu	pulsed n	NSE,9,132(61)	Meadows
Eu^{151}	activation	NP,20,183(60)	Hans
$Eu,Eu^{151,153}$	pile osci.	JNE,12,32(60)	Tattersall
Eu^{151}	isom. ratio	KAPL-2000-8,D-16(59)-	Johnson
Eu^{151}	isom. ratio	KAPL-2000-8,D-16(59)	Moore
$Eu,Eu^{151,153}$	σ_c	58GENEVA,16,44(58)	Pattenden
Eu	pile osci.	AERE-R/M-100(57)	Cummins
Eu	$\bar{\sigma}_s$	CJP,31,432(53)	Brockhouse
Eu	local osci.	PR,83,641(51)	Pomerance
$Eu^{151-155}$	mass spectrometry	PR,75,1500(49)	Hayden
Eu^{151}	activation	PR,72,888(47)	Seren
Eu	σ_c	PR,71,757(47)	Sturm

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Eu^{151}	σ_t	1.05-98.6	PRIVATE COMM.(72)	Rahn
Eu^{153}	σ_t	1.73-97.6	PRIVATE COMM.(72)	Rahn
Eu	σ_t	thermal	NP/A,172,489(71)	Poortmans
Eu^{151}	σ_γ	0.025-3.4	NP/A,172,489(71)	Poortmans
Eu^{151}	σ_t	0.32-109.9	PRIVATE COMM.(70)	Vertebnyi
Eu^{153}	σ_t	0.457-659	PRIVATE COMM.(70)	Vertebnyi
Eu^{151}	polarization	0.025-3.4	PR/B,134,68(64)	Stolovy
Eu^{153}	polarization	2.4	PR/B,134,58(64)	Stolovy
Eu	σ_t	thermal	ADP,7,50(61)	Hohne
Eu^{151}	σ_t	0.32-0.46	NSE,10,169(61)	Tassan
Eu^{151}	σ_t	1.055-9.06	PR,114,1577(59)	Domanic
Eu^{153}	σ_t	1.73-8.87	PR,114,1577(59)	Domanic
Eu^{153}	σ_t	0.457	58GENEVA,16,44(58)	Pattenden
Eu^{151}	σ_t	1.055-9.0	ORNL-2204,33(56)	Harvey
Eu^{153}	σ_t	1.76-11.7	ORNL-2204,33(56)	Harvey
Eu^{151}	σ_t	2.717-3.710	BAP,1,347(56)	Landon
Eu^{153}	σ_t	2.456-3.944	BAP,1,347(56)	Landon
Eu^{151}	σ_t	4.85-27.0	PRIVATE COMM.(56)	Zimmerman
Eu^{153}	σ_t	4.81-24.1	PRIVATE COMM.(56)	Zimmerman
Eu	σ_t	4.8-15.2	PR,99,10(55)	Harvey
Eu	σ_t	thermal	PR,98,1162(55)	Holt
Eu	σ_t	0.025-1.056	PR,98,1267(55)	Landon
Eu	σ_t	0.327-19.5	PR,96,1014(54)	Sailor
Eu	σ_t	0.025-19.5	PR,93,1292(54)	Sailor
Eu^{151}	σ_γ	0.025-7.4	PR,95,453(54)	Wood
Eu	σ_t	thermal	PR,71,757(47)	Sturm
Eu	σ_t	0.025-0.54	PR,70,557(46)	Borst

$_{64}$Gd

THERMAL CROSS SECTIONS

σ_γ = 49000±1000 b
a_{coh} = 15±2 fm

RESONANCE PROPERTIES

I_γ^c = 390±10 b
S_0 = 2.0±0.4

$^{152}_{64}$Gd

THERMAL CROSS SECTIONS

σ_γ = 1100±100 b
σ_a = 7 mb

RESONANCE PROPERTIES

I_γ = 3000±300 b
<D> = 15±2 eV
S_0 = 4.6±1.8

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.2 S_n = 6487±8 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
3.31±0.04	0.018± 0.006		0.010±0.003
8.00±0.06	0.92 ± 0.03		0.03 ±0.01
12.35±0.07	2.2 ± 0.2		0.62 ±0.06
21.2 ±0.2	0.69 ± 0.23		0.15 ±0.05
36.86±0.05	83.8 ± 6.7	56 ±12	13.8 ±1.0
39.3 ±0.1	38.9 ± 3.1	58 ±17	6.2 ±0.5
42.7 ±0.1	3.1 ± 0.6		0.47 ±0.09
74.3 ±0.2	55.2 ±12.9		6.4 ±1.5
85.1 ±0.2	3.6 ± 0.5		0.39 ±0.06
92.4 ±0.2	160 ±37		16.6 ±3.8
100.0 ±0.4	90		0.9
124.0 ±0.4	7.5		0.7
140 ±0.4	124 ±15	46 ±24	10.5 ±1.3
185.2 ±0.6	105 ±30	62 ±40	7.7 ±2.2
202 ±1	200 ±43		14 ±3
223 ±1	300 ±90		20 ±6
231 ±1	100 ±40		6.6 ±2.6
238 ±1			
252 ±1.5			
293 ±1.5			

There is a discrepancy between the measured and the calculated absorption resonance integrals.

THERMAL CROSS SECTIONS

σ_γ = 85±12 b
σ_γ = 0.049±0.015 b [31 ms ^{155}Gd^m]

RESONANCE PROPERTIES

I_γ^c = 215±20 b
<D> = 15.5±2.3 eV
S_0 = 2.0±0.4

RESONANCE PARAMETERS

I^π = 0$^+$ %Abn = 2.2 S_n = 6446±6 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
9.41±0.04	0.030± 0.003		0.010±0.03
11.58±0.02	0.34 ± 0.10		0.11 ±0.02
22.33±0.06	11.5 ± 1.0		2.4 ±0.2
47.07±0.07	3.2 ± 0.4		0.47 ±0.06
49.50±0.07	1.8 ± 0.2		0.26 ±0.03
65.06±0.05	24 ± 3	57 ±15	2.98 ±0.37
76.12±0.08	1.1 ± 0.3		0.13 ±0.03
100.7 ±0.1	32 ± 4	80 ±15	3.2 ±0.4
105.6 ±0.1	4.8 ± 0.3		0.47 ±0.03
124.0 ±0.2	124 ±17	85 ±10	11.1 ±1.5
139.2 ±0.2	124 ±16	91 ±10	10.5 ±1.4
148.43±0.2	38 ± 5		3.1 ±0.4
164.5 ±0.2	105 ± 7	73 ± 9	8.2 ±0.6
170.4 ±0.2	5.0 ± 1.5		0.38 ±0.12
201.6 ±0.2	11.7 ± 2.5		0.82 ±0.18
211.0 ±0.2	35 ± 5		2.4 ±0.3
224.0 ±0.2	20 ± 3		1.34 ±0.20
252.8 ±0.2	12 ± 2		0.76 ±0.13
257.5 ±0.2	34 ± 5		2.1 ±0.3
269.2 ±0.2	28 ± 4		1.7 ±0.2
331.7 ±0.3	14 ± 2		0.76 ±0.11
333.8 ±0.3	13.5 ± 3.0		0.74 ±0.16
364.8 ±0.4	7.0 ± 4.0		0.37 ±0.21
396.5 ±0.4	95 ± 8	65 ±10	4.8 ±0.4
407.6 ±0.4	45 ± 9		2.2 ±0.5
444.7 ±0.3	120 ±15	76 ±11	5.7 ±0.7
447.1 ±0.3	94 ± 8	69 ± 9	4.5 ±0.4
468.0 ±0.3	125 ±15	86 ± 9	5.8 ±0.7
486.2 ±0.3	69 ±10	75 ±15	3.1 ±0.5
511.5 ±0.3	91 ±12	83 ±13	4.0 ±0.5
516.0 ±0.3	50 ± 7	80 ±15	2.2 ±0.3
551.8 ±0.4	55 ± 7	85 ±15	2.3 ±0.3
589.8 ±0.4	152 ±20	115 ±30	6.3 ±0.8
625.5 ±0.4	240 ±35	80 ±10	9.6 ±1.4
640.3 ±0.4	61 ±14	90 ±15	2.4 ±0.5
684.7 ±0.5	55 ±10		2.1 ±0.3
774.0 ±0.6	148 ±12	105 ±15	5.3 ±0.4
795.0 ±0.6	35 ± 8		1.2 ±0.3

$^{154}_{64}Gd$

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
808.7 ±0.6	195 ±30	95 ±15	6.9 ±1.1
811.9 ±0.6	75 ±20		2.6 ±0.7
836.3 ±0.3	540 ±70	104 ±15	18.7 ±2.4
845.3 ±0.3	370 ±50	96 ±15	12.7 ±1.7
859.0 ±0.4	265 ±40	97 ±15	9.0 ±1.4
897.4 ±0.4	310 ±40	92 ±12	10.3 ±1.3
910.8 ±0.4	63 ± 9	84 ±13	2.1 ±0.3
916.9 ±0.4	405 ±50	98 ±10	13.4 ±1.6
966.7 ±0.4	275 ±40	105 ±10	8.5 ±1.3
985.5 ±0.4	157 ±28	83 ±14	5.0 ±0.9

$^{155}_{64}Gd$

THERMAL CROSS SECTIONS

σ_γ = 61000±500 b
$\bar{\sigma}_s^c$ = 60 b
σ_α < 0.007 mb [$^{152}Sm^{0+}$]
σ_α = 0.015±0.002 mb [$^{152}Sm^{2+}$]
σ_α = 0.067±0.005 mb [$^{152}Sm^{4+}$]

RESONANCE PROPERTIES

I_γ^c = 1550±50 b
R' = 6.7±1.5 fm
<D> = 1.8±0.3 eV
S_0 = 2.3±0.2

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 14.9 S_n = 8535.4±0.8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.0268±0.0002	108 ±1	0.130± 0.002	2	108 ± 1	0.794±0.012
2.008 ±0.010		0.280± 0.003	1	110 ± 1	0.198±0.002
2.568 ±0.013		2.18 ± 0.02	1	111 ± 1	1.36 ±0.01
3.616 ±0.006		0.033± 0.002		130 ±17	0.017±0.001
6.30 ±0.02		2.50 ± 0.15	2		0.996±0.060
7.75 ±0.01		1.30 ± 0.05	2	125 ± 4	0.467±0.018
10.01 ±0.01		0.22 ± 0.02	2		0.070±0.006
11.53 ±0.01		0.47 ± 0.03	1		0.14 ±0.01
11.99 ±0.01		1.20 ± 0.05	2		0.35 ±0.01
14.51 ±0.01		2.4 ± 0.2		103 ±10	0.63 ±0.05
17.77 ±0.02		0.48 ± 0.03	2	120 ±25	0.11 ±0.01
19.92 ±0.02		5.4 ± 0.4	2	104 ±16	1.21 ±0.09
21.03 ±0.04		19.0 ± 1.2	2	98 ± 6	4.14 ±0.26
23.67 ±0.04		3.9 ± 0.1	2	120 ±15	0.80 ±0.02
27.57 ±0.05		0.84 ± 0.02	1	125 ±20	0.16 ±0.04
29.58 ±0.05		5.0 ± 0.4	2	108 ±22	0.92 ±0.07
30.10 ±0.06		13 ± 3	2	100 ±11	2.4 ±0.5

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
31.72 ±0.06		1.40 ± 0.04	2	118 ±20	0.25 ±0.07
33.14 ±0.07		1.2 ± 0.3			0.21 ±0.05
33.51 ±0.07		1.2 ± 0.3		115 ±35	0.21 ±0.05
34.83 ±0.07		4.6 ± 0.3	1	152 ±23	0.78 ±0.05
35.47 ±0.07		2.30 ± 0.12	2	118 ±23	0.39 ±0.02
37.12 ±0.08		6.3 ± 0.2	1	101 ±20	1.03 ±0.03
39.00 ±0.08		1.3 ± 0.2	2	118 ±26	0.21 ±0.03
43.92 ±0.10		13 ± 1	1	136 ± 9	1.96 ±0.15
46.10 ±0.10		2.8 ± 0.2		126 ±20	0.41 ±0.03
46.87 ±0.10		6.7 ± 0.3		100 ±12	0.98 ±0.04
47.73 ±0.11		0.49 ± 0.04			0.071±0.006
51.38 ±0.11		14.0 ± 0.7	1		1.95 ±0.10
52.13 ±0.12		14.6 ± 0.5	1	115 ±39	2.02 ±0.07
53.03 ±0.08		1.70 ± 0.06			0.23 ±0.01
53.74 ±0.08		9.6 ± 0.7	2	92 ±20	1.31 ±0.10
56.22 ±0.08		2.7 ± 0.2	2	120 ±18	0.36 ±0.03
59.32 ±0.09		8.3 ± 0.2	2	129 ±19	1.08 ±0.03
62.84 ±0.09		10.0 ± 0.4	2	90 ±15	1.26 ±0.05
64.09 ±0.10		0.32 ± 0.04			0.040±0.005
65.20 ±0.11		1.0 ± 0.2			0.12 ±0.03
69.0 ±0.1		7.9 ± 0.3	1		0.95 ±0.04
77.0 ±0.1		2.0 ± 0.1			0.23 ±0.01
77.8 ±0.1		0.90 ± 0.05			0.102±0.005
78.8 ±0.1		5.3 ± 0.5			0.60 ±0.06
80.05 ±0.12		0.39 ± 0.14			0.044±0.016
80.9 ±0.1		1.8 ± 0.2			0.20 ±0.02
84.2 ±0.1		6.9 ± 0.2			0.75 ±0.02
85.0 ±0.1		2.3 ± 0.1			0.25 ±0.01
90.5 ±0.1		1.60 ± 0.06			0.168±0.006
92.5 ±0.2		2.7 ± 0.3			0.28 ±0.03
92.8 ±0.2		3.9 ± 0.4			0.40 ±0.04
94.10 ±0.2		0.68 ± 0.05			0.070±0.005
95.7 ±0.2		4.8 ± 0.3			0.49 ±0.03
96.4 ±0.2		4.7 ± 0.3			0.48 ±0.03
98.3 ±0.2		13.0 ± 0.4			1.31 ±0.04
100.2 ±0.2		1.6 ± 0.2			0.16 ±0.02
101.4 ±0.2		3.4 ± 0.3			0.34 ±0.03
102.1 ±0.1		1.3 ± 0.2			0.13 ±0.02
104.4 ±0.1		6.8 ± 0.8			0.66 ±0.08
105.9 ±0.1		4.6 ± 0.4			0.45 ±0.04
107.1 ±0.1		7.8 ± 0.6			0.75 ±0.06
109.6 ±0.1		3.5 ± 0.3			0.33 ±0.03
112.4 ±0.1		11.3 ± 1.5		84 ±10	1.07 ±0.14
113.8 ±0.2		19 ± 3		67 ±12	1.78 ±0.28
116.5 ±0.2		13.0 ± 1.7			1.20 ±0.16
118.6 ±0.2		2.5 ± 0.2			0.23 ±0.02
123.4 ±0.2		27.0 ± 4.3			2.4 ±0.4
124.4 ±0.2		8.3 ± 0.9			0.74 ±0.08
126.0 ±0.2		15.4 ± 2.1			1.37 ±0.19
128.6 ±0.2		1.4 ± 0.2			0.12 ±0.02
129.8 ±0.2		3.2 ± 0.5			0.28 ±0.05
130.8 ±0.2		36.4 ± 5.7			3.18 ±0.50

$^{155}_{64}Gd$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
133.0 ±0.2		2.8 ± 0.4			0.24 ±0.04
133.8 ±0.2		2.9 ± 0.5			0.25 ±0.04
134.7 ±0.2		1.1 ± 0.2			0.10 ±0.02
137.8 ±0.2		16.0 ± 1.5			1.4 ±0.1
140.9 ±0.2		1.3 ± 0.2			0.11 ±0.02
145.6 ±0.2		7.7 ± 0.7			0.64 ±0.06
146.9 ±0.2		4.7 ± 0.6			0.39 ±0.05
148.2 ±0.3		3.5 ± 0.5			0.29 ±0.04
149.6 ±0.2		25.0 ± 7.2			2.04 ±0.59
150.1 ±0.2		31 ±11			2.5 ±0.9
152.2 ±0.2		5.9 ± 0.5			0.48 ±0.04
154.0 ±0.2		1.4 ± 0.2			0.11 ±0.02
156.3 ±0.2		9.6 ± 0.8			0.77 ±0.06
160.1 ±0.2		13.0 ± 1.3			1.03 ±0.10
161.6 ±0.2		22.0 ± 2.5			1.73 ±0.20
168.3 ±0.2		22.6 ± 2.4			1.74 ±0.18
170.3 ±0.2		10.8 ± 1.5			0.83 ±0.12
171.4 ±0.2		11.5 ± 1.6			0.88 ±0.12
173.5 ±0.2		41 ± 6		110 ±29	3.11 ±0.46
175.5 ±0.2		2.6 ± 0.3			0.20 ±0.02
178.0 ±0.2		7.3 ± 0.7			0.55 ±0.05
180.3 ±0.3		10.5 ± 1.1			0.78 ±0.08
183.3 ±0.3		8.0 ± 0.8			0.59 ±0.06

THERMAL CROSS SECTIONS

σ_γ = 1.5±1.2 b

RESONANCE PROPERTIES

I_γ = 95±5 b
R' = 8.1±0.7 fm
<D> = 47±4 eV
S_0 = 1.8±0.6

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 20.6 S_n = 6359.8±0.6 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
33.23±0.04	14.6± 2.0	90 ±10	2.53± 0.35
151.2 ±0.4	41.7± 4.9		3.4 ± 0.4
198.1 ±0.5	270 ± 32		19.2 ± 2.3
201.6 ±0.5	17 ± 6		1.2 ± 0.4
202.1 ±2.6	266 ± 35.00		18.7 ± 2.500
244.0 ±0.7	3.1± 0.5		0.20± 0.03
340 ±1	20 ± 3		1.1 ± 0.2
377 ±1	225 ± 23		11.6 ± 1.2
461 ±1	117 ± 34		5.5 ± 1.6
477.0 ±1.0	110 ± 13		5.04± 0.56
515.0 ±1.5	120 ± 40		5.29± 1.76
707 ±2	420		15.8
714 ±2	420		15.7
732 ±2	325 ±108	70 ±14	12.0 ± 4.0
796 ±2.5	93 ± 31		3.3 ± 1.1
823 ±3	1000 ±290	94 ±15	35 ±10
845 ±3	350 ±115	97 ±15	12.0 ± 4.0
856 ±3	21 ± 3		0.72± 0.10
900 ±3	390 ±150	79 ±16	13.0 ± 5.0
982 ±4	185 ± 56		5.9 ± 1.8
1035 ±4	30 ± 6		0.94± 0.19
1054 ±4	49 ± 10		1.5 ± 0.3
1094 ±4	15 ± 3		0.45± 0.09
1143 ±4.5	913 ±203		27 ± 6
1185 ±5	230 ± 70		6.7 ± 2.0
1239 ±5			
1254 ±5			
1318 ±6	58		1.6
1339 ±6	59		1.6
1392 ±6	172 ± 41		4.6 ± 1.1
1427 ±6	204 ± 53		5.4 ± 1.4

$^{157}_{64}$Gd

THERMAL CROSS SECTIONS

σ_γ = 254000±2000 b
σ_s^c = 1011 b
σ_a < 0.5 mb [^{154}Sm^{0+}]
σ_a < 0.05 mb [^{154}Sm^{2+}]

RESONANCE PROPERTIES

I_γ^c = 730±20 b
R' = 4.9±1.3 fm
<D> = 5.6±0.7 eV
S_0 = 2.3±0.2

RESONANCE PARAMETERS

I^π = 3/2$^-$ %Abn = 15.7 S_n = 7936.8±0.8 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.0314±0.002	0.59 ± 0.01		106 ± 1	3.33 ±0.06
2.825 ±0.015	0.431± 0.004		97 ± 1	0.256±0.003
16.24 ±0.03	0.3 ± 0.1			0.074±0.025
16.77 ±0.06	16.0 ± 1.0	2	77 ± 5	3.9 ±0.3
20.56 ±0.04	13.8 ± 1.0	2	88 ± 5	3.04 ±0.02
21.65 ±0.04	0.47 ± 0.06		114 ±23	0.10 ±0.01
23.33 ±0.04	0.59 ± 0.05		122 ±31	0.12 ±0.01
25.40 ±0.04	2.3 ± 0.1	1	85 ±13	0.46 ±0.02
40.17 ±0.09	0.98 ± 0.04		110 ±20	0.16 ±0.06
44.22 ±0.10	11.2 ± 0.6	2	91 ± 8	1.68 ±0.09
48.80 ±0.11	30.0 ± 1.8	2	90 ± 4	4.3 ±0.3
58.38 ±0.08	35 ± 3	1	100 ± 5	4.6 ±0.4
66.65 ±0.15	11.0 ± 0.7	1	67 ±12	1.35 ±0.09
81.48 ±0.15	15.0 ± 0.9	1	108 ±35	1.66 ±0.10
82.30 ±0.15	7.7 ± 0.5			0.85 ±0.06
87.46 ±0.15	12.7 ± 0.8	2	128 ±18	1.36 ±0.09
96.59 ±0.15	15.2 ± 0.8	2		1.55 ±0.08
100.2 ±0.1	35 ± 3	1	84 ±19	3.5 ±0.3
105.3 ±0.1	43 ± 8	2	70 ±10	4.2 ±0.8
107.7 ±0.1	7.0 ± 0.8			0.68 ±0.08
110.5 ±0.1	53 ± 8		85 ±10	5.04 ±0.08
115.4 ±0.1	24 ± 2		112 ±24	2.2 ±0.2
121.0 ±0.1	165 ±15	1	87 ± 6	15.0 ±1.4
138.7 ±0.2	62 ±15	2	86 ±20	5.3 ±1.3
139.3 ±0.2	7.5 ± 0.8			0.64 ±0.07
143.7 ±0.2	75.0 ±10.0	2		6.26 ±0.83
148.4 ±0.2	18.0 ± 3.6	1		1.48 ±0.30
156.8 ±0.2	24.7 ± 1.8			1.97 ±0.14
165.5 ±0.2	25.7 ± 1.8	2	100 ±30	2.00 ±0.14
168.6 ±0.2	2.5 ± 0.4			0.19 ±0.03
169.5 ±0.2	4.1 ± 0.3			0.31 ±0.02
171.4 ±0.3	30 ± 5	1		2.29 ±0.38
178.7 ±0.3	20.0 ± 1.0	2	145 ±47	1.50 ±0.08
184.9 ±0.3	22.0 ± 1.3	2		1.62 ±0.10
191.4 ±0.4	21.0 ± 2.0			1.52 ±0.15

$^{157}_{64}$Gd

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
195.6 ±0.3	57 ± 7		106 ±46	4.1 ±0.5
204.2 ±0.4	8.0 ± 0.9			0.56 ±0.06
206.9 ±0.4	1.7 ± 0.3			0.12 ±0.02
208.9 ±0.4	140 ±20	2		9.69 ±1.38
218.4 ±0.4	6.7 ± 0.6			0.45 ±0.04
222.4 ±0.4	5.0 ± 3.0			0.34 ±0.20
229.7 ±0.4	10.0 ± 1.2			0.66 ±0.08
240.9 ±0.5	190 ±20			12.2 ±1.3
244.6 ±0.5	3.3 ± 1.1			0.21 ±0.07
248.2 ±0.5	12.0 ± 1.2			0.76 ±0.08
250.2 ±0.6	4.3 ± 0.6			0.27 ±0.04
255.0 ±0.6	2.7 ± 0.5			0.17 ±0.03
260.1 ±0.6	16.1 ± 1.6			1.0 ±0.1
265.8 ±0.6	8.0 ± 0.8			0.49 ±0.05
268.2 ±0.7	13.1 ± 1.8			0.80 ±0.11
281.8 ±0.7	47 ± 8			2.8 ±0.5
287.6 ±0.7	17.0 ± 1.7			1.0 ±0.1
290.8 ±0.7	49 ± 7			2.9 ±0.4
293.7 ±0.8	46 ± 7			2.7 ±0.4
300.9 ±0.8	40 ±10			2.3 ±0.6
306.4 ±0.8	3.5 ± 0.5			0.2 ±0.03

$^{158}_{64}$Gd

THERMAL CROSS SECTIONS

σ_γ = 2.5±0.5 b

RESONANCE PROPERTIES

I_γ^c = 61±6 b
R' = 6.5±1.0 fm
<D> = 86±4 eV
S_0 = 1.5±0.2

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 24.7 S_n = 7930.7±3.3 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
22.30±0.02	6.0± 0.6	96 ±10	1.27± 0.13
101.1 ±0.1	1.0± 0.2		0.10± 0.02
242.7 ±0.2	60 ± 10	105 ±12	3.9 ± 0.6
277.2 ±0.2	18 ± 2		1.1 ± 0.1
344.8 ±0.3	155 ± 15	93 ± 8	8.35± 0.81
409.1 ±0.4	265 ± 20	100 ±10	13.1 ± 1.0
503.3 ±0.3	270 ± 20	105 ±10	12.0 ± 0.9
588.5 ±0.3	56 ± 6	112 ±14	2.3 ± 0.3
692.9 ±0.4	750 ± 100	95 ±10	28.5 ± 3.8
847.3 ±0.5	1600 ± 200	107 ±12	55.0 ± 6.9

$^{158}_{64}Gd$

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
869.3 ±0.5	3.3± 1.6		0.11± 0.05
917.1 ±0.3	460 ± 30	83 ±10	15.2 ± 1.0
1088.0 ±0.4	270 ± 20	70 ±15	8.3 ± 0.6
1219.9 ±0.5	900 ± 100	110 ±14	25.8 ± 2.9
1294.7 ±0.3	490 ± 60	112 ±12	13.6 ± 1.7
1351.3 ±0.3	25 ± 15		
1427.6 ±0.3	660 ± 50	108 ±14	17.5 ± 1.3
1458.8 ±0.3	1070 ± 80	135 ±30	28.0 ± 2.1
1584.4 ±0.3	360 ± 40	93 ±10	9.0 ± 1.0
1740 ±1	3.0± 1.5		0.72± 0.04
1776 ±0.4	480 ± 50	128 ±14	11.4 ± 1.2
1876.1 ±0.4	265 ± 55	102 ±10	6.1 ± 1.3
1944.7 ±0.5	650 ± 120	99 ±10	14.7 ± 2.7
1990.6 ±0.5	610 ± 120	107 ±13	13.7 ± 2.7
2113 ±2	8.9± 4.0		0.19± 0.09
2243.4 ±0.6	165 ± 35	85 ±17	3.48± 0.74
2317.3 ±0.6	650 ± 80	155 ±25	13.5 ± 1.7
2361 ±2	7.6± 4.0		0.16± 0.08
2386.7 ±0.6	111.5± 90	117 ±20	22.8 ± 1.8
2564.3 ±0.7	350 ± 100	135 ±18	6.9 ± 2.0
2585.4 ±0.7	80 ± 15	70 ±20	1.57± 0.30
2654.4 ±0.8	225 ± 30	95 ±17	4.36± 0.58
2795.7 ±0.8	605 ± 30	130 ±25	11.4 ± 0.6
2868.8 ±0.8	4200 ± 600		78.4 ±11.2
2933.8 ±0.9	790 ± 40	91 ±13	14.6 ± 0.7
3071 ±3	42 ± 15		0.75± 0.27
3094.2 ±0.9	65 ± 25		1.2 ± 0.5
3165.1 ±1.0	220 ± 30		3.91± 0.53
3325 ±3	16 ± 8		0.28± 0.14
3479.3 ±1.1	3400 ± 600		57.6 ±10.2
3535 ±3	21 ± 12		0.35± 0.20
3586.2 ±1.2	770 ± 100		12.9 ± 1.7
3624.1 ±1.2	40 ± 20		0.66± 0.33
3684.0 ±3.0	24 ± 12		0.40± 0.20
3768.1 ±1.3	2950 ± 300		48.1 ± 4.9
3937.0 ±1.4	1500 ± 240		23.9 ± 3.8
3982.7 ±1.4	4000 ± 800		63.4 ±12.7
4180.4 ±1.5	570 ± 40		8.8 ± 0.6
4223.0 ±4.0	30 ± 15		0.46± 0.23
4299.9 ±1.5	445 ± 80		6.8 ± 1.2
4468.0 ±4.0	55 ± 20		0.82± 0.30
4501.2 ±1.7	360 ± 70		5.4 ± 1.0
4621.0 ±1.7	2050 ± 300		30.2 ± 4.4
4796.2 ±1.8	1650 ± 200		23.8 ± 2.9
4894.0 ±1.9	420 ± 80		6.0 ± 1.1
4985.3 ±1.9	1100 ± 250		15.6 ± 3.5
5029.9 ±2.0	100 ± 50		1.4 ± 0.7
5113.0 ±2.0	50 ± 30		0.70± 0.42
5196.1 ±2.1	30 ± 20		0.42± 0.28
5334.2 ±2.2	360 ± 160		4.9 ± 2.2
5414.0 ±2.2	910 ± 230		12.4 ± 3.1
5611.2 ±2.3	6200 ±1500		82.8 ±20.0

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
5680.9 ±2.4	1900 ± 500		25.2 ± 6.6
5759.1 ±2.4	1600 ± 400		21.1 ± 5.3
5993.4 ±2.6	1500 ± 300		19.4 ± 3.9
6112.1 ±2.6	125 ± 50		1.6 ± 0.6
6194.0 ±2.7	770 ± 195		9.8 ± 2.5
6343.5 ±2.8	2050 ± 500		25.7 ± 6.3
6376.8 ±2.8	2300 ± 600		28.8 ± 7.5
6782.9 ±3.1	700 ± 200		8.5 ± 2.4
6807.4 ±3.1	350 ± 150		4.2 ± 1.8
6878.8 ±3.1	100 ± 50		1.2 ± 0.6
7266.2 ±3.4	100 ± 50		1.2 ± 0.6
7445.8 ±3.5	250 ± 70		2.9 ± 0.8
7548.9 ±3.6	270 ± 80		3.1 ± 0.9
7610.4 ±3.6	2950 ± 750		33.8 ± 8.6
7676.3 ±3.8	5500 ±1400		62.8 ±16.0
7854.2 ±3.8	1650 ± 450		18.6 ± 5.1
7936.9 ±3.9	600 ± 200		6.7 ± 2.3
8010.9 ±3.9	300 ± 200		3.4 ± 2.2
8235.5 ±4.1	1550 ± 400		17.0 ± 4.4
8288.9 ±4.1	650 ± 200		7.1 ± 2.2
8368.0 ±4.2	3700 ± 900		40.5 ± 9.8
8660.5 ±4.7	850 ± 210		9.1 ± 2.2
8740.5 ±4.5	6200 ±1550		66.3 ±16.6
8867.2 ±4.6	1250 ± 300		13.3 ± 3.2
9362.6 ±5.0	5800 ±1500		59.9 ±15.5
9437.5 ±5.0	135 ± 80		1.4 ± 0.8
9513.3 ±5.1	2100 ± 500		21.5 ± 5.1
9626.0 ±5.2	2500 ± 630		25.5 ± 6.4
9767.3 ±5.3	550 ± 250		5.6 ± 2.5
9949.5 ±5.4	580 ± 260		5.8 ± 2.6
9979.8 ±5.6	140 ± 80		1.4 ± 0.8

$^{160}_{64}Gd$

THERMAL CROSS SECTIONS

σ_γ = 0.77±0.02 b [3.7 min ^{161}Gd]
a_{coh} = 9.15±0.05 fm

RESONANCE PROPERTIES

I_γ^c = 7.0±1.0 b
R' = 6.8±0.8 fm
<D> = 170±20 eV
S_0 = 1.8±0.4

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 21.7 S_n = 5633±10 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
222.0±0.1	50 ± 5.0	120 ±17	3.3 ± 0.3
421.9±0.5	1.5± 0.7		0.07± 0.03
447.9±0.5	15 ± 6		0.71± 0.28
478.9±0.5	345 ± 37	125 ±15	15.8 ± 1.7
571.8±0.3	6.0± 1.0		0.25± 0.04
707.5±1.0	3.8± 2.0		0.14± 0.08
752.6±0.5	4.9± 1.1		0.18± 0.04
904.9±0.3	3500 ± 360	105 ±15	116.6 ±12.0
984 ±4	4.4± 0.9		0.14± 0.03
1240.9±0.5	3050 ± 360	91 ±14	85 ±14
1417.9±0.3	880 ± 100	100 ±15	23.4 ± 2.7
1695 ±7	10 ± 4		0.24± 0.10
1808.4±0.4	7000 ± 450		164.6 ±10.6
1828.9±1.2	200 ± 100		4.7 ± 2.3
1954.8±0.5	250 ± 40		5.6 ± 0.9
2268.9±0.6	1450 ± 100		30.4 ± 2.1
2396.3±0.7	5500 ± 750		112.3 ±15.3
2516.9±0.7	4535 ± 500		89.7 ±20.0
2640.2±0.8	3200 ± 800		62.3 ±15.6
2813.3±0.9	510 ± 120		9.6 ± 2.3
3454.7±1.1	200 ± 100		3.4 ± 1.7
3717.9±1.2	1400 ± 300		22.9 ± 4.9
3870.2±1.3	1300 ± 300		20.9 ± 4.8
3931.6±1.4	550 ± 130		8.8 ± 2.1
4517.8±1.7	6100 ±1500		90.8 ±22.3
5018.3±2.1	2000 ± 500		28.2 ± 7.1
5251.9±2.1	1200 ± 300		16.6 ± 4.1
5836.5±2.4	1950 ± 500		25.5 ± 6.6
5927.9±2.5	3500 ± 600		45.6 ± 7.8
6390.8±2.8	2550 ± 650		31.9 ± 8.1
6504.2±2.9	11500 ±2500		142.6 ±31.0
6792.1±3.1	6300 ±1600		76.4 ±19.4
6832.1±3.1	1480 ± 500		17.9 ± 6.1
6900.7±3.2	400 ± 250		4.8 ± 3.0
7303.6±3.4	1950 ± 500		22.8 ± 5.9
7379.4±3.5	5600 ±1400		65.2 ±16.3
7691.0±3.7	4300 ±1100		49.0 ±12.5

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
7840.9±3.8	3100 ± 750		35.0 ± 8.5
8305.5±4.2	3200 ± 750		35.1 ± 8.2
8465.3±4.3	2500 ± 600		27.1 ± 6.5
8693.7±4.4	2700 ± 650		29.0 ± 7.0
9095.6±4.5	3700 ± 900		38.6 ± 9.4
9518.4±5.1	2400 ± 600		24.6 ± 6.2
9662.4±5.2	2200 ± 550		22.4 ± 5.6

$^{161}_{64}$Gd

[3.7 min]

THERMAL CROSS SECTIONS

σ_γ = 31000±12000 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Gd^{160}	diffraction	PR/B,5,997(72)	Moon
$Gd^{152,158}$	activation	JIN,34,2699(72)	Steinnes
$Gd^{154,156}$	mass spectrometry	JMS,6,435(71)	Dobrozemsky
Gd^{154}	isom. ratio	DA/B,31,7511(71)	Kime
Gd^{161}	activation	NP/A,142,634(70)	Chang
Gd^{155}	σ_a	NP/A,129,571(69)	Beg
$Gd^{155,157}$	σ_t	PRIVATE COMM.(68)	Ohno
Gd	local osci.	ZFK-132,18(67)	Fahrmann
$Gd^{154,156}$	mass spectrometry	AE,22,133(67)	Grishanin
Gd^{161}	activation	PR,153,1310(67)	Wahlgren
Gd^{156}	mass spectrometry	APA,23,64(66)	Lugmair
$Gd^{152,154,155,157}$	σ_a	YF,1,252(65)	Andreev
$Gd^{154,156}$	mass spectrometry	ORNL-3832,7(65)	Lantz
Gd	σ_t	RSI,36,887(65)	Rustad
Gd	σ_t pile osci.	NUK,6,245(64)	Sokolowski
Gd	diffraction	JAP,35,1045(64)	Will
$Gd^{158,160}$	activation	NP,41,372(63)	Mangal
$Gd^{155,157}$	alpha emission	PL,1,289(62)	Cheifetz
$Gd^{155,157}$	σ_γ(spectra)	IZV,26,1118(62)	Groshev
Gd	pulsed n	NSE,9,132(61)	Meadows
Gd^{158}	activation	NSE,8,378(60)	Lyon
$Gd^{155,157}$	σ_t	NSE,8,183(60)	Moller
$Gd,Gd^{155,157}$	pile osci.	AERE-R/R-2516(59)	Jowitt
$Gd^{155,157}$	mass spectrometry	PR,115,424(59)	Low
$Gd,Gd^{155,157}$	σ_t	58GENEVA,16,44(58)	Pattenden
Gd	pile osci.	AERE-R/R-2459(58)	Tattersall
Gd	pile osci.	AERE-R/M-100(57)	Cummins
Gd	local osci.	PR,83,641(51)	Pomerance
Gd	pile osci.	PPS/A,63,1175(50)	Colmer
Gd	pile osci.	PR,80,342(50)	Harris
$Gd^{155,157}$	mass spectrometry	PR,79,271(50)	Inghram
$Gd^{158,160}$	activation	PR,75,1276(49)	Butement
Gd^{160}	activation	ANL-4237,64(49)	Der Mateosian
$Gd^{155,157}$	mass spectrometry	PR,71,745(47)	Lapp
Gd^{158}	activation	PR,72,888(47)	Seren
Gd	σ_t	PR,71,757(47)	Sturm

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Gd^{154}	σ_t	11.6-986	BAP,17,580(72)+	Rahn
Gd^{158}	σ_t	22.3-9980	BAP,17,580(72)+	Rahn
Gd^{160}	σ_t	222-9852	BAP,17,580(72)+	Rahn
Gd	$\bar{\sigma}_s\sigma_\gamma$(spectra)	2-241	NP/A,145,549(70)	Asghar
Gd^{155}	$\bar{\sigma}_s\sigma_\gamma$(spectra)	2-93	NP/A,145,549(70)	Asghar
Gd^{157}	$\bar{\sigma}_s\sigma_\gamma$(spectra)	16-241	NP/A,145,549(70)	Asghar
Gd^{155}	σ_γ(spectra)	0.03-62.9	ZET,58,456(70)	Danelyan
Gd^{157}	σ_γ(spectra)	0.03-146	ZET,58,456(70)	Danelyan
Gd	σ_γ	1000-750000	NP/A,146,337(70)	Friesenhahn
Gd^{155}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	3-183	NP/A,146,337(70)	Friesenhahn
Gd^{157}	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	3-184	NP/A,146,337(70)	Friesenhahn
Gd	σ_t	6.3-48.7	NP/A,132,129(69)	Julien
Gd^{152}	$\sigma_t\sigma_\gamma$	8-293	YF,9,897(69)	Karzhavina
Gd^{154}	$\sigma_t\sigma_\gamma$	11-224	YF,9,897(69)	Karzhavina
Gd^{155}	$\sigma_t\sigma_\gamma$	6.3-183	YF,9,897(69)	Karzhavina
Gd^{156}	$\sigma_t\sigma_\gamma$	33-1094	YF,9,897(69)	Karzhavina
Gd^{157}	$\sigma_t\sigma_\gamma$	16-306	YF,9,897(69)	Karzhavina
Gd^{158}	$\sigma_t\sigma_\gamma$	22-2338	YF,9,897(69)	Karzhavina
Gd^{160}	$\sigma_t\sigma_\gamma$	222-2656	YF,9,897(69)	Karzhavina
Gd	σ_t	2-2680	PR,180,1130(69)	Mughabghab
Gd^{155}	σ_t	2-69	PR,180,1130(69)	Mughabghab
Gd^{156}	σ_t	33-846	PR,180,1130(69)	Mughabghab
Gd^{157}	σ_t	0.2-185	PR,180,1130(69)	Mughabghab
Gd^{158}	σ_t	22-917	PR,180,1130(69)	Mughabghab
Gd^{160}	σ_t	223-2680	PR,180,1130(69)	Mughabghab
Gd^{155}	σ_t	0.03-85	CEA-N-1149(69)	Ribon
Gd^{157}	σ_t	0.03-248	CEA-N-1149(69)	Ribon
Gd^{152}	σ_t	3.3-93.5	UFZ,14,517(69)	Vertebnyi
Gd^{154}	σ_t	9.4-148	UFZ,14,517(69)	Vertebnyi
Gd^{152}	σ_t	3.3-93.5	UFZ,13,2083(68)	Vertebnyi
Gd^{154}	σ_t	9.4-148	UFZ,13,2083(68)	Vertebnyi
Gd	$\bar{\sigma}_s$	17.1	NP/A,97,657(67)	Poortmans
Gd	polarization	0.03-2.8	PR/B,138,1361(65)	Shore
Gd^{155}	σ_t	2-70	BAP,9,433(64)+	Mughabghab
Gd^{156}	σ_t	33-350	BAP,9,433(64)+	Mughabghab
Gd^{157}	σ_t	2.8-160	BAP,9,433(64)+	Mughabghab
Gd^{158}	σ_t	22.2	BAP,9,433(64)+	Mughabghab
Gd	polarization	0.03-6.3	PR/B,134,68(64)	Stolovy
Gd^{155}	σ_γ	2-44	ANL-6589(62)	Carpenter
Gd	σ_t	0.033	AP,7,50(61)	Hohne
$Gd^{155,157}$	σ_γ(spectra)	0.025	60KINGSTON,573(60)	Bartholomew
Gd^{155}	σ_t	0.027	NSE,8,183(60)	Moller
Gd^{157}	σ_t	0.031	NSE,8,183(60)	Moller
Gd	$\sigma_\gamma\bar{\sigma}_s$	6.4-81	NP,5,294(58)	Bowey
Gd,$Gd^{155,157}$	σ_t	2.1-49	BAP,2,42(57)	Simpson
Gd,$Gd^{155,157}$	σ_t	2.1-49	IDO-16373(57)	Simpson
Gd	σ_t	0-0.2	PR,72,585(47)	Brill
Gd	σ_t		PR,71,757(47)	Sturm
Gd	σ_t	0.044	PR,70,557(46)	Borst

$^{159}_{65}$Tb

THERMAL CROSS SECTIONS

σ_γ = 25.5±1.1 b
$\bar{\sigma}_s$ = 20±2 b
$\sigma_{pm}{}^c$ = 20 b
a_{coh} = 7.56±0.20 fm

RESONANCE PROPERTIES

I_γ = 430±40 b
R' = 8.3±0.8 fm
<D> = 4.2±0.6 eV
S_0 = 1.2±0.3

RESONANCE PARAMETERS

I^π = 3/2⁺ %Abn = 100 S_n = 6381.8±1.4 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
3.35±0.01	80 ±10	0.42 ±0.04	2	80 ±10	0.23 ±0.03
4.99±0.02		0.061±0.006	1		0.027±0.003
11.14±0.04	95 ± 6	9.8 ±0.4	2	87 ± 6	2.9 ±0.1
14.38±0.06		0.20 ±0.05			0.054±0.013
21.2 ±0.2		2.1 ±0.2			0.46 ±0.05
24.5 ±0.2	95 ±10	5.5 ±0.4	2	91 ±10	1.11 ±0.08
27.6 ±0.2		0.92 ±0.10			0.175±0.019
33.5 ±0.2	80 ± 8	3.5 ±0.4		76 ± 8	0.60 ±0.08
43.7 ±0.3	99 ± 4	6.0 ±0.2	2	94 ± 4	0.91 ±0.04
46.2 ±0.3	100 ± 4	13.9 ±0.6	2	89 ± 4	2.00 ±0.15
50.4 ±0.4		2.6 ±0.6			0.37 ±0.09
51.6 ±0.2		1.08 ±0.14			0.15 ±0.02
54.3 ±0.4		0.6 ±0.1			0.081±0.01
57.3 ±0.3		1.32 ±0.14			0.176±0.019
58.7 ±0.5		1.7 ±0.3			0.22 ±0.04
64.9 ±0.6	99 ± 7	11.6 ±0.8	2	90 ± 7	1.44 ±0.09
66.8 ±0.3		2.4 ±0.2			0.29 ±0.03
74.0 ±0.7	106 ± 5	16 ±1		90 ± 5	1.86 ±0.01
76.4 ±0.7	85 ± 4	6.4 ±0.6	1	76 ± 4	0.75 ±0.08
77.5 ±0.7	88 ± 7	7.2 ±0.7	1	78 ± 7	0.083±0.008
88.8 ±0.5		3.6 ±0.4			0.38 ±0.04
90.8 ±1.0		7.9 ±0.8			0.83 ±0.08
97.5 ±1.0	122 ± 6	29.3 ±1.5	1	93 ± 5	3.00 ±0.15
108.7 ±1.0	138 ± 8	27 ±2	1	102 ± 7	2.6 ±0.2
113.3 ±1.0	146 ± 4	42.0 ±1.5	1	90 ± 3	4.00 ±0.15

Note- Resonance parameters contribute 340 b to the absorption resonance integral.

$^{160}_{65}$Tb

[72.3 day]

THERMAL CROSS SECTIONS

σ_γ = 525±100 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Tb^{159}	diffraction	JP/C,5,2887(72)	Toffield
Tb^{159}	σ_t	AKE,16,49(70)	Knorr
Tb^{159}	σ_γ	NIM,86,83(70)	Malik
Tb^{159}	activation	70HELSINKI,2,589(70)	Ricabarra
Tb^{159}	activation	JIN,29,2155(67)	Alstad
Tb^{159}	diffraction	PR,131,1518(63)	Felcher
Tb^{159}	diffraction	JCP,35,1950(61)	Atoji
Tb^{160}	activation	JCP,25,502(56)	Smith
Tb^{159}	pile osci.	PR,83,641(51)	Pomerance
Tb^{159}	activation	ZN,1,179(46)	Bothe

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Tb^{159}	σ_t	3.3	PRIVATE COMM.(71)	Cansoy
Tb^{159}	$\bar{\sigma}_s\sigma_\gamma$	24-113	65ANTWERP,65(65)	Asghar
Tb^{159}	polarization	3.3-11.1	PHY,30,713(64)	Postma
Tb^{159}	$\sigma_t\bar{\sigma}_s\sigma_\gamma$	3.3-90.6	ZET,47,43(64)	Wang
Tb^{159}	σ_t	3.3-156	PR,99,10(55)	Harvey
Tb^{159}	σ_t	3.3-11.4	PR,96,1014(54)	Sailor

$_{66}$Dy

THERMAL CROSS SECTIONS

σ_γ = 930±20 b
$\bar{\sigma}_s$ = 100±10 b
$\sigma_{pm}{}^c$ = 28 b
σ_t = 1030±25 b
a_{coh} = 16.9±0.4 fm

RESONANCE PROPERTIES

I_γ = 1600±100 b
S_0 = 2.0±0.5

$^{156}_{66}$Dy

[2×10⁴ yr]

THERMAL CROSS SECTIONS

σ_γ = 33±3 b
σ_α < 9 mb

RESONANCE PROPERTIES

I_γ = 960±80 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.06 S_n = 6975±7 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)	E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
2.15±0.02	0.20	0.14	36.0 ±0.3	~9.0	~1.5
15.2±0.1	4.6 ±0.7	1.2 ±0.2	46.9 ±0.5	~14.0	~2.0
17.4±0.1	0.32±0.20	0.08±0.05	52 ±0.6	~16	~2.0
19.6±0.1	9.0 ±2.0	2.1 ±0.5	68.6 ±0.6	~54	~6.5
24.5±0.2	~2.4	~0.48	85.5 ±1.2	~15	~1.7
29.3±0.3	~8.7	~1.6	90.9 ±1.4	~42	~4.0

$^{158}_{66}Dy$

THERMAL CROSS SECTIONS

σ_γ = 43±6 b
σ_α < 6 mb

RESONANCE PROPERTIES

I_γ = 120±20 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.10 S_n = 6826±6 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
[a]38 ± 1	~22	~3.6
45.6± 0.5	~39	~5.7
[b]86.0± 1.5	~81	~8.7

[a] Isotopic identification uncertain
[b] Isotopic identification uncertain, level may belong to Dy-161

$^{160}_{66}Dy$

THERMAL CROSS SECTIONS

σ_γ = 61±6 b
σ_α < 0.3 mb
a_{coh} = 6.7±0.4 fm

RESONANCE PROPERTIES

I_γ = 1160±130 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 2.3 S_n = 6451.1±2.0 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
1.88±0.02	0.4±0.2	100 ±20	0.30±0.15
10.4 ±0.1	19.3±3.0	100 ±20	5.9 ±0.9
20.5 ±0.1	~25		~5.6
85.0 ±1.3	~93		~10

$^{161}_{66}Dy$

THERMAL CROSS SECTIONS

σ_γ = 585±30 b
$\bar{\sigma}_s$ = 22±1 b
σ_a < 0.03 mb
a_{coh} = 10.3±0.4 fm

RESONANCE PROPERTIES

I_γ = 1060±80 b
R' = 8.9±0.8 fm
<D> = 2.9±0.3 eV
S_0 = 1.9±0.2

RESONANCE PARAMETERS

I^π = 5/2$^+$ %Abn = 18.9 S_n = 8194.9±2.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-2.38			(110)	13.6
2.72±0.02	0.65± 0.07	3		0.39 ±0.04
3.68±0.03	1.78± 0.18	2		0.928± .009
4.34±0.05	1.0 ± 0.2	2		0.48 ±0.10
7.74±0.12	0.60± 0.12	3		0.22 ±0.04
10.40±0.19	1.3 ± 0.3	3		0.40 ±0.09
10.88±0.20	0.4 ± 0.1	3		0.12 ±0.03
12.65±0.20	0.13± 0.0	2		0.037±0.006
14.32±0.20	5.6 ± 0.6			1.48 ±0.16
16.8 ±0.3	7.7 ± 1.3			1.88 ±0.32
18.5 ±0.3	8.0 ± 0.9			1.86 ±0.21
20.23±0.08	1.0 ± 0.2			0.22 ±0.04
25.08±0.12	1.2 ± 0.1			0.24 ±0.02
28.84±0.14	2.7 ± 0.2			0.50 ±0.04
29.73±0.14	0.74± 0.11			0.14 ±0.02
35.50±0.19	3.0 ± 0.4			0.50 ±0.07
37.64±0.21	11.2 ± 1.6			1.83 ±0.03
38.38±0.21	11.4 ± 1.6			1.84 ±0.26
43.02±0.26	13.0 ± 2.0		150 ±30	1.98 ±0.30
44.85±0.30	12.0 ± 1.1		93 ±22	1.79 ±0.16
50.8 ±0.4	7.9 ± 2.0			1.11 ±0.28
51.8 ±0.4	10.5 ± 2.0			1.46 ±0.28
54.9 ±0.4	10.2 ± 1.3			1.38 ±0.18
59.1 ±0.5	12.1 ± 1.1			1.57 ±0.14
61.1 ±0.5	7.2 ± 0.8			0.92 ±0.10
63.3 ±0.5	5.0 ± 0.7			0.62 ±0.09
66.4 ±0.5	1.3 ± 0.6			0.16 ±0.07
72.3 ±0.6	6.5 ± 0.8			0.76 ±0.09
76.5 ±0.6	7.4 ± 0.7			0.84 ±0.08
79.4 ±0.7	0.5 ± 0.1			0.06 ±0.01
81.8 ±0.7	3.6 ± 0.4			0.40 ±0.04
84.6 ±0.7	12.9 ± 1.5			1.4 ±0.2
88.3 ±0.8	11.3 ± 1.4			1.2 ±0.2
92.5 ±0.8	12.0 ± 3.0			1.25 ±0.31
94.4 ±0.8	4.9 ± 1.5			0.5 ±0.2

$^{161}_{66}Dy$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
100.7 ±1.0	17.1 ± 3.1			1.7 ±0.3
104.5 ±1.0	9.2 ± 1.5			0.9 ±0.1
109.9 ±1.1	10.9 ± 2.2			1.0 ±0.2
111.9 ±1.1	11.0 ± 2.2			1.0 ±0.2
117.0 ±1.2	11.1 ± 2.8			4.6 ±2.3
119.7 ±1.2	11.3 ± 2.8			1.03 ±0.26
123.7 ±1.2	76 ±19			6.8 ±1.0
130.4 ±1.4	6.8 ± 1.6			0.6 ±0.1
137.6 ±1.5	22.3 ± 4.4			1.9 ±0.4

$^{162}_{66}Dy$

THERMAL CROSS SECTIONS

σ_γ = 180±20 b
$\bar{\sigma}_s$ = 2.5±0.8 b
a_{coh} = -1.4±0.5 fm

RESONANCE PROPERTIES

I_γ = 2730±270 b
R' = 8.3±0.5 fm
<D> = 72±10 eV
S_0 = 2.0±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 25.5 S_n = 6271.7±1.3 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
5.45± 0.02	20.8± 1.7	155 ±30	9.10± 0.72
*5.80± 0.01	5.8± 0.01		2.40± 0.04
70.55± 0.13	110 ± 30		4.14± 0.27
72.10± 0.14	180 ± 50		2.12± 0.28
116.4 ± 1.2	6.9± 1.1		0.64± 0.10
206.1 ± 2.7	23 ± 4		1.6 ± 0.3
267 ± 5	580 ± 70		35.5 ± 4.3
354 ± 6	24.5± 6.1		1.3 ± 0.3
409 ± 7	85 ± 15		4.2 ± 0.8
526 ±11	92 ± 23		4.0 ± 1.0
625 ±14	1410 ±280		56.3 ±11.3
683 ±17	420 ±160		17.0 ± 6.0
711 ±17	266 ±100		10.0 ± 4.0
764 ±19	850 ±260		30.8 ± 6.2
861 ±23	2550 ±500		86.9 ±17.0

* Isotopic assignment uncertain.

$^{163}_{66}Dy$

THERMAL CROSS SECTIONS

σ_γ = 130±10 b
σ_s = 9.7±0.4 b
σ_a < 0.02 mb
σ_t = 140±10 b
a_{coh} = 5.0±0.4 fm

RESONANCE PROPERTIES

I_γ = 1680±150 b
R' = 8.7±0.7 fm
S_0 = 1.9±0.2

RESONANCE PARAMETERS

I^π = 5/2⁻ %Abn = 24.9 S_n = 7654.7±1.3 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-0.517			(100)	0.047
1.713±0.004	1.68± 0.01	2	101.9± 0.8	1.28 ±0.01
16.23 ±0.03	20.6 ± 0.8	3	107 ±15	5.11 ±0.20
19.65 ±0.03	0.95± 0.08	3		0.21 ±0.02
35.79 ±0.04	6.4 ± 1.0	2		
50.27 ±0.06	3.5 ± 0.4	3		0.49 ±0.06
55.85 ±0.08	28 ± 2	3	125 ±12	3.75 ±0.27
58.97 ±0.08	80 ± 6	2	100 ±10	10.4 ±0.8
66.11 ±0.10	8.8 ± 0.8	3		0.98 ±0.10
*71.3		2		
*72.3		3		
75.48 ±0.10	2.4 ± 0.2	2		0.28 ±0.02
78.99 ±0.13	14 ± 2	2		1.56 ±0.23
86.30 ±0.14	1.30± 0.36	3		0.14 ±0.01
94.08 ±0.08	20 ± 2	3		2.06 ±0.21
105.88 ±0.10	62 ± 8	3	120 ±25	6.03 ±0.78
107.18 ±0.18	28 ± 4	2	90 ±20	2.70 ±0.39
120.33 ±0.12	9.8 ± 1.0	3		0.89 ±0.09
126.58 ±0.13	17.8 ± 3.0	3		1.58 ±0.27
127.46 ±0.13	13.2 ± 2.0			1.17 ±0.18
135.31 ±0.14	5.6 ± 0.6	3		0.48 ±0.05
143.38 ±0.15	15.4 ± 1.8	2		1.29 ±0.15
144.97 ±0.15	46 ± 6	2	85 ±20	3.82 ±0.50
155.02 ±0.17	86 ± 8	2	85 ±20	6.91 ±0.64
163.81 ±0.19	12.4 ± 1.4	3		0.97 ±0.11
177.18 ±0.21	4.0 ± 0.8	3		0.30 ±0.06
185.09 ±0.22	5.2 ± 1.0	3		0.38 ±0.07
188.95 ±0.23	3.4 ± 0.6	2		0.25 ±0.04
202.90 ±0.25	17.8 ± 3.0	2		1.25 ±0.21
205.26 ±0.26	54 ± 6	3	110 ±20	3.77 ±0.42
213.74 ±0.27	6.8 ± 1.0	3		0.47 ±0.07
224.15 ±0.30	200 ±24	2	140 ±50	13.36 ±1.60
233.54 ±0.32	7.2 ± 1.0	3		0.47 ±0.07
250.55 ±0.18	18.2 ± 2.2	3		1.15 ±0.14
261.13 ±0.19	106 ±12	3	110 ±20	6.56 ±0.74

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
268.01 ±0.19	134 ±16	3	125 ±25	8.19 ±0.98
274.17 ±0.20	30.6 ± 3.6	2		1.85 ±0.22
281.06 ±0.21	31.0 ± 4.0	3		1.85 ±0.24
288.85 ±0.22	128 ±18	2	105 ±40	7.53 ±1.06
297.77 ±0.23	88 ± 6	2		5.10 ±0.35
306.91 ±0.46	1.8 ± 1.0			1.03 ±0.06
323.08 ±0.25	280 ±40	[3]	130 ±30	15.58 ±2.23
324.55 ±0.26	264 ±40	[3]	100 ±30	14.65 ±2.22
326.93 ±0.26	35 ± 7			1.94 ±0.39
329.73 ±0.26	17.2 ± 3.6			0.95 ±0.20
342.86 ±0.28	22.8 ± 2.0	[3]		1.23 ±0.11
348.32 ±0.29	420 ±36	[2]	100 ±25	22.50 ±1.93
368.64 ±0.31	172 ±20	[3]	120 ±25	8.96 ±1.04
374.96 ±0.32	3.8 ± 1.4			0.20 ±0.07
382.16 ±0.33	5.2 ± 1.6			0.27 ±0.08
387.01 ±0.33	24.4 ± 3.6	[3]		1.24 ±0.18
390.44 ±0.34	54 ± 8	[2]	90 ±20	2.73 ±0.41
400.34 ±0.35	28 ± 6	[3]		1.40 ±0.30
403.15 ±0.35	3.4 ± 1.6	[3]		0.17 ±0.08
411.08 ±0.37	540 ±60	[3]	155 ±30	26.63 ±2.96
420.56 ±0.38	2.6 ± 1.0			0.13 ±0.05
429.38 ±0.38	46 ± 6		70 ±20	2.22 ±0.29
454.84 ±0.43	94 ±12		150 ±30	4.41 ±0.56
459.21 ±0.43	30 ± 6			1.40 ±0.28
465.32 ±0.44	22 ± 4			1.02 ±0.19
479.10 ±0.46	72 ±10		150 ±30	3.29 ±0.46
483.55 ±0.47	80 ±10		120 ±25	3.64 ±0.46
504.59 ±0.25	118 ±14		80 ±20	5.25 ±0.62
516.34 ±0.26	30 ± 6			1.32 ±0.26
519.83 ±0.26	22 ± 4			0.97 ±0.18
533.18 ±0.27	200 ±30		130 ±30	8.66 ±1.30
542.22 ±0.28	240 ±40		135 ±30	10.31 ±1.72
564.29 ±0.29	62 ± 8		85 ±25	2.61 ±0.34
569.02 ±0.30	122 ±16		150 ±30	5.11 ±0.67
580.79 ±0.31	88 ±12		130 ±30	3.65 ±0.50
594.52 ±0.52	98 ±14			4.02 ±0.57
601.25 ±0.32	146 ±20		130 ±30	5.95 ±0.82
615.71 ±0.34	70 ±12		75 ±20	2.82 ±0.48
620.77 ±0.34	100 ±16		110 ±25	4.01 ±0.64
632.10 ±0.35	210 ±36		125 ±30	8.35 ±1.43
637.17 ±0.35	158 ±28		135 ±30	6.26 ±1.11
641.96 ±0.36	162 ±28		100 ±30	6.39 ±1.11
646.26 ±0.36	124 ±20		150 ±40	4.88 ±0.79
652.20 ±0.47	5.0 ± 2.4			0.20 ±0.09
660.40 ±0.48	19.0 ± 5.0			0.74 ±0.20
686.95 ±0.39	24 ± 6			0.92 ±0.23
695.71 ±0.40	158 ±24		115 ±30	5.99 ±0.91
709.78 ±0.53	8 ± 4			0.30 ±0.15
712.49 ±0.42	76 ±12		95 ±30	2.85 ±0.45
721.32 ±0.43	88 ±12		75 ±25	3.28 ±0.46
732.05 ±0.44	19.2 ± 5.0			0.71 ±0.19
736.14 ±0.56	19.6 ± 5.0			0.72 ±0.18

$^{163}_{66}Dy$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
741.69 ±0.44	22 ± 6			0.81 ±0.22
747.15 ±0.57	5.2 ± 2.4			0.19 ±0.09
756.05 ±0.46	52 ± 6		85 ±30	1.89 ±0.22
764.30 ±0.60	17.6 ± 8.0			0.64 ±0.29
769.93 ±0.60	6.2 ± 3.0			0.22 ±0.11
776.55 ±0.61	28 ± 6			1.00 ±0.22
794.40 ±0.63	54 ±12			1.92 ±0.43
809.51 ±0.51	260 ±60			9.14 ±2.11
812.29 ±0.51	50 ±16			1.75 ±0.56
823.04 ±0.52	48 ±16			1.67 ±0.56
830.86 ±0.53	84 ±18			2.91 ±0.62
846.62 ±0.69	12.6 ± 7.0			0.43 ±0.24
851.16 ±0.54	158 ±32			5.42 ±1.10
857.75 ±0.70	60 ±16			2.05 ±0.55
864.92 ±0.56	52 ±16			1.77 ±0.54
873.91 ±0.57	120 ±28			4.06 ±0.95
899.65 ±0.30	180 ±40			6.00 ±1.33
918.71 ±0.31	88 ±10			2.90 ±0.33
929.79 ±0.31	206 ±50			6.76 ±1.64
935.75 ±0.80	38 ±20			1.24 ±0.65
939.49 ±0.32	260 ±80			8.48 ±2.61
949.67 ±0.32	136 ±36			4.41 ±1.17
957.75 ±0.83	36 ±12			1.16 ±0.39
967.35 ±0.84	48 ±16			1.54 ±0.51
972.84 ±0.34	230 ±60			7.37 ±1.92
980.52 ±0.86	13.2 ± 8.0			0.42 ±0.26
996.60 ±0.88	54 ±18			1.71 ±0.57

[a] Masked by Dy-162 resonances.

$^{164}_{66}Dy$

THERMAL CROSS SECTIONS

σ_γ = 2700±75 b
σ_γ = 1700±250 b [75.4 sec $^{165}Dy^m$]
σ_γ = 1000±150 b [2.35 hr $^{165}Dy^g$]
$\bar{\sigma}_s$ = 347±30 b
a_{coh} = 49.4±0.5 fm

RESONANCE PROPERTIES

I_γ = 377±44 b
R' = 7.7±0.8 fm
<D> = 200±40 eV
S_0 = 1.2±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 28.2 S_n = 5715.4±1.4 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
-1.89± 0.04		55 ±3	41 ±1
145.4 ± 1.5	868 ± 40	[60]	72.0±3.3
450 ± 9	45 ± 11		2.1±0.5
534 ±11	51 ± 12		2.2±0.5
855 ±23	500 ±180		17 ±7
1053 ±31	31 ± 11		1.0±0.4
1190 ±38	480 ±160		14 ±4
1316 ±44	820 ±330		23 ±9

$^{165}_{66}Dy$ [2.35 hr]

THERMAL CROSS SECTIONS

σ_γ = 3900±300 b

RESONANCE PROPERTIES

I_γ = 22000±3000 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Dy^{156,158,164,165}$	activation	PRIVATE COMM.(72)	Alstad
$Dy^{160-163}$	mass spectrometry	JMS,6,435(71)	Dobrozemsky
Dy	σ_t	AKE,16,49(70)	Knorr
$Dy^{161-164}$		70HELSINKI,1,651(70)	Vertebnyi
$Dy^{160-164}$	σ_t diffraction	PR,174,1553(68)	Child
Dy^{164}	activation	68WASH,2,1263(68)-	Fabry
Dy^{164}	activation	KE,10,307(67)	Albert
Dy^{162}	σ_γ(spectra)	PR,154,1146(67)	Schult
Dy	σ_t	66PARIS,1,61(66)	Brunner
$Dy^{160-164}$	reactivity	NSE,25,12(66)	Scoville
Dy	σ_t	PRIVATE COMM.(65)	Ohno
$Dy^{161-163}$	σ_t	AE,16,56(64)	Danelyan
Dy^{164}	activation	NP,36,542(62)	Mangal
Dy	pulsed n	NSE,9,132(61)	Meadows
Dy^{164}	activation	NSE,11,369(61)	Sher
$Dy^{158,164}$	activation	NP,12,261(59)	Sehgal
$Dy^{160,161,163,164}$	pile osci.	BAP,3,337(58)	House
Dy	pile osci.	AERE-R/M-100(57)	Cummins
Dy^{164}	ratio	ZN/A,9,115(54)	Weber
Dy	$\bar{\sigma}_s$	CJP,31,432(53)	Brockhouse
Dy	pile osci.	PR,83,641(51)	Pomerance
Dy^{165}	activation	PR,76,1256(49)	Ketelle
Dy^{164}	activation	ANL-4010,55(47)	Goldhaber
Dy^{164}	activation	PR,72,888(47)	Seren
Dy^{164}	activation,ratio	ZN,1,190(46)	Flammersfeld
Dy	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Dy^{162}	$\sigma_t \sigma_\gamma$(SI)	5.45-72.1	PRIVATE COMM.(73)	Liou
Dy^{163}	$\sigma_t \sigma_\gamma$(SI)	1.71-997	PRIVATE COMM.(73)	Liou
Dy^{163}	σ_γ(spectra)	16.2-204	ZET,62,425(72)	Danelyan
Dy^{163}	σ_γ(spectra)	16.2-299	72BUD,214(72)	Mughabghab
Dy^{163}	σ_γ(spectra)	16.2-299	BAP,17,580(72)	Slaughter
Dy^{161}	polarization	2.72-18.5	ZN/A,26,334(71)	Brunhart
Dy^{163}	polarization	1.71-16.25	ZN/A,26,334(71)	Brunhart
Dy^{161}	polarization	12.65-16.7	BAP,16,518(71)	Rorer
Dy^{163}	σ_γ(spectra)	1.7-323	BAP,15,549(70)	Mughabghab
Dy^{161}	σ_t	2.7-138	PR/C,1,1850(70)	Mughabghab
Dy^{162}	σ_t	5.4-861	PR/C,1,1850(70)	Mughabghab
Dy^{163}	σ_t	1.7-224	PR/C,1,1850(70)	Mughabghab
Dy^{164}	σ_t	145-1316	PR/C,1,1850(70)	Mughabghab
Dy^{163}	σ_γ(spectra)	16-142	69STUDSVIK,663(69)	Danelyan
Dy^{160}	σ_t	1.8-85	UFZ,14,1810(69)	Vertebnyi
Dy^{158}	σ_t	38-271	UFZ,14,1810(69)	Vertebnyi
Dy^{158}	σ_t	38-271	UFZ,13,2083(68)	Vertebnyi
Dy^{160}	σ_t	1.8-85	UFZ,13,2083(68)	Vertebnyi
Dy	σ_t	1.7	EIR-123(67)	Brunner
Dy^{163}	σ_t	1.7	66PARIS,1,61(66)	Brunner
Dy^{163}	$\bar{\sigma}_s$	1.7	NP,62,641(65)	Ceulemans
Dy^{161}	σ_t	0.022-1	AE,16,56(64)	Danelyan
Dy^{162}	σ_t	0.022-1	AE,16,56(64)	Danelyan
Dy^{163}	σ_t	0.022-1	AE,16,56(64)	Danelyan
Dy^{161}	σ_t	2.72-73.5	BAP,9,433(64)	Mughabghab
Dy^{162}	σ_t	5.36-663	BAP,9,433(64)	Mughabghab
Dy^{163}	σ_t	1.71-94.0	BAP,9,433(64)	Mughabghab
Dy^{164}	σ_t	145.5	BAP,9,433(64)	Mughabghab
Dy^{163}	σ_t	1.7	BAP,7,305(62)	Brunhart
Dy^{164}	σ_t	0.001-1.0	NSE,11,369(61)	Sher
Dy^{161}	σ_t	2.7-63.5	BAP,2,42(57)+	Zimmerman
Dy^{162}	σ_t	5.4-645	BAP,2,42(57)+	Zimmerman
Dy^{163}	σ_t	1.7-94	BAP,2,42(57)+	Zimmerman
Dy^{164}	σ_t	146	BAP,2,42(57)+	Zimmerman
Dy	σ_t	2.7-38	PRIVATE COMM.(56)	Pilcher
Dy	σ_t	0-19.5	PR,96,1014(54)	Sailor

$^{165}_{67}$Ho

THERMAL CROSS SECTIONS

σ_γ = 66.5±3.3 b
σ_γ = 3.5±0.5 b [1200 yr ^{166}Ho^m]
σ_γ = 63.0±3.3 b [27.2 hr ^{166}Ho^g]
$\bar{\sigma}_s$ = 9.4±0.2 b
σ_a < 0.02 mb
σ_{pm} = 23.5 b
a_{coh} = 8.5±0.2 fm

RESONANCE PROPERTIES

I_γ = 700±20 b
R' = 7.6±0.5 fm
<D> = 2.7±0.5 eV
S_0 = 1.8±0.2
S_1 = 1.6±0.3

RESONANCE PARAMETERS

I^π = 7/2$^-$ %Abn = 100 S_n = 6242.7±0.6 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level				
3.92±0.01	2.4 ± 0.1	4	85 ± 2	1.21 ±0.005
8.16±0.02	1.64± 0.01	3		0.057±0.004
12.75±0.05	11.8 ± 0.4	4		3.30 ±0.11
18.20±0.05	0.84± 0.05	3		0.20 ±0.01
21.12±0.05	0.63± 0.02	4		0.137±0.004
35.50±0.05	6.3 ± 0.3	3	73.6± 3.5	1.06 ±0.05
37.30±0.05	0.58± 0.02	3		0.095±0.003
39.65±0.05	20 ± 2	4	88 ± 4	3.18 ±0.32
47.70±0.05	24.3 ± 0.4	3	77 ± 3	3.52 ±0.06
51.60±0.05	50.5 ± 0.7	3	85 ± 2	7.03 ±0.10
54.40±0.05	3.0 ± 0.2	4		0.41 ±0.03
64.0 ±0.1	21.0 ± 1.0	4	70 ± 4	2.63 ±0.13
68.80±0.06	1.1 ± 0.1	[4]	65 ±12	0.13 ±0.01
71.8 ±0.1	20 ± 2	4	74 ± 4	2.36 ±0.24
80.0 ±0.1	1.8 ± 0.1	4		0.20 ±0.01
83.8 ±0.1	15.2 ± 1.0	4	67 ± 4	1.66 ±0.11
84.8 ±0.1	4.9 ± 0.3	3		0.53 ±0.03
85.8 ±0.1	32.7 ± 2.0	3		3.53 ±0.22
93.6 ±0.1	83 ± 2	4	77 ± 2	8.6 ±0.2
101.9 ±0.1	21.5 ± 0.3	4	74 ± 3	2.13 ±0.03
106.3 ±0.1	8.8 ± 0.4	4		0.85 ±0.04
117.9 ±0.1	11.7 ± 0.5		75 ± 6	1.08 ±0.05
120.6 ±0.1	5.4 ± 0.4			0.49 ±0.04
124.8 ±0.1	39.7 ± 1.4	4	74 ± 4	3.55 ±0.13
126.8 ±0.1	18 ± 2		85 ±15	1.6 ±0.2
128.4 ±0.1	28 ± 4	3	65 ± 5	2.5 ±0.4
139.0 ±0.1	0.28± 0.02			0.024±0.002
141.3 ±0.1	1.50± 0.03			0.126±0.003
149.3 ±0.1	2.8 ± 0.1			0.23 ±0.01
151.0 ±0.1	37.1 ± 1.5	3	72 ± 3	3.02 ±0.12

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
152.4 ±0.1	1.5 ± 0.1			1.2 ±0.01
163.2 ±0.1	3.9 ± 0.2			0.31 ±0.02
164.3 ±0.1	16.4 ± 0.9	[4]		1.28 ±0.07
169.7 ±0.1	20.3 ± 0.5	[4]	60 ± 3	1.56 ±0.04
174.6 ±0.1	4.8 ± 0.3			0.36 ±0.02
180.9 ±0.1	34.8 ± 0.7	[4]		2.56 ±0.05
187.9 ±0.1	1.0 ± 0.2			0.07 ±0.02
188.8 ±0.1	18.7 ± 0.7		75 ± 5	1.36 ±0.05
192.6 ±0.1	9.3 ± 0.5			0.67 ±0.04
194.7 ±0.1	0.7 ± 0.1			0.05 ±0.01
195.3 ±0.1	3.3 ± 0.3			0.24 ±0.02
202.3 ±0.2	80 ± 5	[4]	76 ± 3	5.6 ±0.4
204.9 ±0.9	10.6 ± 0.6			0.74 ±0.04
214.7 ±0.2	53.0 ± 1.4	(3)	75 ± 3	3.62 ±0.10
220.7 ±0.2	29.0 ± 2.0		90 ±10	1.95 ±0.14
225.9 ±0.2	0.9 ± 0.1			0.06 ±0.01
230.0 ±0.2	10.4 ± 0.5			0.69 ±0.03
232.7 ±0.2	8.4 ± 0.3			0.55 ±0.02
235.9 ±0.2	1.3 ± 0.2			0.085±0.013
239.5 ±0.2	30.0 ± 2.0	[4]	84 ± 5	1.94 ±0.13
254.5 ±0.2	137.0 ± 5.0			8.59 ±0.31
261.1 ±0.2	35.4 ± 2.0		77 ±10	2.19 ±0.12
264.9 ±0.2	2.0 ± 0.3			0.12 ±0.02
272.6 ±0.2	6.8 ± 2.0			0.41 ±0.12
274.1 ±0.2	25.5 ± 1.5			1.54 ±0.09
277.0 ±0.2	14.0 ± 0.7			0.84 ±0.04
280.9 ±0.2	17.0 ± 0.8			1.01 ±0.05
287.6 ±0.3	11.2 ± 0.5			0.66 ±0.03
290.9 ±0.3	7.7 ± 0.5			0.45 ±0.03
291.6 ±0.3	19.3 ± 1.2			1.13 ±0.07
297.0 ±0.3	12.2 ± 0.6			7.08 ±0.04
300.1 ±0.3	112 ± 6			6.46 ±0.35
306.6 ±0.3	5.0 ± 0.2			0.34 ±0.01
313.0 ±0.3	15.7 ± 0.9			0.89 ±0.05
320.0 ±0.3	15.2 ± 0.7			0.85 ±0.04
323.8 ±0.3	59 ± 3			3.3 ±0.2
327.6 ±0.3	5.6 ± 0.2			0.31 ±0.01
329.1 ±0.3	2.9 ± 0.2			0.16 ±0.01
331.4 ±0.3	26.8 ± 3.0			1.47 ±0.16
332.2 ±0.3	25.0 ± 2.0			1.37 ±0.11
339.6 ±0.3	193.0 ± 8.0			10.5 ±0.4
341.8 ±0.3	14.6 ± 0.8			0.79 ±0.04
350.2 ±0.3	63.5 ± 4.5			3.39 ±0.24
351.5 ±0.3	135.0 ± 9.0			7.20 ±0.48
351.3 ±0.3	10.0 ± 2.0			0.53 ±0.11
354.0 ±0.3	28.8 ± 2.0			1.53 ±0.11
358.9 ±0.3	6.9 ± 0.3			0.35 ±0.01
366.6 ±0.3	27.1 ± 1.0			1.42 ±0.05
371.0 ±0.3	0.90± 0.20			0.07 ±0.01
374.7 ±0.3	63.8 ± 3.0			3.50 ±0.15
375.1 ±0.3	1.0 ± 0.2			0.05 ±0.01
379.6 ±0.3	1.7 ± 0.2			0.087±0.010

$^{165}_{67}$Ho

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
384.6 ±0.3	111.0 ± 6.0			5.66 ±0.31
386.0 ±0.4	22.3 ± 1.8			1.14 ±0.09
388.8 ±0.4	0.6 ± 0.2			0.03 ±0.01
401.2 ±0.4	12.4 ± 0.5			0.62 ±0.03
405.2 ±0.4	124.0 ± 7.0			6.16 ±0.35
407.8 ±0.4	0.60± 0.20			0.03 ±0.01
409.7 ±0.4	0.60± 0.20			0.03 ±0.01
413.5 ±0.4	6.4 ± 0.4			0.31 ±0.02
415.0 ±0.4	37.3 ± 2.0			1.83 ±0.10
416.7 ±0.4	37.1 ± 2.0			1.82 ±0.10
422.6 ±0.4	28.2 ± 1.2			1.37 ±0.06
430.3 ±0.4	213 ±10			10.3 ±0.5
433.7 ±0.4	14.0 ± 0.5			0.67 ±0.02
436.3 ±0.4	32.2 ± 1.8			1.54 ±0.09
438.3 ±0.4	38.7 ± 2.0			1.85 ±0.10
443.0 ±0.4	39.3 ± 2.0			1.87 ±0.10
445.8 ±0.4	3.0 ± 0.2			0.14 ±0.01
450.8 ±0.4	96.6 ± 5.0			4.55 ±0.24
454.7 ±0.4	14.1 ± 0.5			0.66 ±0.02
461.2 ±0.4	8.7 ± 0.3			0.41 ±0.01
464.9 ±0.4	1.0 ± 0.2			0.046±0.009
467.5 ±0.4	1.0 ± 0.2			0.046±0.009
475.1 ±0.4	4.0 ± 1.0			0.18 ±0.05
479.6 ±0.4	0.6 ± 0.2			0.03 ±0.01
485.4 ±0.5	14.1 ± 0.6			0.64 ±0.03
487.6 ±0.5	25.5 ± 1.2			1.15 ±0.05
494.1 ±0.5	7.0 ± 2.0			0.32 ±0.09
495.2 ±0.5	75.9 ± 5.0			3.4 ±0.2
505.8 ±0.8	2.6 ± 0.3			0.12 ±0.01
511.1 ±0.5	165.0 ±10.0			7.30 ±0.44
515.1 ±0.5	108.0 ± 7.0			4.76 ±0.3
520.1 ±0.5	20.9 ± 1.2			0.91 ±0.05
521.8 ±0.5	54.4 ± 5.0			2.38 ±0.22
528.5 ±0.5	88.0 ± 5.0			3.83 ±0.22
534.4 ±0.5	52.5 ± 4.0			2.27 ±0.17
536.0 ±0.5	1.7 ± 0.3			0.072±0.013
538.9 ±0.5	37.5 ± 2.5			1.62 ±0.11
541.0 ±0.5	38.6 ± 2.5			1.66 ±0.11
543.4 ±0.5	22.3 ± 1.0			0.96 ±0.04
552.5 ±0.6	19.8 ± 0.8			0.84 ±0.03
555.1 ±0.6	74.0 ± 4.0			3.14 ±0.17
559.1 ±0.6	43.2 ± 2.0			1.83 ±0.08
560.6 ±0.6	10.0 ± 0.5			0.42 ±0.02
563.5 ±0.6	45.2 ± 2.0			1.90 ±0.08
570.0 ±0.6	66.3 ± 4.0			2.77 ±0.17
578.3 ±0.6	31.9 ± 1.5			1.33 ±0.06
581.4 ±0.6	2.0 ± 0.5			0.083±0.02
584.6 ±0.6	126.0 ± 8.0			5.21 ±0.33
590.3 ±0.6	218.0 ±50.0			8.97 ±2.05
592.2 ±0.6	37.1 ± 2.0			1.52 ±0.08
596.5 ±0.6	2.0 ± 0.5			0.082±0.020
605.6 ±0.6	29.4 ± 1.0			1.20 ±0.04

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
607.0 ±0.6	3.0 ± 1.0			0.12 ±0.04
612.9 ±0.6	10.2 ± 0.6			0.41 ±0.02
620.5 ±0.6	33.8 ± 1.5			1.36 ±0.06
621.8 ±0.6	2.0 ± 0.5			0.08 ±0.02
626.4 ±0.6	0.8 ± 0.2			0.03 ±0.01
632.7 ±0.6	4.9 ± 0.5			0.19 ±0.02
634.8 ±0.6	9.8 ± 0.5			0.39 ±0.02
644.2 ±0.6	273.0 ±15.0			10.76 ±0.59
646.1 ±0.6	36.9 ± 3.0			1.45 ±0.12
653.2 ±0.7	13.0 ± 0.6			0.51 ±0.02
655.5 ±0.7	1.0 ± 0.2			0.04 ±0.01
661.1 ±0.7	1.0 ± 0.2			0.04 ±0.01
672.7 ±0.7	1.5 ± 0.2			0.06 ±0.01
677.3 ±0.7	32.5 ± 1.2			1.25 ±0.05
679.9 ±0.7	107.0 ± 7.0			4.10 ±0.27
681.5 ±0.7	3.3 ± 0.4			0.13 ±0.02
694.9 ±0.7	40.5 ± 2.0			1.54 ±0.08
698.4 ±0.7	35.6 ± 1.5			1.35 ±0.06
708.4 ±0.7	57.7 ± 4.0			2.17 ±0.15
710.1 ±0.7	155.0 ±12.0			5.82 ±0.45
714.0 ±0.7	24.2 ± 1.2			0.91 ±0.05
723.0 ±0.7	122.0 ± 8.0			4.54 ±0.30
728.3 ±0.7	19.0 ± 0.9			0.70 ±0.03
735.7 ±0.7	4.8 ± 0.6			0.18 ±0.02
737.2 ±0.7	56.5 ± 4.0			2.1 ±0.2
744.3 ±0.7	25.1 ± 1.2			0.92 ±0.04
746.2 ±0.7	39.1 ± 1.5			1.43 ±0.06
756.2 ±0.8	19.6 ± 1.0			0.71 ±0.04
758.2 ±0.8	25.5 ± 1.0			0.93 ±0.04
767.5 ±0.8	7.5 ± 0.4			0.27 ±0.01
770.2 ±0.8	30.3 ± 1.2			1.09 ±0.04
774.8 ±0.8	13.0 ± 1.0			0.47 ±0.04
776.6 ±0.8	120.0 ±10.0			4.31 ±0.36
779.5 ±0.8	58.4 ± 3.0			2.09 ±0.11
785.7 ±0.8	56.0 ± 2.5			1.20 ±0.09
794.2 ±0.8	103 ± 7.0			3.66 ±0.25
797.3 ±0.8	51.7 ± 2.5			1.83 ±0.09
799.2 ±0.8	7.8 ± 0.7			0.28 ±0.03
800.1 ±0.8	5.0 ± 1.0			0.18 ±0.04
803.4 ±0.8	28.7 ± 1.2			1.01 ±0.04
818.7 ±0.8	10.8 ± 0.7			0.38 ±0.02
823.5 ±0.8	16.2 ± 0.9			0.56 ±0.03
828.8 ±0.8	31.5 ± 1.2			1.09 ±0.04
830.8 ±0.8	34.6 ± 1.5			1.20 ±0.05
835.5 ±0.8	7.2 ± 0.7			0.25 ±0.02
837.5 ±0.8	1.8 ± 0.5			0.062±0.017
844.0 ±0.8	49.7 ± 2.5			1.71 ±0.09
848.8 ±0.9	50.5 ± 2.5			1.73 ±0.09
853.9 ±0.9	6.0 ± 0.6			0.21 ±0.02
856.0 ±0.9	9.3 ± 0.6			0.32 ±0.02
861.5 ±0.9	8.9 ± 0.6			0.30 ±0.02
863.5 ±0.9	7.0 ± 0.6			0.24 ±0.02

$^{165}_{67}$Ho

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
868.1 ±0.9	143.0 ± 9.0			4.85 ±0.31
874.9 ±0.9	8.5 ± 1.0			0.29 ±0.03
876.5 ±0.9	21.7 ± 1.2			0.73 ±0.04
889.4 ±0.9	38.8 ± 1.2			1.30 ±0.04
893.4 ±0.9	89.3 ± 4.0			2.99 ±0.13
895.6 ±0.9	5.0 ± 0.6			0.17 ±0.02
900.7 ±0.9	69.3 ± 2.5			2.31 ±0.08
907.0 ±0.9	3.8 ± 1.0			0.13 ±0.03
908.1 ±0.9	36.1 ± 1.8			1.20 ±0.06
915.8 ±0.9	50.2 ± 2.0			1.66 ±0.07
919.0 ±0.9	7.9 ± 0.6			0.26 ±0.02
927.7 ±0.9	58.1 ± 2.0			1.91 ±0.07
930.3 ±0.9	35.1 ± 1.2			1.15 ±0.04
935.2 ±0.9	18.5 ± 0.8			0.61 ±0.03
936.7 ±0.9	86.6 ± 5.0			2.63 ±0.16
942.8 ±0.9	29.6 ± 1.2			0.96 ±0.04
947.3 ±0.9	14.9 ± 0.7			0.48 ±0.02
956.8 ±0.9	46.7 ± 1.3			1.51 ±0.04
960.6 ±1.0	67.3 ± 2.5			2.17 ±0.08
962.0 ±1.0	4.9 ± 0.8			0.16 ±0.03
969.1 ±1.0	9.5 ± 0.8			0.31 ±0.03
970.7 ±1.0	15.2 ± 0.8			0.49 ±0.03
979.1 ±1.0	141.0 ± 6.0			4.51 ±0.19
983.6 ±1.0	21.3 ± 1.0			0.68 ±0.03
990.5 ±1.0	21.3 ± 1.0			0.68 ±0.03
994.1 ±1.0	2.5 ± 0.4			0.08 ±0.01
1007.3 ±1.0	7.0 ± 0.6			0.22 ±0.01
1008.8 ±1.0	4.0 ± 0.3			0.13 ±0.01
1016.8 ±1.0	67.3 ± 2.5			2.11 ±0.08
1026.4 ±1.0	10.2 ± 0.8			0.32 ±0.03
1029.1 ±1.0	81.1 ± 5.0			2.52 ±0.16
1033.6 ±1.0	42.7 ± 2.0			1.32 ±0.06
1040.4 ±1.0	10.0 ± 0.8			0.31 ±0.03
1044.4 ±1.0	117.0 ± 6.0			3.62 ±0.19
1049.3 ±1.0	36.7 ± 2.0			1.13 ±0.06
1053.2 ±1.0	32.9 ± 2.0			1.01 ±0.06
1055.2 ±1.0	14.8 ±10.0			0.46 ±0.31
1066.1 ±1.0	105.0 ± 6.0			3.22 ±0.18
1072.5 ±1.0	304.0 ±15.0			9.28 ±0.46
1084.7 ±1.0	11.2 ± 1.0			0.34 ±0.03
1089.1 ±1.0	86.2 ± 4.0			2.61 ±0.12
1093.4 ±1.0	72.6 ± 4.0			2.20 ±0.12
1106.1 ±1.0	5.0 ± 0.5			0.15 ±0.02
1107.2 ±1.0	30.4 ± 2.5			0.91 ±0.08
1111.4 ±1.0	87.5 ± 4.5			2.62 ±0.13
1113.2 ±1.0	91.0 ± 4.0			2.72 ±0.12
1124.5 ±1.0	105.0 ± 6.0			3.13 ±0.18
1126.4 ±1.0	170.0 ±10.0			5.06 ±0.30
1139.9 ±1.0	17.0 ± 2.0			0.50 ±0.06
1141.4 ±1.0	76.8 ± 3.5			2.27 ±0.10
1143.3 ±1.0	29.8 ± 1.5			0.88 ±0.04
1148.2 ±1.0	30.9 ± 1.5			0.91 ±0.04

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1159.2 ±1.0	13.1 ± 1.0			0.39 ±0.03
1162.4 ±1.0	196.0 ±10.6			5.75 ±0.29
1168.4 ±1.0	196.0 ±10			5.73 ±0.29
1178.5 ±1.0	47.0 ± 2.0			1.37 ±0.06
1180.6 ±1.0	16.8 ± 1.0			0.49 ±0.03
1186.0 ±1.0	13.3 ± 1.8			0.39 ±0.05
1187.6 ±1.0	105.0 ± 5.0			3.05 ±0.15
1191.1 ±1.0	74.3 ± 4.0			2.15 ±0.12
1199.1 ±1.0	7.1 ± 1.0			0.21 ±0.03
1203.6 ±1.0	63.4 ± 4.0			1.83 ±0.12
1206.0 ±1.0	440.0 ±25.0			12.67 ±0.72
1217.6 ±1.0	172.0 ±10.0			4.93 ±0.29
1226.8 ±1.0	28.8 ± 1.5			0.82 ±0.04
1232.7 ±1.0	27.6 ± 1.5			0.79 ±0.04

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ho^{165}	σ_t	70HELSINKI,1,651(70)	Vertebnyi
Ho^{165}	activation	JIN,30,15(68)	Nethavay
Ho^{165}	σ_γ(spectra)	PR,155,1265(67)	Motz
Ho^{165}	σ_t	NP/A,95,663(67)	Zimmerman
Ho^{165}	σ_γ	YF,1,252(65)	Andreev
Ho^{165}	$\bar{\sigma}_s$	PR/B,136,1285(64)	Schermer
Ho^{165}	activation	PRIVATE COMM.(62)	Keisch
Ho^{165}	σ_t	PRIVATE COMM.(61)	Schermer
Ho^{165}	diffraction	PR,110,37(58)	Koehler
Ho^{165}	pile osci.	PR,83,641(51)	Pomerance
Ho^{165}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Ho	multiplicity	8-39	JINR-P3-6092(71)	Karzhavina
Ho^{165}	σ_t	5-1700	CEA-N-1338(71)	Tellier
Ho^{165}	σ_t	5-1700	71KNOX,2,680(71)	Tellier
Ho	σ_γ(spectra)	18-86	NP/A,151,569(70)	Poenitz
Ho	$\sigma_\gamma\bar{\sigma}_s$	8-261	NP,108,535(68)	Asghar
Ho	polarization	21-150	JINR-P3-3208(67)	Alfimenkov
Ho	σ_γ(spectra)	3.92-39.5	BAP,12,106(67)	Bhat
Ho	polarization	0-55	YF,3,55(66)	Alfimenkov
Ho	$\sigma_t\sigma_\gamma\sigma_\gamma$(SI)	3.9-510	JINR-P-2593(66)	Karzhavina
Ho	$\sigma_\gamma\bar{\sigma}_s$	8-214	65ANTWERP,65(65)	Asghar
Ho	polarization	18-21	PR/B,137,1484(65)	Brunhart
Ho	polarization	3.9-12.8	PR,126,979(62)	Postma
Ho	polarization	3.9	PR,127,1124(62)	Sailor
Ho	σ_t	3.9-130	PR,99,10(55)	Harvey
Ho	σ_t	3.9-39	PR,96,1014(54)	Sailor
Ho	σ_t	3.9-39	PR,92,656(53)	Foote

$_{68}$Er

THERMAL CROSS SECTIONS

σ_γ = 162±8 b
$\bar{\sigma}_s$ = 11.0±0.8 b
σ_{pe} = 26±3 b
a_{coh} = 7.9±0.2 fm

RESONANCE PROPERTIES

I_γ = 740±10 b
R' = 8.3±0.8 fm

$^{162}_{68}$Er

THERMAL CROSS SECTIONS

σ_γ = 19±2 b
$\bar{\sigma}_s$ = 3.8±2.0 b
σ_a < 11 mb

RESONANCE PROPERTIES

I_γ = 480±50 b
R' = 8.1±0.9 fm
<D> = 6.9±1.2 eV
S_0 = 2.1±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn ≦ 0.14 S_n = 6907±10 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
5.48±0.08	0.32± 0.03	0.14±0.01
7.60±0.12	0.7 ± 0.1	0.25±0.04
14.7 ±0.1	4.1 ± 0.3	1.07±0.08
20.3 ±0.1	8.3 ± 0.8	1.84±0.18
34.8 ±0.1	5.0 ± 0.5	0.87±0.09
43.2 ±0.3	2.2 ± 0.2	0.33±0.03
46.0 ±0.1	19.5 ± 1.5	2.88±0.22
51.4 ±0.3	48 ± 6	6.69±0.84
57.4 ±0.1	30 ± 3	3.94±0.40
112.1 ±1.1	12.7 ± 1.1	1.2 ±0.1
127.0 ±1.3	29.3 ± 5.6	2.6 ±0.5
142.6 ±1.6	14.3 ± 2.4	1.0 ±0.2
158.5 ±1.8	93 ±25	7.4 ±2.0
187.8 ±2.3	41 ±14	3.0 ±1.0
210.2 ±2.8	128 ±37	8.8 ±2.6
228.5 ±3.2	54 ±15	3.6 ±1.0

$^{164}_{68}Er$

THERMAL CROSS SECTIONS

σ_γ = 13±2 b
$\bar{\sigma}_s$ = 12.1±0.7 b
σ_a < 1.2 mb

RESONANCE PROPERTIES

I_γ = 105±10 b
R' = 7.8±0.8 fm
<D> = 20±3 eV
S_0 = 1.4±0.3

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 1.6 S_n = 6650.1±0.7 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
Bound level		
7.90±0.02	0.65± 0.08	0.23±0.03
30.5 ±0.1	3.9 ± 0.4	0.71±0.07
49.6 ±0.2	4.0 ± 1.0	0.57±0.14
53.8 ±0.4	2.3 ± 0.2	0.31±0.06
56.61±0.09	6.6 ± 0.5	0.88±0.07
108.59±0.06	48 ± 6	4.61±0.58
130.96±0.08	100 ±10	8.74±0.87
136.95±0.09	12 ± 3	1.03±0.26
160.73±0.18	60 ± 8	4.73±0.63
194.63±0.14	69.0 ± 8.0	4.95±0.57
214.97±0.17	31 ± 6	2.1 ±0.4
225.43±0.18	75 ±10	5.00±0.67
302 ±2	170 ±70	9.8 ±4.0
317 ±2	240 ±80	13.6 ±4.5
419.95±0.25	270 ±30	13.0 ±1.5
611.57±0.24	174 ±35	7.04±1.4
654.24±0.46	78 ±25	3.1 ±1.0
750.22±0.56	140 ±40	5.15±1.5

THERMAL CROSS SECTIONS

σ_γ = 15±2 b [2.27 sec ^{167}Er^m]
σ_γ = 20±2 b [^{167}Er^g]
σ_γ = 5±3 b
$\bar{\sigma}_s$ = 19.1±1.0 b
σ_a < 0.07 mb
a_{coh} [c] = 12.3±0.6 fm

RESONANCE PROPERTIES

I_γ [c] = 100±20 b
R' = 7.7±0.9 fm
<D> = 38±3 eV
S_0 = 1.6±0.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 33.4 S_n = 6436.3±0.5 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
Bound level			
15.55±0.04	2.15 ± 0.15	94 ± 6	0.55 ±0.04
73.79±0.07	65 ± 4	75 ±10	7.6 ±0.5
81.74±0.08	9.5 ± 0.5	80 ±10	1.05 ±0.06
110.63±0.08	0.063± 0.035		0.006±0.003
154.15±0.21	7.0 ± 0.3	89 ±12	0.56 ±0.02
243.59±0.21	25 ± 2	100 ±20	1.60 ±0.13
301.15±0.29	195 ± 12	105 ±15	11.2 ±0.7
315.97±0.30	320 ± 20	110 ±25	17.8 ±1.1
352.23±0.36	84 ± 7.0		4.48 ±0.37
388.46±0.42	185 ± 15		9.4 ±0.8
457.88±0.19	1.5 ± 1.0		0.07 ±0.05
509.04±0.32	53 ± 5		2.4 ±0.2
535.32±0.34	54 ± 5	96 ±20	2.3 ±0.2
594.84±0.40	710 ± 70		29.0 ±3.0
601.1 ±1.0	4.2 ± 2.5		0.17 ±0.10
642.2 ±0.5	44 ± 6		1.8 ±0.2
708.3 ±1.3	2.8 ± 1.2		0.11 ±0.05
747.3 ±0.6	85 ± 10		3.1 ±0.4
772.8 ±0.6	39 ± 5		1.4 ±0.2
794.5 ±0.6	115 ± 12		4.1 ±0.4
849.0 ±0.3	950 ± 70		33.0 ±2.4
873.1 ±0.9	6.6 ± 2.2		0.22 ±0.08
905.0 ±0.4	500 ± 50		16.7 ±1.7
923.9 ±1.0	2.4 ± 1.2		0.08 ±0.04
973.9 ±1.1	2.6 ± 1.3		0.08 ±0.04
1025.1 ±0.5	225 ± 25		7.0 ±0.8
1036.9 ±1.2	7.9 ± 3.2		0.25 ±0.10
1056.8 ±0.5	155 ± 16		4.8 ±0.5
1137.2 ±0.5	80 ± 10		2.4 ±0.3
1171.0 ±0.5	300 ± 25		8.8 ±0.7
1183.7 ±0.5	500 ± 35		14.8 ±1.0
1259.5 ±0.6	175 ± 16		4.9 ±0.45

$^{166}_{68}$Er

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
1325.0 ±1.7	4.7 ± 3.1		0.13 ±0.09
1339.7 ±0.6	66 ± 8		1.8 ±0.2
1367.3 ±0.7	990 ± 70		27.0 ±2.0
1431.3 ±1.9	7.6 ± 5.0		0.2 ±0.1
1468.6 ±0.8	91 ± 11		2.4 ±0.3
1502.3 ±0.8			
1545.6 ±2.1	2.9 ± 2.0		0.07 ±0.05
1556.2 ±0.9	290 ± 28		7.4 ±0.7
1618.1 ±2.3	6.7 ± 3.6		0.17 ±0.09
1640.5 ±0.9	140 ± 20		3.5 ±0.5
1678.9 ±2.4	3.6 ± 2.5		0.09 ±0.06
1757.8 ±0.5	195 ± 22		4.7 ±0.5
1785.7 ±0.6	360 ± 45		8.5 ±1.1
1809.6 ±0.6	160 ± 25		3.8 ±0.6
1831.9 ±0.6	103 ± 15		2.4 ±0.4
1846.4 ±0.6	625 ± 70		14.5 ±1.6
1906.5 ±2.9	10 ± 7		0.23 ±0.16
1940.2 ±0.6	165 ± 20		3.8 ±0.45
1987.7 ±0.6	54 ± 8		1.2 ±0.2
2027.5 ±0.7	33 ± 7		0.73 ±0.16
2069.0 ±3.3	8.1 ± 4.5		0.18 ±0.10
2121.6 ±0.7	455 ± 70		9.9 ±1.5
2128.9 ±0.7	650 ±100		16.0 ±2.2
2174.5 ±0.7	220 ± 25		4.7 ±0.5
2197.5 ±0.7	225 ± 35		4.8 ±0.8
2245.4 ±0.7	385 ± 45		8.1 ±1.0
2269.5 ±0.7	240 ± 35		5.0 ±0.7
2334.4 ±0.8	56 ± 10		1.2 ±0.2
2401.4 ±0.8	750 ± 90		15.0 ±1.8
2463.2 ±0.9	89 ± 14		1.8 ±0.3
2476.2 ±0.9	690 ± 80		14.0 ±1.6
2514.0 ±0.9	365 ± 50		7.3 ±1.0
2548.5 ±4.5	12 ± 8		0.24 ±0.16
2569.0 ±0.9	990 ±110		19.5 ±2.2
2594.9 ±0.9	74 ± 15		1.5 ±0.3
2656.4 ±0.9	1200 ±100		23.0 ±2.0
2659.6 ±3.8	935 ±150		18.1 ±2.9
2669.6 ±4.9	5.0 ± 3.6		0.10 ±0.07
2736.0 ±1.0	910 ± 90		17.4 ±1.7
2785.5 ±1.0	870 ±100		16.5 ±1.9
2808.2 ±1.1	42 ± 10		0.8 ±0.2
2829.6 ±1.1	1600 ±240		30 ±5
2850.2 ±1.1	30 ± 12		0.56 ±0.23
2890.1 ±1.1	550 ± 65		10.0 ±1.2
2931.8 ±1.1	260 ± 40		4.8 ±0.7
2950.3 ±1.1	36 ± 18		0.66 ±0.33
2955.3 ±2.2	198 ± 45		3.6 ±0.8
2984.5 ±1.1	170 ± 25		3.1 ±0.5
3147.0 ±1.2	184 ± 28		3.3 ±0.5
3214.9 ±1.2	435 ± 50		7.7 ±0.9
3280.7 ±1.3	370 ± 45		6.5 ±0.8
3340.8 ±1.3	400 ± 65		6.9 ±1.1

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
3351.4 ±1.3	605 ± 90		10.5 ±1.6
3378.7 ±1.3	880 ±110		15.0 ±2.0
3415.4 ±1.3	600 ± 70		10.3 ±1.2
3519.4 ±1.4	1030 ±140		17.4 ±2.4
3541.0 ±1.5	745 ±110		12.5 ±1.9
3600.9 ±1.5	255 ± 45		4.3 ±0.8
3615.9 ±1.5	220 ± 50		3.7 ±0.8
3630.6 ±1.5	120 ± 30		2.0 ±0.5
3755.0 ±1.6	810 ±100		13.0 ±1.6
3790.7 ±1.6	124 ± 28		2.0 ±0.5
3841.5 ±1.6	815 ±130		13.0 ±2.0
3851.3 ±1.6	1350 ±220		22.0 ±3.6
3895.0 ±1.6	420 ± 70		6.1 ±1.1
3982.1 ±1.7	730 ±100		11.6 ±1.6
4110.9 ±1.8	93 ± 40		1.5 ±0.6
4169.3 ±1.9	480 ± 70		7.4 ±1.1
4233.5 ±1.9	278 ± 45		4.3 ±0.7
4306.1 ±1.9	484 ± 65		7.4 ±1.0
4349.0 ±2.0	490 ± 65		7.4 ±1.0
4422.5 ±2.0	235 ± 80		3.5 ±1.2
4488.7 ±2.1	69 ± 35		1.0 ±0.5
4652.6 ±2.2	440 ± 70		6.5 ±1.0
4688.6 ±2.2	99 ± 50		1.5 ±0.7
4759.7 ±2.3	66 ± 35		0.96 ±0.51
4857.9 ±2.3	365 ± 80		5.2 ±1.2
4902.2 ±2.4	1500 ±250		21.0 ±4.0
4936.4 ±2.4	1300 ±220		19.0 ±3.0
4985.4 ±2.4	1500 ±240		21.0 ±3.4
5036.4 ±2.5	200 ± 70		2.8 ±1.0
5140.8 ±2.5	370 ± 80		5.2 ±1.1
5314.4 ±2.6	920 ±150		12.6 ±2.1
5416.6 ±2.7	650 ±120		8.8 ±1.6
5449.5 ±2.7	110 ± 55		1.5 ±0.8
5561.3 ±2.8	510 ± 80		6.8 ±1.1
5609.9 ±2.9	395 ± 70		5.3 ±0.9
5729.6 ±3.0	1200 ±200		16.0 ±2.6
5780.4 ±3.0	160 ± 70		2.1 ±0.9
5800.0 ±3.0	1450 ±260		19.0 ±3.4
5845.7 ±3.1	2200 ±400		29.0 ±5.0
5944.8	430 ±110		5.6 ±1.4
6022.4 ±3.2	480 ±140		6.2 ±1.8
6111.4 ±3.3	1100 ±180		14.0 ±2.3
6274.8 ±3.3	620 ±120		7.8 ±1.5
6303.8 ±3.4	640 ±120		8.1 ±1.5
6348.5 ±3.5	670 ±120		8.4 ±1.5
6428.9 ±3.5	730 ±130		9.1 ±1.6
6475.0 ±3.6	465 ± 70		5.8 ±0.9
6543.3 ±3.6	2400 ±600		30.0 ±7.4
6556.0 ±3.6	2000 ±500		25.0 ±6.0
6601.7 ±3.7	375 ±160		4.6 ±2.2
6701.9 ±3.8	750 ±200		9.2 ±2.4
6770.3 ±3.8	890 ±180		11.0 ±2.2

$^{166}_{68}$Er

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
7017.2 ±4.0	610 ±170		7.3 ±2.0
7057.6 ±4.1	150 ± 60		1.8 ±0.7
7193.5 ±4.2	170 ± 70		2.0 ±0.8
7222.8 ±4.2	620 ±150		7.3 ±1.8
7273.5 ±4.3	320 ± 90		3.8 ±1.1
7354.8 ±4.3	1550 ±300		18.0 ±3.5
7385.1 ±4.4	1800 ±360		21.0 ±4.0
7477.2 ±4.4	920 ±160		10.6 ±1.9
7593.6 ±4.5	1550 ±250		18.0 ±3.0
7636.8 ±4.6	400 ±140		4.6 ±1.6
7705.8 ±4.6	800 ±250		9.1 ±2.9
7829.9 ±4.7	410 ±170		4.6 ±1.9
7969.3 ±4.9	1200 ±280		13.4 ±3.1
8013.3 ±4.9	1400 ±320		15.6 ±3.6
8132.4 ±5.0	2700 ±450		30.0 ±5.0
8285.1 ±5.2	1450 ±300		16.0 ±3.3
8399.8 ±5.3	1900 ±350		21.0 ±3.8
8458.1 ±5.3	4300 ±700		47.0 ±7.6
8680.7 ±5.5	2950 ±600		32.0 ±6.4
8835.0 ±5.7	5700 ±800		61.0 ±8.5
9075.6 ±5.9	1500 ±400		16.0 ±4.0
9195.1 ±6.1	2500 ±500		26.0 ±5.0
9274.8 ±6.2	420 ±180		4.4 ±1.9
9373.4 ±6.2	770 ±300		8.0 ±3.0
9429.6 ±6.2	1650 ±350		17.0 ±3.6
9486.2 ±6.3	2150 ±450		22.0 ±5.0

THERMAL CROSS SECTIONS

σ_γ = 670±30 b
$\bar{\sigma}_s$ = 7.9±0.8 b
σ_α < 0.07 mb

RESONANCE PROPERTIES

I_γ = 2970±70 b
R' = 9.9±0.9 fm
<D> = 4.0±0.2 eV
S_0 = 1.8±0.2

RESONANCE PARAMETERS

I^π = 7/2⁺ %Abn = 22.9 S_n = 7771.4±0.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.460±0.002	0.314± 0.005	4	88 ± 1	0.460±0.010
0.584±0.002	0.224± 0.004	3	86.3± 1.0	0.290±0.005
5.98 ±0.02	17.7 ± 1.0	3	83 ± 5	
7.95 ±0.02	0.22 ± 0.02			0.078±0.008
9.37 ±0.03	7.0 ± 0.4	3	84 ± 9	2.29 ±0.13
20.23 ±0.05	5.2 ± 0.2	4		1.16 ±0.04
22.02 ±0.06	1.14 ± 0.06	3	87 ±12	0.243±0.013
26.64 ±0.04	83.0 ± 3.0	3	92 ±17	16.1 ±0.6
27.42 ±0.08	11.8 ± 0.8	4	93 ±14	2.30 ±0.16
32.88 ±0.04	7.6 ± 0.4	4	88 ± 8	1.33 ±0.07
37.59 ±0.05	8.0 ± 0.4	4	82 ± 8	1.30 ±0.07
39.43 ±0.06	7.8 ± 0.4	3	92 ± 9	1.24 ±0.06
42.23 ±0.06	3.4 ± 0.2	3	100 ±12	0.52 ±0.03
50.19 ±0.08	7.8 ± 0.4	4	80 ± 7	1.10 ±0.06
53.60 ±0.09	54.0 ± 6.0	4	97 ±12	7.38 ±0.82
59.96 ±0.05	13.0 ± 0.4	3	92 ± 8	1.68 ±0.05
62.07 ±0.05	6.4 ± 0.4			0.81 ±0.05
62.78 ±0.09	6.2 ± 0.4			0.78 ±0.05
69.43 ±0.06	2.6 ± 0.2	4	98 ±15	0.31 ±0.02
74.37 ±0.07	6.4 ± 0.8	[4]		0.74 ±0.09
75.77 ±0.07	1.18 ± 0.08	[4]		0.14 ±0.01
79.29 ±0.08	10 ± 1	3		1.12 ±0.11
85.42 ±0.09	1.24 ± 0.10	3		0.13 ±0.01
91.2 ±0.1	3.4 ± 0.2	4		0.36 ±0.02
94.8 ±0.1	19.2 ± 2.2	4	86 ±16	1.97 ±0.23
97.5 ±0.1	0.96 ± 0.16			0.098±0.010
98.2 ±0.2	0.24 ± 0.16			0.024±0.016
107.6 ±0.2	45 ± 5	3	82 ± 8	4.3 ±0.4
112.9 ±0.1	1.4 ± 0.1			0.13 ±0.01
115.6 ±0.2	3.4 ± 0.2			0.32 ±0.02
128.3 ±0.2	0.38 ± 0.16			0.034±0.014
131.6 ±0.2	97 ± 5	4	120 ±20	8.5 ±0.4
142.3 ±0.2	16 ± 1	4		1.34 ±0.09
142.9 ±0.2	1.8 ± 0.3			0.15 ±0.03
150.5 ±0.2	1.94 ± 0.16			0.16 ±0.01
153.18 ±0.27	0.60 ± 0.24			0.048±0.020

$^{167}_{68}Er$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
157.8 ±0.2	56 ± 4	3	75 ±16	4.5 ±0.3
159.4 ±0.2	6.4 ± 0.8			0.51 ±0.06
162.2 ±0.2	26 ± 2			2.04 ±0.16
165.1 ±0.2	20.0 ± 2.0			1.56 ±0.16
166.8 ±0.2	47 ± 5		84 ±15	3.6 ±0.4
168.5 ±0.2	48 ± 5		85 ±18	3.7 ±0.4
176.8 ±0.1	8.2 ± 0.8			0.62 ±0.06
178.5 ±0.1	33.5 ± 2.1			2.50 ±0.16
184.7 ±0.1	16 ± 1			1.18 ±0.07
191.3 ±0.2	26 ± 2			1.90 ±0.15
196.0 ±0.2	72 ± 4			5.2 ±0.3
209.9 ±0.2	38 ± 3	(4)	93 ±10	2.6 ±0.2
217.2 ±0.2	9.7 ± 0.6			0.66 ±0.04
223.3 ±0.2	6.4 ± 0.6			0.23 ±0.04
228.7 ±0.2	47 ± 4			3.1 ±0.3
230.1 ±0.2	4.2 ± 1.0			0.28 ±0.07
235.5 ±0.2	25 ± 2			1.63 ±0.13
237.9 ±0.2	28 ± 2			1.82 ±0.13
238.7 ±0.2	8.6 ± 2.0			0.56 ±0.13
247.3 ±0.2	10.8 ± 1.4			0.69 ±0.09
249.2 ±0.2	18 ± 2			1.13 ±0.13
258.2 ±0.2	68 ± 6	(4)	93 ±12	4.4 ±0.4
263.3 ±0.3	25.0 ± 2.6			1.54 ±0.16
274.5 ±0.3	22 ± 2			1.33 ±0.12
279.9 ±0.3	80 ±10		90 ±20	4.8 ±0.6
282.5 ±0.3	120 ±14		95 ±24	7.13 ±0.83
288.8 ±0.3	9.2 ± 1.4			0.54 ±0.08
297.6 ±0.3	2.2 ± 0.6			0.13 ±0.03
304.7 ±0.4	0.8 ± 0.6			0.05 ±0.03
306.2 ±0.3	2.4 ± 0.6			0.14 ±0.03
309.5 ±0.3	27.0 ± 2.8			1.53 ±0.16
314.2 ±0.3	6.6 ± 2.0			0.37 ±0.11
319.4 ±0.3	39 ± 4		89 ±22	2.2 ±0.2
327.2 ±0.3	24.0 ± 2.4			1.33 ±0.13
330.0 ±0.3	5.0 ± 1.6			0.28 ±0.09
331.6 ±0.3	88 ±10		88 ±20	4.8 ±0.6
335.1 ±0.3	68 ± 6	(4)	91 ±16	3.7 ±0.33
343.3 ±0.2	68 ± 8			3.68 ±0.44
346.5 ±0.4	43 ± 4		86 ±18	2.3 ±0.22
349.7 ±0.4	64 ± 6		92 ±20	3.42 ±0.3
355.5 ±0.4	6.6 ± 1.2			0.35 ±0.06
358.1 ±0.4	4.2 ± 1.0			0.22 ±0.05
363.7 ±0.4	96 ± 6	(4)	90 ±14	5.0 ±0.3
368.3 ±0.4	35.0 ± 3.2		83 ±16	1.82 ±0.17
371.2 ±0.4	2.7 ± 0.6			0.14 ±0.03
373.5 ±0.4	4.6 ± 1.0			0.24 ±0.05
376.6 ±0.4	11 ± 1.6			0.57 ±0.08
381.8 ±0.4	23 ± 3.4			1.4 ±0.2
384.3 ±0.4	5 ± 1.2			0.26 ±0.06
387.6 ±0.4	98 ± 8	(3)	82 ±10	4.98 ±0.41
393.5 ±0.4	2 ± 1			0.10 ±0.05
396.6 ±0.4	2.6 ± 1.0			0.13 ±0.05

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
399.6 ±0.4	53 ± 5	[4]	82 ±12	2.65 ±0.25
408.0 ±0.5	17 ± 2.4			0.82 ±0.12
411.7 ±0.5	12 ± 2			0.58 ±0.10
414.6 ±0.6	1.4 ± 0.8			0.07 ±0.04
418.8 ±0.2	2.8 ± 0.8			0.14 ±0.04
422.7 ±0.2	30 ± 4			1.5 ±0.2
429.0 ±0.2	35 ± 4		66 ±20	1.7 ±0.2
433.9 ±0.3	6.8 ± 2.6			0.33 ±0.13
437.2 ±0.3	71 ± 8		92 ±22	3.4 ±0.4
442.2 ±0.3	6 ± 2			0.29 ±0.10
446.6 ±0.3	89 ± 9		90 ±20	4.2 ±0.4
450.4 ±0.3	114 ±12			5.2 ±0.5
455.8 ±0.3	37 ± 3	[3]	88 ±10	1.73 ±0.14
462.0 ±0.3	8.4 ± 1.6			0.39 ±0.07
466.6 ±0.3	52 ± 5		91 ±18	2.4 ±0.2
473.6 ±0.3	94 ± 8	[4]	145 ±25	4.3 ±0.4
485.4 ±0.3	112 ±12			5.1 ±0.5
497.3 ±0.3	164 ±30			7.4 ±1.4
498.8 ±0.3	90 ±18			4.0 ±0.8
505.9 ±0.3	64 ±10			2.8 ±0.4
508.1 ±0.3	46 ± 8			2.0 ±0.36
515.4 ±0.3	11 ± 2			0.48 ±0.09
518.9 ±0.3	8.4 ± 2.0			0.37 ±0.09
522.2 ±0.3	4.4 ± 2.4			0.19 ±0.11
528.3 ±0.3	214 ±40			9.3 ±1.8
531.5 ±0.3	13.2 ± 3.2			0.57 ±0.14
533.1 ±0.3	7.2 ± 2.0			0.31 ±0.009
542.3 ±0.4	74 ± 6			3.2 ±0.3
550.2 ±0.4	20.6 ± 4.0			0.88 ±0.17
555.0 ±0.4	20 ± 6			0.85 ±0.26
556.8 ±0.4	82 ±12			3.5 ±0.5
562.8 ±0.4	43.6 ±10.0			1.84 ±0.42
571.5 ±0.4	124 ±20			5.2 ±0.8
575.5 ±0.4	63 ±10			2.6 ±0.4
581.0 ±0.4	7.2 ± 3.6			0.30 ±0.15
590.1 ±0.4	140 ±16		94 ±28	5.76 ±0.66
612.7 ±0.4	85 ± 8		93 ±20	3.43 ±0.32
629.9 ±0.4	17.2 ± 3.6			0.69 ±0.15
636.9 ±0.4	104 ±10			4.1 ±0.4
648.5 ±0.5	8.4 ± 3.4			0.33 ±0.14
652.5 ±0.5	108 ±12			4.2 ±0.48
665.98 ±0.47	42 ± 6			1.6 ±0.2
677.9 ±0.5	54 ± 8			2.1 ±0.3
693.1 ±0.5	20 ± 5			0.76 ±0.19
708.9 ±0.5	53 ± 6			2.0 ±0.23
712.0 ±0.5	9.8 ± 4.0			0.37 ±0.15
723.0 ±0.5	38 ± 6			1.41 ±0.23
726.2 ±0.5	27 ± 5			1.0 ±0.19
729.5 ±0.5	110 ±14			4.1 ±0.52
737.1 ±0.6	28 ± 8			1.03 ±0.29
741.5 ±0.6	42 ± 6			1.54 ±0.22
750.4 ±0.6	12.8 ± 6.4			0.47 ±0.24

$^{167}_{68}Er$

E_0 (eV)		$2g\Gamma_n$ (meV)		J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	
753.2	±0.6	34	± 8			1.24	±0.29
757.2	±0.6	19	± 4			0.69	±0.15
772.8	±0.6	160	±40			5.8	±1.5
776.4	±0.6	370	±60			13.3	±2.2
784.7	±0.6	12	± 4			0.42	±0.14
790.8	±0.6	70	±12			2.5	±0.4
800.0	±0.6	60	±10			2.1	±0.4
803.1	±0.6	14.4	± 4.0			0.51	±0.14
808.1	±0.6	67	±10			2.4	±0.36
811.2	±0.6	6	± 2			0.21	±0.07
816.4	±0.6	73	±10			2.6	±0.36
820.9	±0.3	86	±12			3.0	±0.4
823.9	±0.3	8	± 2			0.28	±0.07
838.2	±0.3	80	± 8			2.8	±0.28
852.4	±0.3	32	±10			1.09	±0.34
855.1	±0.3	76	±10			2.6	±0.34
865.1	±0.4	88	±12			3.0	±0.4
883.5	±0.4	40	± 6			1.35	±0.20
886.6	±0.4	19	± 6			0.64	±0.20
888.6	±0.4	44	±10			1.48	±0.34
896.2	±0.4	310	±32			10.4	±1.1
914.0	±0.4	162	±20			5.4	±0.7
918.6	±0.4	62	±10			2.0	±0.3
930.09	±0.39	48	± 6			1.6	±0.02
935.8	±0.4	126	±22			4.1	±0.7
939.5	±0.4	112	±20			3.7	±0.7
944.6	±0.4	18.2	± 5.6			0.59	±0.18
950.59	±0.40	46	±10			1.49	±0.33
956.23	±0.40	24	± 4			0.78	±0.13
959.0	±0.4	5.4	± 3.0			0.17	±0.10
961.8	±0.4	30	±10			0.97	±0.32
966.0	±0.4	16	± 5			0.51	±0.16
968.5	±0.4	15	± 4			0.48	±0.13
972.6	±0.4	76	± 8			2.4	±0.3
984.3	±0.4	220	±28			7.1	±0.9
991.5	±0.4	14	± 4			0.44	±0.13
995.8	±0.4	19	± 7			0.61	±0.22
998.9	±0.4	194	±28			6.1	±0.9
1014.0	±0.4	92	±12			2.9	±0.4
1018.4	±0.5	26	± 8			0.81	±0.25
1022.0	±0.5	420	±80			13.1	±2.5
1035.5	±0.5	29	± 7			0.90	±0.22
1047.5	±0.5	35	± 8			1.08	±0.25
1065.8	±0.5	12	± 6			0.37	±0.18
1068.9	±0.5	50	±12			1.53	±0.37
1073.9	±0.5	120	±18			3.7	±0.56
1091.0	±0.5	28	±12			0.85	±0.36
1101.4	±0.5	37	± 9			1.11	±0.27
1108.4	±0.5	52	±12			1.56	±0.36
1115.0	±0.5	74	±14			2.2	±0.42
1123.7	±0.5	102	±16			3.0	±0.48
1129.9	±0.5	11.4	± 5.6			0.34	±0.17

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1138.8 ±0.5	26 ±12			0.77 ±0.36
1144.1 ±0.5	42 ±10			1.24 ±0.30
1159.0 ±0.6	57 ±14			1.68 ±0.41
1163.9 ±0.6	16 ± 8			0.46 ±0.23
1166.1 ±0.6	19 ± 9			0.55 ±0.27
1173.7 ±0.6	17 ± 7			0.49 ±0.21
1193.2 ±0.6	34 ± 6			0.98 ±0.18
1201.1 ±0.6	25 ± 5			0.70 ±0.15
1206.8 ±0.6	192 ±24			5.5 ±0.7
1219.5 ±0.6	90 ±20			2.6 ±0.6
1223.6 ±0.6	66 ±18			1.9 ±0.52
1226.6 ±0.6	248 ±48			7.1 ±1.4
1230.1 ±0.6	14.4 ± 7.2			0.41 ±0.21
1234.2 ±0.6	15 ± 7.6			0.43 ±0.22
1237.8 ±0.6	20 ± 4			0.57 ±0.12
1243.8 ±0.6	17.4 ± 8.8			0.49 ±0.25
1248.3 ±0.6	18.4 ± 6.0			0.52 ±0.17
1252.2 ±0.6	56 ±14			1.58 ±0.40
1254.6 ±0.6	62 ±16			1.75 ±0.45
1265.6 ±0.6	20 ± 4			0.56 ±0.11
1269.3 ±0.7	100 ±16			2.8 ±0.5
1273.7 ±0.7	46 ±12			1.29 ±0.34
1279.9 ±0.7	138 ±34			3.9 ±0.96
1284.5 ±0.7	569 ±90			15.6 ±2.6
1289.2 ±0.7	36 ±16			1.0 ±0.45
1293.0 ±0.7	34 ±16			0.95 ±0.45
1299.4 ±0.7	16 ± 8			0.44 ±0.22
1303.9 ±0.7	112 ±22			3.1 ±0.61
1314.9 ±0.7	60 ±18			1.65 ±0.50
1318.8 ±0.7	30 ±12			0.83 ±0.33
1324.1 ±0.7	26 ±12			0.71 ±0.33
1326.7 ±0.7	73 ±16			2.0 ±0.44
1336.0 ±0.7	50 ±10			1.37 ±0.28
1350.8 ±0.7	140 ±28			3.80 ±0.76
1361.7 ±0.7	80 ±24			1.16 ±0.66
1372.1 ±0.7	32 ±12			0.86 ±0.33
1379.1 ±0.7	63 ±16			1.7 ±0.43
1388.2 ±0.7	320 ±64			8.6 ±1.7
1399.6 ±0.7	212 ±36			5.7 ±0.96
1407.5 ±0.7	24 ±12			0.64 ±0.32
1415.0 ±0.7	62 ±24			1.65 ±0.64
1419.7 ±0.8	58 ±20			1.54 ±0.53
1425.2 ±0.8	104 ±24			2.8 ±0.64
1432.6 ±0.8	64 ±16			1.69 ±0.42
1439.3 ±0.8	240 ±44			6.3 ±1.2
1442.8 ±0.8	19 ±10			0.50 ±0.27
1456.4 ±0.8	90 ±20			2.4 ±0.52
1462.9 ±0.8	54 ±20			1.41 ±0.53
1471.3 ±0.8	212 ±46			5.5 ±1.2
1482.0 ±0.8	74 ±22			1.9 ±0.57
1485.9 ±0.8	34 ±12			0.88 ±0.31
1493.6 ±0.8	40 ±20			1.04 ±0.52

$^{167}_{68}$Er

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1495.9 ±0.8	94 ±30			2.4 ±0.8
1507.9 ±0.8	70 ±22			1.8 ±0.6
1517.5 ±0.8	240 ±50			6.2 ±1.3
1524.0 ±0.8	120 ±30			3.1 ±0.76
1528.1 ±0.8	42 ±18			1.07 ±0.46
1538.8 ±0.8	270 ±40			6.9 ±1.0
1544.6 ±0.8	300 ±50			7.6 ±1.3
1552.9 ±0.8	340 ±60			8.6 ±1.5
1563.8 ±0.8	42 ±18			1.1 ±0.5
1568.5 ±0.9	240 ±56			6.1 ±1.4
1571.5 ±0.9	60 ±30			1.5 ±0.8
1581.7 ±0.9	48 ±16			1.2 ±0.4
1591.2 ±0.9	106 ±24			2.7 ±0.6
1607.0 ±0.9	50 ±12			1.3 ±0.3
1611.4 ±0.9	88 ±20			2.2 ±0.5
1622.1 ±0.9	86 ±24			2.1 ±0.6
1637.3 ±0.9	34 ±16			0.84 ±0.40
1641.9 ±0.9	260 ±70			6.4 ±1.7
1652.8 ±0.9	42 ±18			1.0 ±0.4
1658.8 ±0.9	610 ±96			15.0 ±2.4
1675.8 ±1.0	194 ±50			4.3 ±1.2
1680.0 ±0.5	220 ±60			5.4 ±1.5
1686.4 ±0.5	52 ±22			1.3 ±0.5

$^{168}_{68}$Er

THERMAL CROSS SECTIONS

σ_γ = 1.95±0.05 b
σ_s = 15.0±0.8 b
σ_a < 0.09 mb
a_{coh} = 10.9±0.5 fm

RESONANCE PROPERTIES

I_γ = 36±7 b
R' = 6.6±0.8 fm
<D> = 94±10 eV
S_0 = 1.5±0.2
S_1 = 0.70±0.20

RESONANCE PARAMETERS

I^π = 0⁺ %Abn = 27.0 S_n = 6003.14±.32 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
Bound level			
79.70± 0.12	41.0 ± 2.0	80 ±10	4.59 ± 0.22
139.6 ± 0.1	*0.11 ± 0.04		0.093± 0.003
145.7 ± 0.1	*0.061± 0.050		0.005± 0.004

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
174.3 ± 0.2	*0.15 ± 0.07		0.011± 0.005
188.9 ± 0.2	76.0 ± 4.0	86 ±12	5.53 ± 0.29
244.4 ± 0.4	550 ± 30	90 ±15	35.0 ± 4.0
296.7 ± 0.4	*0.29 ± 0.16		0.017± 0.009
312.6 ± 0.3	160 ± 20	95 ±15	9.05 ± 1.13
335.5 ± 0.4	*0.84 ± 0.55		0.046± 0.030
410.82± 0.3	2.0 ± 0.7		0.10 ± 0.04
446.0 ± 0.3	2.3 ± 0.8		0.11 ± 0.04
527.4 ± 0.3	845 ± 60		36.6 ± 2.6
587.4 ± 0.5	*0.49 ± 0.40		0.020± 0.17
691.5 ± 0.6	*1.0 ± 0.6		0.04 ± 0.02
765.3 ± 0.6	76 ± 9		2.8 ± 0.3
830.4 ± 1.3	1020 ± 100		35.0 ± 3.5
985.7 ± 1.1	2.0 ± 1.2		0.064± 0.038
990.61± 1.1	2.5 ± 1.4		0.079± 0.044
1005.8 ± 0.5	400 ± 50		12.61 ± 1.58
1022.4 ± 1.2	*1.7 ± 1.2		0.053± 0.038
1093.9 ± 0.5	1000 ± 70		30.0 ± 2.1
1106.1 ± 1.3	*3.9 ± 2.0		0.12 ± 0.06
1131.7 ± 0.5	205 ± 25		6.1 ± 0.7
1193.2 ± 1.5	*2.2 ± 1.5		0.064± 0.043
1207.7 ± 1.5	*2.6 ± 1.6		0.075± 0.046
1342.8 ± 1.8	8.9 ± 4.0		0.24 ± 0.11
1356.3 ± 0.7	320 ± 32		8.70 ± 0.87
1449.6 ± 0.8	950 ± 80		24.95 ± 2.10
1626.1 ± 0.9	100 ± 14		2.50 ± 0.35
1636.4 ± 2.3	*4.4 ± 2.4		0.11 ± 0.06
1681.3 ± 2.4	*3.0 ± 2.4		0.073± 0.059
1713.9 ± 0.5	66 ± 13		1.6 ± 0.3
1810.7 ± 0.5	230 ± 30		5.4 ± 0.7
1894.4 ± 0.6	515 ± 55		11.8 ± 1.3
1937.3 ± 1.2	1450 ± 150		33.0 ± 3.4
2100.6 ± 3.4	*8.2 ± 4.1		0.18 ± 0.09
2151.9 ± 0.7	305 ± 40		6.60 ± 0.86
2204.3 ± 0.7	435 ± 50		9.3 ± 1.1
2325.9 ± 3.9	*4.3 ± 3.4		0.089± 0.070
2364.1 ± 0.8	1550 ± 160		32.0 ± 3.3
2456.6 ± 4.3	*5.3 ± 4.0		0.11 ± 0.08
2472.4 ± 0.9	110 ± 20		2.2 ± 0.4
2544.0 ± 4.5	29 ± 10		0.58 ± 0.20
2671.4 ± 1.0	1150 ± 200		22.0 ± 3.9
2682.7 ± 1.0	2300 ± 350		44.0 ± 6.8
2814.2 ± 1.0	145 ± 40		2.7 ± 0.8
2862.6 ± 5.4	32 ± 14		0.60 ± 0.26
2900.5 ± 5.5	*21 ± 12		0.39 ± 0.22
2970.6 ± 1.1	315 ± 70		5.8 ± 1.3
3027.4 ± 1.2	14 ± 9		0.25 ± 0.16
3095.3 ± 1.2	650 ± 85		11.7 ± 1.5
3165.8 ± 1.2	215 ± 45		3.8 ± 0.8
3202.8 ± 6.3	*8.5 ± 5.0		0.15 ± 0.09
3304.1 ± 1.3	3000 ± 350		52.0 ± 6.1
3467.2 ± 1.4	215 ± 70		3.7 ± 1.2

$^{168}_{68}$Er

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
3588.4 ± 1.5	220 ± 55		3.7 ± 0.9
3648.7 ± 1.5	170 ± 45		2.8 ± 0.8
3678.3 ± 1.6	4000 ± 500		66 ± 8
3751.6 ± 4.0	22 ± 16		0.47 ± 0.26
3809.9 ± 1.6	340 ± 70		5.5 ± 1.1
3849.9 ± 4.2	*14 ± 8		0.23 ± 0.13
3997.7 ± 1.7	110 ± 35		1.7 ± 0.6
4100.1 ± 7.2	2820 ± 300		44.0 ± 4.7
4127.0 ± 4.7	*13 ± 10		0.20 ± 0.16
4154.6 ± 1.8	3900 ± 360		61.0 ± 5.6
4284.3 ± 4.9	61.0 ± 32.0		0.93 ± 0.49
4326.5 ± 1.9	1550 ± 160		24.0 ± 2.4
4389.5 ± 2.0	1630 ± 200		25.0 ± 3.0
4476.8 ± 5.3	*14 ± 10		0.21 ± 0.15
4515.6 ± 2.1	435 ± 80		6.5 ± 1.2
4643.6 ± 5.6	49 ± 26		0.72 ± 0.38
4671.1 ± 2.2	740 ± 100		10.8 ± 1.5
4819.9 ± 5.9	22 ± 10		0.32 ± 0.15
4885.8 ± 2.3	1520 ± 170		22.0 ± 2.4
5138.2 ± 2.5	755 ± 100		10.5 ± 1.4
5326.4 ± 2.7	770 ± 100		10.6 ± 1.4
5449.5 ± 2.8	2000 ± 350		27.0 ± 4.70
5463.3 ± 2.8	370 ± 140		5.0 ± 1.9
5703.0 ± 3.0	1700 ± 200		23.0 ± 2.7
5756.5 ± 3.0	3200 ± 350		42.0 ± 4.6
5968.4 ± 3.2	1560 ± 220		20.0 ± 2.8
6080.4 ± 3.3	580 ± 200		7.4 ± 2.6
6249.3 ± 3.4	6100 ± 700		77.0 ± 8.9
6428.9 ± 3.5	580 ± 150		7.2 ± 1.9
6528.8 ± 3.6	620 ± 200		7.7 ± 2.5
6565.1 ± 3.6	730 ± 250		9.0 ± 3.1
6627.4 ± 3.7	920 ± 280		11.3 ± 3.4
6759.1 ± 3.8	1920 ± 300		23.0 ± 3.7
6859.0 ± 3.9	1250 ± 400		15.1 ± 4.8
7017.2 ± 4.0	1450 ± 200		17.3 ± 2.4
7231.2 ± 4.2	2900 ± 350		34 ± 4.1
7441.9 ± 4.4	3850 ± 480		45.0 ± 5.6
7593.6 ± 4.5	760 ± 300		8.7 ± 3.5
7625.4 ± 4.6	720 ± 360		8.3 ± 4.1
7780.4 ± 4.7	600 ± 200		6.8 ± 2.3
8157.6 ± 5.1	1500 ± 300		16.6 ± 3.3
8378.8 ± 5.3	4700 ± 700		51.0 ± 7.7
8702.9 ± 5.6	5000 ± 900		64 ±10
8877.7 ± 5.7	2150 ± 800		23.0 ± 8.5
8900.7 ± 5.8	650 ± 330		6.9 ± 3.5
9117.2 ± 6.0	4750 ± 900		50 ± 9.4
9156.0 ± 6.0	1500 ± 550		15.7 ± 5.8
9392.1 ± 6.2	890 ± 450		9.2 ± 4.7
9614.0 ± 6.4	1150 ± 350		11.7 ± 3.6
9731.2 ± 6.6	2400 ± 550		24.0 ± 5.6
9823.8 ± 6.7	7700 ±1200		78 ±12
10093 ± 7	1000 ± 250		10.0 ± 2.5

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
10159 ± 7	1150 ± 300		11.4 ± 3.0
10272 ± 7	1750 ± 550		17.3 ± 5.4
10423 ± 7	1650 ± 500		16.2 ± 4.9
10789 ± 8	10000 ±1600		96 ±16
11167 ± 8	3600 ± 750		34 ± 7
11232 ± 8	4700 ±1000		44.0 ± 9.4
11497 ± 9	4650 ± 700		43.0 ± 6.5
11807 ± 9	1500 ± 700		13.8 ± 6.4
12048 ± 9	2000 ± 800		18.2 ± 7.3
12533 ±10	2300 ±1000		21.0 ± 8.9
12846 ±10	3550 ± 800		31.0 ± 7.0
13150 ±11	1800 ± 800		15.7 ± 7.0
13351 ± 6	930 ± 460		8.1 ± 4.0
13614 ± 6	1200 ± 500		10.3 ± 4.3
13862 ± 6	1350 ± 400		11.5 ± 3.4
13963 ± 6	15000 ±3000		127.0 ±25.0
14082 ± 6	3100 ± 700.0		26.0 ± 6.0
14163 ± 6	3200 ± 700		27.0 ± 6.0
14337 ± 6	2650 ± 750		22.0 ± 6.3
14497 ± 6	2000 ± 500		16.6 ± 4.2
14605 ± 6	8700 ±1800		72 ±15
14862 ± 6	4800 ±1200		39.0 ± 9.8

* $g\Gamma_n$ Resonance considered p-wave by Liou et al (72)

$^{170}_{68}$Er

THERMAL CROSS SECTIONS

σ_γ = 5.7±0.2 b
$\bar{\sigma}_s$ = 15.0±0.8 b
a_{coh} = 10.9±0.5 fm

RESONANCE PROPERTIES

I_γ = 20±2 b
<D> = 150±15 eV
S_0 = 1.5±0.2
S_1 = 0.80±0.25

RESONANCE PARAMETERS

I" = 0+ %Abn = 15.0 S_n = 5681.5±0.5 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
95.07± 0.10	880 ± 40	90.0 ± 4.0
164.6 ± 0.2	*0.066± 0.045	0.005± 0.004
221.9 ± 0.2	*0.71 ± 0.21	0.045± 0.014
284.0 ± 0.3	600 ± 35	35.6 ± 2.1
394.3 ± 0.3	*0.54 ± 0.25	0.027± 0.013
408.9 ± 0.3	*1.3 ± 0.4	0.064± 0.020

$^{170}_{68}Er$

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
483.8 ± 0.4	*0.95 ± 0.50	0.043± 0.023
496.7 ± 0.3	600 ± 40	30.0 ± 1.8
584.1 ± 0.5	*2.3 ± 0.9	0.095± 0.037
598.2 ± 0.5	*4.2 ± 1.4	0.17 ± 0.06
698.2 ± 0.7	*1.8 ± 0.8	0.068± 0.030
729.5 ± 0.7	*2.2 ± 1.0	0.081± 0.037
748.8 ± 0.6	125 ± 12	4.6 ± 0.4
809.2 ± 0.8	*0.97 ± 0.60	0.034± 0.021
935.6 ± 0.4	1600 ± 100	52.0 ± 3.3
975.0 ± 1.1	8.2 ± 2.7	0.26 ± 0.09
1089.0 ± 0.5	760 ± 50	23.0 ± 1.5
1230.7 ± 0.6	38 ± 7	1.1 ± 0.2
1391.1 ± 0.7	2850 ± 200	76.0 ± 5.4
1433.2 ± 1.9	*2.9 ± 2.1	0.077± 0.055
1512.1 ± 2.1	*8.5 ± 4.5	0.22 ± 0.11
1524.0 ± 0.8	71 ± 16	1.8 ± 0.4
1618.1 ± 2.3	*3.4 ± 2.2	0.084± 0.055
1693.4 ± 2.4	*5.8 ± 3.0	0.14 ± 0.07
1827.6 ± 2.7	*12 ± 6	0.28 ± 0.14
1844.1 ± 2.8	25 ± 11	0.58 ± 0.26
1874.9 ± 2.9	*12.1 ± 5.0	0.28 ± 0.12
1938.9 ± 3.0	*6.5 ± 3.5	0.15 ± 0.08
2009.9 ± 2.5	995 ± 75	22.2 ± 1.7
2087.2 ± 3.4	*3.7 ± 3.0	0.081± 0.066
2101.1 ± 0.7	1400 ± 100	31.0 ± 2.2
2190.9 ± 3.6	53 ± 20	1.1 ± 0.4
2249.3 ± 0.7	2120 ± 160	45.0 ± 3.4
2291.0 ± 3.9	*15.8 ± 7.0	0.33 ± 0.15
2377.9 ± 0.8	570 ± 70	11.7 ± 1.6
2482.3 ± 4.3	*14 ± 7	0.28 ± 0.14
2594.0 ± 4.6	38 ± 16	0.75 ± 0.32
2830.6 ± 1.0	3970 ± 450	74.6 ± 8.5
2857.3 ± 5.4	*27 ± 19	0.51 ± 0.36
2928.0 ± 5.6	*9.5 ± 6.0	0.18 ± 0.11
2977.8 ± 1.1	180 ± 25	3.3 ± 0.5
3018.6 ± 5.8	*21 ± 9	0.38 ± 0.16
3083.4 ± 6.0	*20 ± 8	0.36 ± 0.14
3150.3 ± 6.2	15 ± 6	0.27 ± 0.11
3302.1 ± 1.3	650 ± 70	11.3 ± 1.2
3352.8 ± 3.4	55 ± 24	0.95 ± 0.42
3414.7 ± 3.5	*34 ± 16	0.58 ± 0.27
3464.4 ± 1.4	195 ± 70	3.3 ± 1.2
3518.1 ± 3.7	*7.3 ± 5.0	0.12 ± 0.08
3599.7 ± 3.8	*28 ± 11	0.47 ± 0.18
3698.0 ± 4.0	*9.3 ± 6.0	0.15 ± 0.10
3715.9 ± 1.6	117 ± 40	1.9 ± 0.7
3843.9 ± 1.7	300 ± 70	4.8 ± 1.1
4067.4 ± 4.6	*9.0 ± 7.0	0.14 ± 0.11
4123.6 ± 1.8	360 ± 50	5.6 ± 0.8
4193.3 ± 1.9	1180 ± 120	18.2 ± 1.9
4240.9 ± 1.9	1350 ± 140	21.0 ± 2.2
4245.8 ± 7.6	1100 ± 150	16.9 ± 2.3

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
4318.8 ± 5.0	*36 ± 21	0.55 ± 0.32
4421.5 ± 2.0	1450 ± 150	22.0 ± 2.3
4599.6 ± 5.5	108 ± 50	1.6 ± 0.7
4715.1 ± 2.2	1400 ± 140	20.0 ± 2.0
5449.5 ± 2.8	4850 ± 500	66.0 ± 6.8
5946.4 ± 3.2	11800 ±2000	153 ±26
6032.0 ± 3.2	2420 ± 300	31.0 ± 3.9
6235.8 ± 3.4	4850 ± 500	61.0 ± 6.3
6385.0 ± 3.5	310 ± 120	3.9 ± 1.5
6638.5 ± 3.7	1150 ± 220	14.1 ± 2.7
6831.9 ± 3.9	420 ± 200	5.1 ± 2.4
6862.9 ± 3.9	760 ± 280	9.2 ± 3.4
7187.2 ± 4.2	645 ± 100	7.6 ± 1.2
7286.2 ± 4.3	3070 ± 400	36.0 ± 5.0
8223.5 ± 5.1	1300 ± 240	14.3 ± 2.7
8311.0 ± 5.2	6500 ±1000	71.0 ±11.0
8405.1 ± 5.3	24000 ±3500	260 ±38
8894.9 ± 5.8	1250 ± 300	13.3 ± 3.2
9348.6 ± 6.2	1700 ± 500	17.6 ± 5.2
9803.8 ± 6.6	6250 ± 750	63.0 ± 7.6
10054 ± 7	1500 ± 450	15.0 ± 4.5
10229 ± 7	4000 ± 600	40.0 ± 6.0
10329 ± 7	8300 ±1200	82.0 ±12.0
11103 ± 8	810 ± 300	7.7 ± 2.9
11208 ± 8	7700 ±1400	73.0 ±13.0
11281 ± 8	1900 ± 600	17.9 ± 5.7
11480 ± 8	9100 ±1400	85.0 ±13.0
11557 ± 9	770 ± 380	7.2 ± 3.6
11608 ± 9	5070 ± 800	47.0 ± 7.4
11702 ± 9	2050 ±1000	19 ± 9.2
11798 ± 9	1600 ± 600	14.7 ± 5.5
12428 ±10	8600 ±1200	77.0 ±11.0
13212 ±10	5300 ±1000	46.0 ± 8.7
13465 ± 5	1000 ± 350	8.6 ± 3.0
13806 ± 6	5900 ± 900	50.0 ± 8.0
13932 ± 6	8250 ±1200	70.0 ±10.0
14569 ± 6	3550 ± 600	29.0 ± 5.0
15404 ± 7	1350 ± 400	10.9 ± 3.20
15609 ± 7	10000 ±1600	80.0 ±13.0
15777 ± 7	6100 ± 900	49.0 ± 7.2
16045 ± 7	6800 ±1100	54.0 ± 8.7
16142 ± 7	11000 ±2000	87.0 ±16.0
16448 ± 7	5200 ±1100	41.0 ± 8.6
16488 ± 8	1740 ± 600	13.6 ± 4.7
16869 ± 8	9500 ±1800	73.0 ±14
17012 ± 8	4500 ±1100	35.0 ± 8.4
17058 ± 8	4450 ±1100	34.0 ± 8.4
17320 ± 8	5900 ±1300	45.0 ± 9.9
17773 ± 8	7700 ±1400	58.0 ±11.0
18492 ± 9	3050 ± 900	22.0 ± 6.6
18621 ± 9	14500 ±2200	106.0 ±16.0
19319 ± 9	4900 ± 900	35.0 ± 6.5

$^{170}_{68}Er$

E_0 (eV)		Γ_n (meV)		Γ_n^0 (meV)	
19536	±10	6000	±1500	43.0	±11.0
19978	±10	5300	±1100	38.0	± 7.8
20301	±10	2800	± 700	19.7	± 4.9
20566	±10	17000	±3000	119	±21
21003	±10	7700	±1500	53.0	±11.0
21102	±11	14000	±2600	96.0	±18.0
21517	±11	6650	±1200	45.0	± 8.2
21939	±11	17000	±3000	115	±20
22322	±12	4100	±1500	27.0	±10.0
22374	±12	4700	±1600	31.0	±11.0
22587	±12	9800	±1800	65.0	±12.0
22803	±12	3700	±1300	25.0	± 8.6
22904	±12	4200	±1700	28	±11
23240	±12	12500	±3000	82	±20
23695	±12	8400	±2000	55	±13

* $g\Gamma_n$ Possibly p-wave

The calculated absorption resonance integral is 42 b for a 0.79 ev radiation width.

$^{171}_{68}Er$

[7.5 hr]

THERMAL CROSS SECTIONS

σ_γ = 280±30 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Er^{162,164,167,168}$		PRIVATE COMM.(72)	Pappas
$Er^{166,167}$	mass spectrometry	JMS,6,435(71)	Dobrozemsky
Er^{171}	activation	JPJ,31,1304(71)	Miyano
Er	σ_t	AKE,16,49(70)	Knorr
Er	σ_γ	NIM,86,83(70)	Malik
$Er, Er^{162,164,166}$	σ_t	70HELSINKI,1,651(70)	Vertebnyi
$Er^{167,168,170}$	σ_t	70HELSINKI,1,651(70)	Vertebnyi
$Er^{162,164,166-168}$	σ_t	UFZ,13,420(68)	Kolotyi
Er^{170}	σ_t	UFZ,13,420(68)	Kolotyi
$Er^{164,168}$	σ_t	PR,162,1130(67)	Mughabghab
$Er, Er^{162,164,166}$	σ_t	BAS,31,338(67)	Vertebnyi
$Er^{167,168,170}$	σ_t	BAS,31,338(67)	Vertebnyi
Er	σ_t	NP/A,95,683(67)	Zimmerman
$Er^{167,170}$	mass spectrometry	ORNL-4155,15(66)	Gillette
Er^{167}	mass spectrometry	NS,14,(2),1(67)	Su
$Er^{162,164,166-168}$	σ_t	UFZ,11,240(66)	Vlasov
Er^{170}	σ_t	UFZ,11,240(66)	Vlasov
$Er^{162,164,166-168}$	alpha emission	YF,1,252(65)	Andreev
Er	σ_t	PRIVATE COMM.(65)	Ohno
Er^{166}	activation	NYO-10175(64)	Arino
Er	σ_γ	PRIVATE COMM.(64)	Haddad
Er	σ_γ	BAP,9,31(64)	Lopez
Er^{166}	activation	ADP,12,225(63)	Alexander
Er^{170}	activation	NP,41,372(63)	Mangal
Er^{170}	activation	ZP,175,54(63)	Schoneberg
Er	σ_t	ANS,3,462(60)	Roesser
$Er^{162,164}$	activation	CNI-6(59)	Segre
$Er^{166,167}$	reactivity	BAP,3,336(58)	Hopkins
$Er^{168,170}$	activation	ANL-5287(54)	Barnes
Er	diffraction	PR,91,597(53)	Koehler
Er	σ_t	PR,87,487(52)	Bernstein
Er	pile osci.	PR,83,641(51)	Pomerance
Er^{170}	activation	ZN,1,179(46)	Bothe

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Er^{164}	$\sigma_t\sigma_\gamma$(SI)	30-750	PR/C,5,974(72)	Liou
Er^{166}	$\sigma_t\sigma_\gamma$(SI)	15-9486	PR/C,5,974(72)	Liou
Er^{167}	$\sigma_t\sigma_\gamma$(SI)	5.9-1686	PR/C,5,974(72)	Liou
Er^{168}	$\sigma_t\sigma_\gamma$(SI)	79-14605	PR/C,5,974(72)	Liou
Er^{170}	$\sigma_t\sigma_\gamma$(SI)	95-23695	PR/C,5,974(72)	Liou
Er^{167}	σ_γ(spectra)	20.3-142	NERE-PR/NP-18,23(72)	Thomas
Er^{167}	σ_γ(spectra)	5.9-106	BNP,16,496(71)	Wasson
Er^{167}	polarization	0.46-9.6	PR/C,2,1137(70)	Brunhart
Er^{162}	$\sigma_t\sigma_\gamma$(SI)	14-66	NYO-72-190(70)	Liou
Er^{164}	$\sigma_t\sigma_\gamma$(SI)	30-750	NYO-72-190(70)	Liou
Er^{166}	$\sigma_t\sigma_\gamma$(SI)	15-2987	NYO-72-190(70)	Liou
Er^{167}	$\sigma_t\sigma_\gamma$(SI)	7.9-652	NYO-72-190(70)	Liou
Er^{168}	$\sigma_t\sigma_\gamma$(SI)	79.8-8407	NYO-72-190(70)	Liou
Er^{167}	σ_γ(spectra)	0.46-27.4	PR/C,1,1501(70)	Wetzel
Er^{164}	$\sigma_t\sigma_\gamma$	7.8-606	YF,7,225(68)	Karzhavina
Er^{166}	$\sigma_t\sigma_\gamma$	15.6-1370	YF,7,225(68)	Karzhavina
Er^{167}	$\sigma_t\sigma_\gamma$	6.0-321	YF,7,225(68)	Karzhavina
Er^{168}	$\sigma_t\sigma_\gamma$	7.3-4360	YF,7,225(68)	Karzhavina
Er^{170}	$\sigma_t\sigma_\gamma$	7.4-4730	YF,7,225(68)	Karzhavina
Er^{162}	σ_t	5.4-228	PR,162,1130(67)	Rughubghub
Er^{164}	σ_t	7.9-225	PR,162,1130(67)	Rughubghub
Er^{166}	σ_t	15-603	PR,162,1130(67)	Rughubghub
Er^{167}	σ_t	0.46-142	PR,162,1130(67)	Rughubghub
Er^{168}	σ_t	80-1410	PR,162,1130(67)	Rughubghub
Er^{170}	σ_t	94.8	PR,162,1130(67)	Rughubghub
Er^{167}	σ_γ	7.9	NP,71,129(65)	Freehner
Er^{162}	σ_t	7.7-21	GSANTUERP,186(65)	Vertebnyi
Er^{164}	σ_t	7.95	GSANTUERP,186(65)	Vertebnyi
Er^{166}	σ_t	15.6	GSANTUERP,186(65)	Vertebnyi
Er^{167}	σ_t	0.46-27.5	GSANTUERP,186(65)	Vertebnyi
Er^{170}	σ_t	94.5	GSANTUERP,186(65)	Vertebnyi
Er	σ_γ	6-108	GA-3874(63)	Haddad
Er^{168}	σ_t	15.3	AE,15,247(63)	Vlasov
Er^{167}	σ_t	0.46-27.6	AE,15,247(63)	Vlasov
Er^{167}	polarization	0.46-9.6	PRIVATE COMM.(61)	Seiler
Er	σ_t	0.46-0.58	NERE-PR/NP-2,15(61)	Tuckey
Er	σ_t	0.46-0.58	NSE,8,183(60)	Muller
Er	σ_γ(spectra)	0.47-9.4	NP,10,306(59)	Fenstermacher
Er	σ_t	0.47-94	PRIVATE COMM.(57)	Zimmerman

THERMAL CROSS SECTIONS

σ_γ = 103±3 b
σ_γ = 8.1±1.6 b (0.004) ms $^{170}Tm^*$)
σ_γ = 95±2 b (130 day $^{170}Tm^g$)
σ_s = 12±2 b
σ_{sn}^* = 19 b
σ_a < 0.01 mb
a_{coh} = 7.05±0.05 fm

RESONANCE PROPERTIES

I_γ = 1720±40 b
R' = 7.7±0.8 fm
<D> = 7.3±0.5 eV
S_0 = 1.4±0.2

RESONANCE PARAMETERS

I^π = 1/2$^+$ ΣΔm = 100 S_n = 6594.2±1.4 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level					
3.90±0.02	108 ± 3	12.2 ± 0.3	1	96 ± 3	6.19 ±0.15
14.4 ±0.1	93 ± 3	4.6 ± 0.2	0	84 ± 3	1.2 ±0.1
17.5 ±0.1	90 ± 5	3.2 ± 0.4	0	84 ± 4	0.76 ±0.10
29.1 ±0.1		0.29± 0.03	1		0.054±0.006
34.8 ±0.1	93 ± 3	10.2 ± 0.5	1	84 ± 3	1.73 ±0.08
38.1 ±0.1		0.68± 0.07			0.11 ±0.01
44.8 ±0.1	96 ± 5	5.1 ± 0.3	1	93 ± 5	0.77 ±0.05
50.7 ±0.2	85 ± 5	8.4 ± 1.1	1	79 ± 5	1.13 ±0.15
54.0 ±0.2		0.60± 0.08			0.08 ±0.01
59.2 ±0.2	94 ± 5	15.6 ± 0.9	1	84 ± 5	2.03 ±0.12
63.1 ±0.2		1.5 ± 0.5	1		0.18 ±0.06
65.9 ±0.2	106 ± 15	56.5 ± 1.5	0	83 ± 4	6.95 ±0.20
83.5 ±0.2	93 ± 5	11.3 ± 0.6	1	85 ± 5	1.23 ±0.06
94.1 ±0.2		45 ± 9	1		4.7 ±0.9
95.6 ±0.2		4 ± 1	(0)		0.42 ±0.10
101.8 ±0.2		1.4 ± 0.2	1		0.13 ±0.02
115.5 ±0.2	112 ± 10	28.4 ± 0.9	1	93 ±10	2.66 ±0.09
125.2 ±0.2	85 ± 8	20.7 ± 0.9	0	71 ± 8	1.85 ±0.09
132.2 ±0.2		1.2 ± 0.3	1		0.10 ±0.03
136.1 ±0.2	111 ± 4	33.5 ± 1.2	1	89 ± 4	2.87 ±0.11
153.0 ±0.3	166 ± 6	122 ± 6	0	85 ± 9	9.8 ±0.5
160.5 ±0.3		2.0 ± 0.5	1		0.16 ±0.04
164.3 ±0.3		7.5 ± 1.0	1		0.58 ±0.08
207.6 ±0.3		26	1		1.8
209.3 ±0.3		4.0			0.28
213.5 ±0.4		32.0			2.2
223.6 ±0.4		15.0	0		1.0
227.2 ±0.5		6.0	1		0.40
238.4 ±0.5		22.0	1		1.42
243.4 ±0.5		9.0	1		0.58
251.3 ±0.5		108 ±20	1	99 ± 6	0.68 ±0.13

$^{169}_{69}$Tm

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
260.1 ±0.5		20.8 ± 2.0	1		1.30 ±0.13
274.0 ±0.5	114 ± 10	31.5 ± 3.0	1	93 ±10	1.91 ±0.20
283.0 ±0.5	185 ± 12	50.0 ± 5.0	1	85 ± 4	3.0 ±0.3
288.0 ±0.6		69.5 ± 2.0	0	100 ± 7	4.10 ±0.13
295.3 ±0.6		9.0 ± 1.4	0		0.52 ±0.08
297.0 ±0.6		27.0 ± 3.0	1	126 ±20	1.58 ±0.17
318.5 ±0.6	170 ± 30	78 ±10	1	118 ±31	4.2 ±0.5
319.3 ±0.6	210 ± 30	58 ± 8	0	94 ±34	3.2 ±0.4
324.0 ±0.6		13.6 ± 1.6	1		0.76 ±0.09
333.0 ±0.6	165 ± 25	70.4 ± 4.0	1	118 ±25	3.86
346.3 ±0.6	130 ± 20	33.0 ± 2.0	1	108 ±20	1.78 ±0.11
356.7 ±0.6	180 ± 35	44.2 ± 2.0		92 ±35	2.4 ±0.1
363.1 ±0.6		2.6 ± 0.8			0.14 ±0.03
376.2 ±0.6		18.8 ± 2.2	1		0.96 ±0.11
377.8 ±0.6		22.6 ± 2.4	0		1.16 ±0.12
390.0 ±0.6		66 ± 4	0		3.4 ±0.5
399.8 ±0.6		7 ± 2	1		0.34 ±0.10
407.0 ±0.6		40 ± 8			0.20 ±0.04
408.9 ±0.7		220 ±30	1		10.8 ±1.4
413.6 ±0.8	500 ±100	186 ±20	0		9.2 ±1.0
415.3 ±0.8		52 ± 4	1		2.6 ±0.5
440.6 ±0.8		58.2 ± 2.0	1		2.8 ±0.1
455.1 ±0.8		7.4 ± 1.0	1		0.34 ±0.05
459.3 ±0.8		15.2 ± 2.0	1		0.70 ±0.09
467.8 ±0.9		36 ± 4	1		1.66 ±0.17
471.7 ±1.0		18 ± 2	0		0.86 ±0.09
492.9 ±1.0		40 ± 2	1		0.44 ±0.08
512.0 ±1.0	170 ± 40	74 ± 4	1	120 ±40	3.2 ±0.2
519.1 ±1.0	340 ± 50	118 ± 6	0	103 ±51	5.2 ±0.3
542.3 ±1.0		10 ± 2	1		0.40 ±0.08
549.4 ±1.0		42 ± 4	1		1.8 ±0.2
556.5 ±1.0	170 ± 40	78 ± 4	1	118 ±40	3.2 ±0.2
564.5 ±1.0	220 ± 40	156 ± 8	1	119 ±40	6.6 ±0.3
573.0 ±1.0	190 ± 40	106 ± 6	1	120 ±40	4.4 ±0.3
577.0 ±1.0		6.0 ± 1.6			0.24 ±0.06
585.8 ±1.0	720 ±100	310 ±30	0		1.28 ±0.13
591.7 ±1.1		42 ± 4	1		1.74 ±0.17
598.9 ±1.1	210 ± 40	130 ± 8	1	118 ±40	5.6 ±0.3
606.9 ±1.2	150 ± 60	34.0 ± 2.8	1	128 ±60	1.36 ±0.11
625.0 ±1.3		90 ± 6	1		3.6 ±0.2
630.9 ±1.3		44.0 ± 3.2	1		1.74 ±0.13
642.1 ±1.3		32 ± 2.4	1		1.28 ±0.10
658.5 ±1.3		52 ± 4	0		2.04 ±0.16
671.8 ±1.3		230 ±20	1		8.8 ±0.8
676.1 ±1.3		360 ±40	1		13.8 ±1.4
684.9 ±1.3		20.0 ± 2.8	(1)		0.68 ±0.10
693.6 ±1.3		22 ± 2	(1)		0.82 ±0.08
705.0 ±1.3		8 ± 2			0.28 ±0.04
711.9 ±1.3	360 ± 50	132 ±20	0		5.0 ±0.8
715.1 ±1.3	330 ± 50	290 ±30	1	136 ±53	10.8 ±1.1
723.0 ±1.4		11 ± 2			0.40 ±0.08
730.0 ±1.4	220 ± 45	48 ± 4.0	(1)	188 ±45	1.78 ±0.15
737.0 ±1.4		26.0 ± 2.4	(1)		0.96 ±0.09
755.6 ±1.4		22 ± 2	(0)		0.80 ±0.08
760.5 ±1.4		11.2 ± 1.6	(1)		0.30 ±0.04

$^{170}_{69}Tm$

(129 day)

THERMAL CROSS SECTIONS

σ_γ = 92±4 b

RESONANCE PROPERTIES

I_γ^c = 460±50 b
S_0 = 1.5±0.2

$^{171}_{69}Tm$

(1.92 yr)

THERMAL CROSS SECTIONS

σ_γ = 4.5±0.2 b

RESONANCE PROPERTIES

I_γ = 118±6 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Tm^{169}	magnetization	PRIVATE COMM.(73)	Lander
Tm^{169}	activation	PRIVATE COMM.(72)	Pappas
Tm	activation	JIN,34,2699(72)	Steinnes
Tm^{170}		JPJ,31,1304(71)	Miyano
Tm	σ_t	AKE,16,49(70)	Knorr
Tm	activation	JIN,32,2839(70)	Sims
Tm^{169}	activation	NP/A,102,241(67)	Andreef
Tm^{169}	σ_t 0.001-1.0	NP/A,95,683(67)	Zimmerman
Tm^{169}	mass spectrometry	ORNL-4155,15(66)	Gillette
Tm^{170}	mass spectrometry	ORNL-4155,15(66)	Gillette
Tm^{171}	mass spectrometry+activ.	ORNL-4155,15(66)	Gillette
Tm^{169}	diffraction	PR,126,1672(62)	Koehler
Tm^{169}	activation	ZP,149,215(57)	Houtermans
Tm^{169}	pile osci.	PR,83,641(51)	Pomerance

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Tm^{169}	σ_γ(spectra)	14.4-153	AERE-PR/NP-18,23(72)	Thomas
Tm^{169}	σ_γ(spectra)	3.9-716	71ALBANY,233(71)	Chrien
Tm^{169}	σ_γ(spectra)	3.9-153	71ALBANY,251(71)	Thomas
Tm^{169}	σ_γ(spectra)	14.4-115	PR/C,2,2031(70)	Bhat
Tm^{169}	$\sigma_t \sigma_\gamma$	3.9-243	NP/A,131,305(69)	Borros
Tm^{170}	σ_t	2.8-89.6	PRIVATE COMM.(69)	Stokes
Tm^{169}	σ_t	3.9-760.5	CEA-R-3385(68)	Julien
Tm^{169}	σ_t	3.9	NP/A,91,644(67)	Al-Kital
Tm^{169}	$\sigma_\gamma \bar{\Gamma}_s$	14.3-297	65ANTWERP,65(65)	Asghar
Tm^{169}	$\bar{\Gamma}_s$	3.9	NP,62,641(65)	Ceulemans
Tm^{169}	$\bar{\Gamma}_s$	14-51	AERE-PR/NP,4,20(63)	Corvi
Tm^{169}	$\sigma_t \bar{\Gamma}_s$	3.9-154	BAP,8,334(63)	Singh
Tm^{169}	σ_t	3.9-158	PR,99,10(55)	Harvey
Tm	σ_t	3.9-17.5	PR,96,1014(54)	Sailor
Tm^{169}	σ_t	3.9-17.6	PR,92,656(53)	Foote

$_{70}$Yb

THERMAL CROSS SECTIONS

σ_γ = 36.6±2.0 b
σ_s = 25.0±0.8 b
σ_{pa} = 5.2±0.5 b
a_{coh} = 12.62±0.12 fm

RESONANCE PROPERTIES

I_γ = 182±10 b

$^{168}_{70}$Yb

THERMAL CROSS SECTIONS

σ_γ = 3470±100 b
σ_a < 4 mb

RESONANCE PROPERTIES

I_γ = 31000±2000 b

RESONANCE PARAMETERS

I^π = 0⁺ %Nbn = 0.14 S_n = 6867.2±0.5 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
0.597±0.001	3.3±0.5	70 ±10	4.3±0.7
22.50 ±0.04	29 ±2		6.1±0.4

$^{170}_{70}Yb$

THERMAL CROSS SECTIONS

σ_γ = 10±1 b
σ_a < 0.04 mb

RESONANCE PROPERTIES

I_γ = 300±30 b
R' = 7.3±0.6 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 3.0 S_n = 6617.2±2.4 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
8.13±0.06	1.64± 0.15	0.583±0.053
39.93±0.06	187 ± 15	29.6 ±2.4
66.57±0.06	40 ± 7	4.9 ±0.9
72.91±0.07	55 ± 9	6.4 ±1.1
95.31±0.10	21 ± 3	2.3 ±0.3
167.7 ±2.0	21 ± 4	1.6 ±0.3
212.8 ±0.3	208 ± 30	14.2 ±2.0
270.0 ±0.2	76 ± 15	4.65 ±0.90
286.4 ±0.3	137 ± 22	8.1 ±1.3
358.0 ±0.4	76 ± 20	4.0 ±1.1
384.0 ±6.0	65 ± 20	3.3 ±1.0
394.0 ±7.0	70 ± 20	3.5 ±1.0
447.9 ±0.5	175 ± 30	8.3 ±1.4
451.8 ±0.5	68 ± 14	3.2 ±0.7
612.1 ±0.8	210 ± 60	8.5 ±2.4
761.8 ±1.2	200 ± 50	7.2 ±1.8
808.8 ±1.3	200 ± 40	7.0 ±1.4
868.9 ±0.7	89 ± 20	3.0 ±0.7
952.6 ±0.8	43 ± 15	1.39 ±0.49
978.4 ±0.8	630 ±130	20 ±4
1037.1 ±1.0	220 ± 80	6.8 ±2.5
1296.2 ±1.2	360 ±100	10.0 ±3.2
1328.0 ±1.4	190 ± 50	5.2 ±1.4

THERMAL CROSS SECTIONS

σ_γ = 50±4 b
σ_α < 0.04 mb

RESONANCE PROPERTIES

I_γ = 332±30 b
R' = 6.3±0.6 fm
<D> = 5.8±0.5 eV
S_0 = 1.7±0.2

RESONANCE PARAMETERS

I^π = 1/2$^-$ %Abn = 14.3 S_n = 8020.9±0.8 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level				
7.91±0.02	3.2 ± 0.2	1	70 ±10	1.14 ±0.08
13.04±0.03	5.0 ± 0.3	0	81 ± 6	1.39 ±0.08
*17.7		1		
21.72±0.06	0.27± 0.03	1		0.058±0.006
28.13±0.04	3.54± 0.24	1	79 ±10	0.67 ±0.05
34.54±0.05	7.5 ± 0.4	1	77 ± 8	1.28 ±0.07
41.36±0.06	15.0 ± 0.8	0	66 ± 8	2.34 ±0.12
46.38±0.07	1.60± 0.14	1		0.23 ±0.02
52.87±0.09	10.0 ± 0.6	1	73 ±18	1.38 ±0.08
54.18±0.13	30.0 ± 2.0	0	82 ±15	4.08 ±0.28
60.09±0.05	8.4 ± 0.4	1	72 ±10	1.08 ±0.06
64.70±0.06	14.2 ± 0.8	1	79 ±10	1.76 ±0.10
76.94±0.08	20 ± 1.5	1	69 ±12	2.28 ±0.17
82.23±0.08	5.2 ± 0.4	1		0.58 ±0.04
84.31±0.09	4.7 ± 0.4			0.51 ±0.04
96.05±0.11	5.6 ± 0.4	0	59 ±18	0.58 ±0.04
107.7 ±0.1	76 ± 4	1	80 ±12	7.4 ±0.4
111.9 ±1.1	30 ± 2	1	89 ±12	
120.2 ±0.2	0.24± 0.14			0.022±0.012
127.6 ±0.2	20.4 ± 2.4	1	70 ±14	2.70 ±0.22
139.9 ±0.2	24.0 ± 6.0			2.02 ±0.50
145.9 ±0.2	15.8 ± 1.2			1.30 ±0.10
160.4 ±0.2	116 ± 10		80 ±14	9.16 ±0.79
164.6 ±0.2	78.0 ± 4.0		70 ±10	6.0 ±0.4
175.6 ±0.1	22.0 ± 2.0		69 ±15	1.66 ±0.16
179.1 ±0.1	1.88± 0.90			0.140±0.068
182.3 ±0.1	22.8 ± 2.8			1.68 ±0.20
193.6 ±0.2	10 ± 2			
208.3 ±0.2	10 ± 2			0.70 ±0.14
210.4 ±0.2	200 ± 56			13.8 ±3.8
216.8 ±0.2	1.38± 0.72			0.094±0.050
226.8 ±0.2	42 ± 4		74 ±10	2.78 ±0.26
239.9 ±0.2	7.2 ± 1.4			0.46 ±0.10
250.1 ±0.2	48 ± 6		84 ±12	3.04 ±0.38
255.26	58.0 ± 8.0		100 ±20	3.64 ±0.50
269.7 ±0.3	1.96± 1.00			0.12 ±0.06

$^{171}_{70}Yb$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
276.6 ±0.3	16.6 ± 2.8			1.00 ±0.16
287.5 ±0.3	34.0 ± 4.0		80 ±18	2.00 ±0.24
290.6 ±0.3	164 ± 12		86 ±20	9.6 ±0.8
302.3 ±0.3	39.0 ± 6.0			2.24 ±0.34
310.1 ±0.3	64.0 ± 8.0		80 ±15	3.64 ±0.46
314.0 ±0.3	6.2 ± 2.6			0.34 ±0.14
319.9 ±0.3	50.0 ± 8.0			2.80 ±0.44
331.1 ±0.3	6.2 ± 3.0			0.34 ±0.16
341.6 ±0.4	32.0 ± 6.0			1.74 ±0.32
344.4 ±0.4	64.0 ± 10.0			3.44 ±0.54
354.4 ±0.4	330 ± 50		82 ±14	17.6 ±2.6
359.5 ±0.5	6.4 ± 3.2			0.34 ±0.16
370.4 ±0.5	4.8 ± 2.4			0.25 ±0.12
387.2 ±0.4	270 ± 50		70 ±25	13.8 ±2.6
392.0 ±0.5	7.0 ± 3.6			0.36 ±0.18
409.4 ±0.5	31.0 ± 5.0			1.54 ±0.24
411.7 ±0.5	38.0 ± 6.0			1.88 ±0.30
434.6 ±0.3	86.0 ± 10.0			4.12 ±0.48
436.7 ±0.3	25.0 ± 6.0			1.20 ±0.28
444.8 ±0.3	122 ± 14		80 ±14	5.80 ±0.60
455.2 ±0.7	8 ± 4			0.38 ±0.18
459.3 ±0.3	44 ± 8			2.1 ±0.4
470.8 ±0.3	60 ± 6		72 ±15	2.8 ±0.3
483.6 ±0.3	46 ± 6		62 ±18	2.1 ±0.3
494.3 ±0.3	142 ± 24			6.4 ±1.0
499.1 ±0.3	160 ± 20		78 ±15	7.2 ±1.0
515.9 ±0.3	186 ± 20		80 ±20	8.2 ±0.8
524.8 ±0.3	126 ± 14		77 ±18	5.6 ±0.6
531.5 ±0.9	8.8 ± 3.0			0.38 ±0.13
538.9 ±0.3	480 ± 60		70 ±15	20.6 ±2.6
547.1 ±0.4	80 ± 12			3.4 ±0.5
557.7 ±0.9	4.6 ± 2.0			0.19 ±0.08
560.9 ±0.9	3.4 ± 1.6			0.14 ±0.07
577.7 ±0.4	86 ± 10		72 ±15	3.6 ±0.4
594.2 ±0.4	38 ± 6			1.6 ±0.2
598.2 ±0.4	60 ± 10		87 ±18	2.5 ±0.4
603.9 ±0.4	130 ± 18		73 ±16	5.2 ±0.8
612.5 ±0.4	84 ± 10		64 ±16	3.4 ±0.4
620.5 ±0.4	48 ± 8			1.9 ±0.3
628.6 ±0.4	122 ± 16		86 ±20	4.8 ±0.6
633.1 ±0.4	92 ± 12			3.7 ±0.5
648.9 ±0.5	56 ± 8			2.2 ±0.4
657.2 ±1.2	17 ± 7			0.68 ±0.28
661.8 ±0.5	118 ± 18			4.6 ±0.8
667.4 ±0.5	76 ± 12			2.9 ±0.5
673.6 ±0.5	29 ± 5			1.1 ±0.2
685.7 ±0.5	42 ± 8			1.6 ±0.3
691.6 ±0.5	80 ± 12			3.04 ±0.46
695.1 ±0.5	15 ± 4			0.58 ±0.16
709.4 ±0.5	350 ± 44			13.2 ±1.6
716.3 ±1.3	2.8 ± 1.6			0.10 ±0.06
731.1 ±0.5	104 ± 12			3.8 ±0.4

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
741.0 ±1.4	8 ± 4			0.30 ±0.14
746.2 ±0.6	36 ± 6			1.3 ±0.2
761.2 ±1.5	8 ± 4			0.29 ±0.14
774.9 ±0.6	54 ± 8			1.9 ±0.3
785.2 ±1.5	15.8 ± 5.0			0.56 ±0.18
790.8 ±0.6	196 ± 28			7.0 ±1.0
800.3 ±0.6	220 ± 24			7.8 ±0.8
810.8 ±0.8	4.0 ± 2.0			0.14 ±0.07
817.6 ±0.6	88 ± 10			3.1 ±0.3
829.4 ±0.3	36 ± 4			1.26 ±0.14
838.6 ±0.3	40 ± 6			1.4 ±0.2
841.6 ±0.3	114 ± 12			3.92 ±0.42
851.5 ±0.3	28 ± 4			0.96 ±0.14
875.3 ±0.4	174 ± 24			5.8 ±0.8
896.2 ±0.4	284 ± 40			9.4 ±1.4
905.4 ±0.4	80 ± 10			2.7 ±0.3
915.5 ±0.4	46 ± 10			1.5 ±0.3
923.5 ±0.4	152 ± 24			5.0 ±0.8
927.0 ±0.4	320 ± 48			10.6 ±1.6
932.4 ±0.4	226 ± 36			7.4 ±1.2
938.7 ±0.4	76 ± 20			2.5 ±0.7
945.0 ±0.4	112 ± 14			3.64 ±0.46
962.4 ±1.1	26 ± 10			0.84 ±0.32
971.8 ±1.1	12 ± 6			0.38 ±0.20
981.4 ±1.1	6 ± 4			0.19 ±0.12
991.1 ±0.4	440 ± 80			14.0 ±2.6
1005.3 ±0.5	50 ± 12			1.6 ±0.4
1009.7 ±0.5	234 ± 36			7.4 ±1.2
1017.5 ±0.5	112 ± 20			3.52 ±0.62
1020.2 ±1.1	12 ± 6			0.38 ±0.18
1026.9 ±0.5	178 ± 28			5.6 ±0.8
1037.1 ±0.5	56 ± 10			1.7 ±0.3
1047.9 ±0.5	34 ± 12			1.1 ±0.4
1049.8 ±0.5	122 ± 28			3.8 ±0.9
1062.9 ±0.5	136 ± 24			4.2 ±0.8
1071.5 ±0.5	228 ± 40			7.0 ±1.2
1078.7 ±0.5	32 ± 10			0.98 ±0.30
1086.5 ±0.5	14 ± 8			0.42 ±0.24
1091.4 ±0.5	68 ± 14			2.1 ±0.4
1110.4 ±0.5	80 ± 14			2.4 ±0.4
1136.2 ±0.5	420 ± 80			12.4 ±2.4
1157.9 ±0.6	176 ± 32			5.2 ±1.0
1167.1 ±0.6	82 ± 20			2.4 ±0.6
1173.2 ±0.6	102 ± 22			2.98 ±0.64
1185.9 ±0.6	48 ± 16			1.4 ±0.5
1209.7 ±0.6	206 ± 36			6.0 ±1.0
1217.2 ±0.6	40 ± 12			1.1 ±0.3
1229.5 ±0.6	50 ± 10			1.4 ±0.3
1234.8 ±0.6	12 ± 6			0.34 ± .18
1241.4 ±0.6	56 ± 14			1.6 ±0.4
1251.0 ±0.6	460 ± 80			13.0 ±2.2
1262.0 ±0.6	380 ± 80			10.6 ±2.2

$^{171}_{70}$Yb

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1269.3 ±0.6	150 ± 32			4.2 ±1.0
1283.2 ±0.6	390 ± 66			10.8 ±1.8
1290.8 ±0.6	480 ± 80			13.4 ±2.2
1299.4 ±0.7	380 ± 80			10.6 ±2.2
1322.1 ±0.7	340 ± 60			9.4 ±1.6
1334.0 ±0.7	270 ± 76			7.4 ±2.2
1352.3 ±1.7	14 ± 8			0.38 ±0.22
1368.6 ±0.7	206 ± 44			5.6 ±1.2
1377.7 ±0.7	98 ± 32			2.6 ±0.9
1397.9 ±0.7	24 ± 12			0.64 ±0.32
1437.6 ±0.7	352 ± 90			9.2 ±2.4
1450.3 ±0.8	134 ± 44			3.52 ±1.16
1453.4 ±0.8	146 ± 50			3.82 ±1.32
1461.7 ±0.8	172 ± 48			4.4 ±1.2
1469.4 ±0.8	64 ± 22			1.66 ±0.58
1481.0 ±0.8	320 ± 60			8.4 ±1.6
1499.1 ±0.8	300 ± 60			7.8 ±1.6
1516.9 ±0.8	240 ± 40			6.2 ±1.0
1524.4 ±0.8	90 ± 30			2.3 ±0.8
1534.7 ±0.8	420 ± 80			10.8 ±2.0
1549.6 ±0.9	102 ± 36			2.6 ±1.0
1586.9 ±0.9	380 ±100			9.6 ±2.6
1593.8 ±0.9	78 ± 30			1.96 ±0.76
1617.6 ±0.9	196 ± 60			4.8 ±1.4
1637.3 ±0.9	116.0 ± 40			2.86 ±0.98
1661.6 ±0.9	240 ± 80			5.8 ±2.0
1675.8 ±0.9	96 ± 30			2.34 ±0.74
1684.7 ±0.9	280 ± 60			6.8 ±1.4

* Small Yb-171 resonance masked by the 17.7 eV Yb-173 resonance.

THERMAL CROSS SECTIONS

σ_γ = 1.3±0.8 b
σ_a < 0.03 mb

RESONANCE PROPERTIES

I_γ = 25±3 b
R' = 6.3±0.8 fm
<D> = 70±3 eV
S_0 = 1.6±0.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 21.9 S_n = 6367.3±0.5 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
139.9±0.2	134 ± 8.0	77 ±16	11.3 ± 0.7
180.3±0.1	220 ± 14	80 ±20	16.0 ± 1.0
201.5±0.2	16.2± 1.0		0.92± 0.07
323.7±0.3	7 ± 1		0.67± 0.22
459.3±0.3	40 ± 5		1.87± 0.23
508.7±0.3	240 ± 40	60 ±20	10.6 ± 1.8
544.4±0.4	32 ± 8		1.37± 0.34
619.6±0.4	93 ± 8		3.7 ± 0.3
662.0±0.5	55 ± 7		2.14± 0.27
753.9±0.6	785 ± 50		28.6 ± 1.8
815.4±0.6	215 ± 25		7.5 ± 0.9
859.2±0.4	28 ± 5		0.96± 0.17
875.6±0.4	69 ± 9		2.3 ± 0.3
981.4±0.4	23 ± 5		0.73± 0.16
1066.7±0.5	330 ± 40		10 ± 2
1129.4±0.5	42 ± 7		1.25± 0.21
1204.0±0.6	19 ± 7		0.55± 0.20
1282.3±0.7	38 ± 12		1.06± 0.34
1334.7±0.7	97 ± 15		2.7 ± 0.4
1455.6±0.8	94 ± 15		2.5 ± 0.4
1511.9±0.8	290 ± 30		7.5 ± 0.8
1702.8±0.5	11 ± 7		0.27± 0.17
1733.9±0.5	230 ± 30		5.5 ± 0.7
1786.8±0.5	310 ± 50		7.3 ± 1.2
1826.6±1.0	4600 ±700		108 ±16
1892.7±0.6	980 ±160		23 ± 4
1914.8±0.6	1100 ±170		25 ± 4
1977.4±0.6	20 ± 14		0.45± 0.31
2001.6±0.7	32 ± 23		0.72± 0.51
2120.3±0.7	500 ± 80		10.8 ± 1.7
2162.1±0.7	96 ± 24		2.1 ± 0.5
2278.7±0.8	37 ± 12		0.78± 0.25
2401.4±0.8	4800 ±700		98 ±14
2433.4±1.7	62 ± 40		1.26± 0.81
2520.9±0.9	360 ± 60		7.2 ± 1.2
2549.1±0.9	150 ± 40		3.0 ± 0.8
2574.8±0.9	2100 ±300		41.0 ± 6.0

$^{172}_{70}$Yb

E_ϕ (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
2726.7±1.0	1600 ±300		31.0 ± 6.0
2817.8±1.0	250 ± 50		4.7 ± 0.9
2901.7±1.1	450 ± 70		8.4 ± 1.3
2913.5±1.1	950 ±140		17.6 ± 2.6
2953.1±1.1	720 ±100		13.2 ± 1.8
3027.8±1.2	710 ± 90		12.9 ± 1.6
3100.6±1.2	195 ± 60		3.5 ± 1.1
3203.2±1.3	610 ± 80		10.8 ± 1.4
3238.1±1.3	1300 ±150		23.0 ± 3.0
3334.8±1.3	300 ± 80		5.2 ± 1.4
3385.5±1.4	37 ± 24		0.64± 0.41
3520.2±1.4	540 ±100		9.1 ± 1.7
3556.2±1.5	1130 ±200		19.0 ± 3.0
3695.1±1.5	1650 ±200		27.0 ± 3.0
3734.6±1.6	260 ± 50		4.3 ± 0.8
3813.1±1.6	760 ± 90		12.3 ± 1.5
3878.4±1.7	390 ± 80		6.3 ± 1.3
3900.0±1.7	220 ± 80		3.5 ± 1.3
4022.9±1.8	170 ± 60		2.7 ± 0.9
4205.4±1.9	410 ± 90		6.3 ± 1.4
4362.8±2.0	950 ±130		14.0 ± 2.0
4386.5±2.0	960 ±130		14.0 ± 2.0
4483.6±2.1	750 ±110		11.2 ± 1.6
4566.9±2.1	240 ± 60		3.6 ± 0.8
4685.3±2.2	590 ±140		8.6 ± 2.1
4837.1±2.3	290 ± 60		4.2 ± 0.9
4877.6±2.3	6000 ±800		86.0 ±13.0
5001.1±2.5	1400 ±250		20.0 ± 4.0
5273.5±2.6	3200 ±500		44.0 ± 7.0
5371.8±2.7	530 ±110		7.2 ± 1.5
5565.6±2.9	1850 ±280		25.0 ± 4.0
5631.5±2.9	370 ±120		4.9 ± 1.6
5654.7±2.9	4300 ±700		57.0 ± 9.0
5775.9±3.0	490 ±130		6.4 ± 1.7
5830.4±3.0	530 ±130		6.9 ± 1.7
5904.2±3.1	1800 ±320		23.0 ± 4.0
5949.5±3.2	730 ±200		9.5 ± 2.6
6534.3±3.6	590 ±120		7.3 ± 1.5
6588.8±3.7	2800 ±500		34.0 ± 6.0
6610.8±3.7	820 ±160		10.0 ± 2.0
6791.5±3.8	770 ±160		9.3 ± 1.8
6876.6±3.9	990 ±150		11.9 ± 1.8
7086.2±4.1	1100 ±200		13.0 ± 2.0
7154.0±4.2	3600 ±400		43.0 ± 5.0
7267.1±4.3	4400 ±700		52.0 ± 8.0
7435.3±4.4	2300 ±300		27.0 ± 3.0
7515.0±4.5	2400 ±300		28.0 ± 3.0
7646.6±4.6	4200 ±600		48.0 ± 7.0
7790.2±4.7	1750 ±500		2.0 ± 6.0
8060.1±5.0	750 ±220		8.4 ± 2.5
8221.0±5.1	1550 ±280		17.0 ± 3.0
8298.0±5.2	3000 ±500		33.0 ± 5.0

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
8601.0±5.5	1050 ±300		11.0 ± 3.0
8705.6±5.6	3200 ±600		34.0 ± 6.0
9132.1±6.0	2300 ±400		24.0 ± 4.0
9223.1±6.1	5700 ±800		59.0 ± 8.0
9476.7±6.4	800 ±400		8.2 ± 4.1
9656.0±6.5	4400 ±800		45.0 ± 8.0
9767.4±6.6	3400 ±700		34.0 ± 7.0
9807.2±6.6	1250 ±500		13.0 ± 5.0
9927.9±6.8	3100 ±700		31.0 ± 7.0
10017 ±7	3000 ±700		30.0 ± 7.0
10102 ±7	1600 ±500		16.0 ± 5.0

THERMAL CROSS SECTIONS

σ_γ = 19±2 b

RESONANCE PROPERTIES

I_γ = 390±40 b
R' = 7.4±0.6 fm
<D> = 7.8±0.9 eV
S_0 = 1.7±0.2

RESONANCE PARAMETERS

I^π = 5/2$^-$ ZAbn = 16.2 S_n = 7465.0±0.8 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level				
4.51±0.02	0.21± 0.02	3	80 ± 1	0.099±0.010
17.63±0.05	31 ± 2	2	82 ± 9	7.4 ±0.5
31.39±0.08	74.0 ± 4.0	2	70 ± 8	13.2 ±0.7
35.72±0.05	48 ± 4	3	80 ± 9	8.0 ±0.7
45.16±0.07	30 ± 2	2	73 ±10	4.5 ±0.3
53.47±0.09	8.2 ± 0.6	3	78 ±12	1.12 ±0.08
58.88±0.05	8.0 ± 0.6	3	74 ±10	1.04 ±0.08
66.18±0.06	9.0 ± 0.6	3	72 ±12	1.11 ±0.07
68.91±0.06	7.3 ± 0.6	2		0.89 ±0.07
74.49±0.07	7.0 ± 0.8	3		0.82 ±0.10
76.14±0.07	36 ± 2	2	68 ± 8	4.2 ±0.2
96.4 ±0.1	11.8 ± 1.0	3	75 ±15	1.2 ±0.1
105.8 ±0.1	60 ± 4	2		5.8 ±0.4
111.1 ±0.1	12.4 ± 1.0	2	70 ±12	1.18 ±0.10
124.3 ±0.2	20.0 ± 1.2		63 ±12	1.8 ±0.1
128.8 ±0.2	71 ± 4		74 ± 9	6.2 ±0.4
134.8 ±0.2	8.5 ± 0.6		62 ±14	0.73 ±0.05
145.3 ±0.2	19.4 ± 1.6		64 ±15	1.60 ±0.14
154.2 ±0.2	1.9 ± 0.2			0.15 ±0.02

$^{173}_{70}$Yb

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
155.7 ±0.2	3.4 ± 0.4			0.27 ±0.03
166.8 ±0.2	54 ± 4		77 ±10	4.16 ±0.31
197.3 ±0.2	30 ± 3		77 ±18	2.1 ±0.2
205.0 ±0.2	7.6 ± 0.8			0.53 ±0.06
210.2 ±0.2	16.3 ± 1.4			1.26 ±0.11
221.7 ±0.2	8.2 ± 0.8			0.56 ±0.06
226.4 ±0.2	7.4 ± 0.8			0.50 ±0.06
229.6 ±0.2	29 ± 2		58 ±14	1.92 ±0.14
250.6 ±0.2	80 ± 6		70 ±10	5.0 ±0.4
256.6 ±0.2	29 ± 3		85 ±15	1.82 ±0.18
277.4 ±0.3	25.0 ± 2.6		72 ±14	1.5 ±0.2
283.5 ±0.3	80 ± 8		62 ±12	4.8 ±0.4
286.4 ±0.3	17.4 ± 2.2			1.02 ±0.14
303.9 ±0.4	1.2 ± 0.8			0.07 ±0.05
307.1 ±0.3	200 ± 14		95 ±12	11.4 ±0.8
318.3 ±0.3	43 ± 4		83 ±15	2.4 ±0.2
324.0 ±0.3	12.2 ± 1.6			0.68 ±0.08
340.2 ±0.3	42 ± 6		76 ±10	2.3 ±0.3
351.1 ±0.4	21.2 ± 2.4		74 ±10	1.14 ±0.12
361.5 ±0.4	102 ± 10			5.4 ±0.6
371.2 ±0.4	40 ± 4		69 ±17	2.08 ±0.21
392.5 ±0.4	4.8 ± 1.0			0.24 ±0.05
405.1 ±0.5	3.8 ± 1.2			0.19 ±0.06
420.1 ±0.2	112 ± 14			5.4 ±0.6
429.7 ±0.3	23.0 ± 3.4			1.1 ±0.2
438.9 ±0.3	180 ± 22		66 ±14	8.6 ±1.0
447.6 ±0.3	104 ± 12		58 ±15	5.0 ±0.6
460.3 ±0.3	15.8 ± 2.6			0.74 ±0.12
488.2 ±0.3	200 ± 28		89 ±15	8.6 ±1.0
497.2 ±0.3	6.0 ± 2.0			0.27 ±0.09
514.4 ±0.3	80 ± 10		100 ±22	3.9 ±0.4
528.4 ±0.3	46 ± 8			2.0 ±0.3
547.6 ±0.4	188 ± 18		78 ±15	8.0 ±0.8
550.1 ±0.4	104 ± 12			4.4 ±0.6
557.2 ±0.4	8.2 ± 2.0			0.34 ±0.08
565.6 ±0.9	3.0 ± 1.4			0.13 ±0.06
574.9 ±0.4	12.2 ± 3.0			0.50 ±0.12
588.8 ±1.0	10.0 ± 6.0			0.42 ±0.24
593.9 ±1.0	13.8 ± 5.2			0.56 ±0.22
605.5 ±0.4	170 ± 20			7.0 ±0.8
618.8 ±0.4	186 ± 26			7.4 ±1.0
621.3 ±0.4	12 ± 6			0.48 ±0.24
648.5 ±0.5	114 ± 16			4.4 ±0.6
653.9 ±0.5	18.4 ± 4.0			0.72 ±0.16
659.4 ±0.5	38 ± 6			1.48 ±0.24
682.7 ±0.5	8 ± 4			0.31 ±0.15
690.1 ±0.5	74 ± 10			2.8 ±0.4
701.7 ±0.5	96 ± 12			3.6 ±0.5
705.3 ±0.5	50 ± 8			1.9 ±0.3
710.9 ±1.3	2.0 ± 1.2			0.076±0.046
721.7 ±0.5	11 ± 4			0.40 ±0.14
728.9 ±0.5	250 ± 30			9.2 ±1.2

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
766.4 ±0.6	140 ± 16			5.0 ±0.6
771.4 ±0.6	24 ± 6			0.86 ±0.22
774.0 ±0.6	74 ± 12			2.7 ±0.4
782.3 ±0.6	92 ± 12			3.3 ±0.4
789.8 ±1.6	10 ± 4			0.36 ±0.14
796.3 ±0.6	29.6 ± 5.0			1.0 ±0.2
811.9 ±0.6	9.8 ± 4.0			0.34 ±0.14
815.1 ±0.6	28 ± 8			0.98 ±0.28
846.6 ±0.3	126 ± 14			4.4 ±0.6
851.0 ±0.3	220 ± 30			7.6 ±1.0
864.9 ±0.4	246 ± 26			8.4 ±0.8
883.1 ±0.4	14.8 ± 3.6			0.50 ±0.12
891.4 ±0.4	33 ± 5			1.1 ±0.2
895.8 ±0.4	88 ± 14			2.9 ±0.5
925.8 ±0.4	480 ± 80			15.8 ±2.6
932.0 ±0.4	17.4 ± 5.0			0.56 ±0.16
937.1 ±0.4	76 ± 12			2.5 ±0.4
941.3 ±0.4	114 ± 18			3.7 ±0.6
958.5 ±0.4	146 ± 16			4.8 ±0.6
968.5 ±0.4	134 ± 16			4.4 ±0.6
973.9 ±0.4	62 ± 10			1.98 ±0.32
985.8 ±0.4	15.4 ± 6.0			0.50 ±0.20
993.3 ±0.4	110 ± 32			3.5 ±1.0
998.0 ±0.4	440 ± 80			14.0 ±2.6
1008.8 ±0.4	280 ± 44			8.8 ±1.4
1017.5 ±0.5	136 ± 24			4.2 ±0.8
1022.4 ±0.5	90 ± 18			2.82 ±0.57
1027.4 ±0.5	15.0 ± 6.0			0.48 ±0.18
1044.2 ±0.5	42 ± 10			1.3 ±0.3
1061.0 ±0.5	17.6 ± 4.4			0.54 ±0.14
1069.1 ±0.5	260 ± 40			8.0 ±1.2
1086.5 ±0.5	54 ± 10			1.64 ±0.30
1107.4 ±0.5	94 ± 14			2.8 ±0.4
1118.1 ±0.5	98 ± 14			2.94 ±0.42
1137.0 ±0.5	54 ± 14			1.6 ±0.4
1140.9 ±0.5	172 ± 28			5.0 ±0.8
1153.1 ±0.5	19.4 ± 10.0			0.58 ±0.30
1162.3 ±0.6	160 ± 26			4.6 ±0.8
1169.6 ±0.6	236 ± 36			7.0 ±1.0
1185.3 ±0.6	440 ± 60			12.8 ±1.8
1195.5 ±0.6	310 ± 60			9.0 ±1.8
1199.4 ±0.6	248 ± 54			7.2 ±1.6
1205.1 ±0.6	216 ± 54			6.2 ±1.6
1209.7 ±0.6	120 ± 70			3.4 ±2.0
1217.2 ±0.6	40 ± 20			1.14 ±0.58
1235.4 ±0.6	230 ± 46			6.6 ±1.4
1241.1 ±0.6	204 ± 40			5.8 ±1.2
1258.6 ±0.6	60 ± 24			1.7 ±0.7
1263.5 ±0.6	300 ± 60			8.4 ±1.6
1274.9 ±0.6	44 ± 22			1.2 ±0.6
1309.7 ±0.6	62 ± 20			1.72 ±0.6
1313.6 ±0.7	17.2 ± 9.0			0.48 ±0.24

$^{173}_{70}Yb$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1354.2 ±0.7	166 ± 26			4.6 ±0.8
1368.2 ±0.7	270 ± 44			7.2 ±1.2
1374.9 ±0.7	126 ± 30			3.4 ±0.6
1381.2 ±0.7	180 ± 36			4.8 ±1.0
1406.1 ±0.7	70 ± 16			1.86 ±0.42
1422.8 ±0.7	34 ± 18			0.9 ±0.48
1436.9 ±0.8	140 ± 42			3.7 ±1.1
1440.6 ±0.8	38 ± 20			1.0 ±0.5
1443.6 ±0.8	56 ± 30			1.5 ±0.8
1448.1 ±0.8	58 ± 30			1.5 ±0.8
1454.1 ±0.8	254 ± 50			6.6 ±1.4
1464.8 ±0.8	34 ± 20			0.88 ±0.52
1471.7 ±0.8	232 ± 48			6.0 ±1.2
1480.3 ±0.8	234 ± 48			6.0 ±1.2
1498.3 ±0.8	420 ± 80			10.8 ±2.0
1518.3 ±0.8	460 ± 80			11.8 ±2.0
1537.9 ±0.8	48 ± 24			1.2 ±0.6
1549.6 ±0.9	64 ± 32			1.6 ±0.8
1566.4 ±0.9	260 ± 60			6.6 ±1.6
1569.8 ±0.9	280 ± 60			7.0 ±1.6
1582.6 ±0.9	76 ± 24			1.9 ±0.6
1593.6 ±0.9	100 ± 32			2.5 ±0.8
1617.6 ±0.9	740 ±120			18.4 ±3.0
1631.0 ±0.9	102 ± 32			2.5 ±0.8
1641.0 ±0.9	52 ± 26			1.3 ±0.6
1679.6 ±0.5	72 ± 28			1.8 ±0.7
1684.3 ±0.5	88 ± 30			2.1 ±0.7
1698.5 ±0.5	38 ± 14			0.92 ±0.34
1704.7 ±0.5	190 ± 40			4.6 ±1.0
1711.5 ±0.5	26 ± 14			0.62 ±0.34
1720.7 ±0.5	64 ± 22			1.5 ±0.5
1730.9 ±0.5	420 ± 80			10 ±2
1739.6 ±0.5	194 ± 60			4.6 ±1.4
1748.8 ±0.5	38 ± 18			0.90 ±0.44
1755.8 ±0.5	20 ± 12			0.48 ±0.28
1760.8 ±0.5	36 ± 18			0.86 ±0.42
1775.8 ±0.5	244 ± 48			5.8 ±1.2
1782.7 ±0.5	326 ± 65			7.8 ±1.6
1789.9 ±0.5	86 ± 32			2.0 ±0.8
1796.8 ±0.5	84 ± 22			2.0 ±0.5

THERMAL CROSS SECTIONS

σ_γ = 65±5 b
σ_γ = 46±4 b (67 ms ^{175}Yb*)
σ_γ = 19±6 b (4.2 day ^{175}Yb^g)
σ_a < 0.02 mb

RESONANCE PROPERTIES

I_γ = 33±4 b
R' = 7.5±0.5 fm
<D> = 162±18 eV
S_0 = 1.6±0.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ ΣAbn = 31.8 S_n = 5822.6±0.5 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
-25.0		65	160
342.7± 0.4	480 ± 20	90 ±20	25.9 ± 1.1
585.4± 0.4	122 ± 12	76 ±20	5.0 ± 0.5
880.2± 0.4	480 ± 90		16.2 ± 3.0
1002.7± 0.4	250 ± 25		7.9 ± 0.8
1179.8± 0.6	42 ± 7		1.22± 0.20
1301.3± 0.7	540 ± 80		26 ± 2
1634.6± 0.9	13 ± 8		0.32± 0.20
1668.6± 1.0	7600 ±1000		186 ±24
1738.8± 0.5	800 ± 140		19.2 ± 3.4
1959.6± 0.6	2400 ± 200		54 ± 5
2073.1± 0.7	66 ± 12		1.45± 0.26
2259.9± 0.8	1100 ± 140		23 ± 3
2477.0± 0.9	770 ± 100		15.5 ± 2.0
2571.2± 0.9	54 ± 9		1.06± 0.18
2620.4± 0.9	3400 ± 400		66 ± 8
2682.3± 1.0	40 ± 8		0.77± 0.15
3058.1± 1.2	720 ± 100		13 ± 2
3080.1± 1.2	880 ± 130		15.9 ± 2.3
3287.7± 1.3	4000 ± 500		70 ± 9
3540.3± 1.5	1350 ± 150		23 ± 3
3840.7± 1.6	670 ± 110		11 ± 2
4036.9± 1.8	910 ± 110		14.3 ± 1.7
4146.3± 1.9	600 ± 100		9.3 ± 1.6
4482.6± 2.1	2200 ± 300		33 ± 4
4868.3± 2.3	4100 ± 500		59 ± 7
5149.6± 2.5	220 ± 50		3.1 ± 0.7
5218.9± 2.6	5900 ± 900		82 ±12
5369.1± 2.7	320 ± 70		4.4 ± 1.0
5653.2± 2.9	8000 ±1000		106 ±13
5752.0± 3.0	1100 ± 200		14.5 ± 2.6
5954.2± 3.2	1400 ± 200		18.1 ± 2.6
6333.0± 3.5	330 ± 70		4.1 ± 0.9
6503.6± 3.6	190 ± 70		2.4 ± 0.9
6718.8± 3.8	1340 ± 220		16.3 ± 2.7

$^{174}_{70}Yb$

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
7080.0± 4.1	2900 ± 400		34 ± 5
7519.4± 4.5	1060 ± 250		12.2 ± 2.9
7726.6± 4.7	8800 ±1000		100 ±11
7851.3± 4.8	500 ± 130		5.6 ± 1.5
8104.9± 5.0	830 ± 200		9.2 ± 2.2
8689.0± 5.6	5200 ± 800		56 ± 9
8840.6± 5.7	9200 ±1200		98 ±13
9389.0± 6.2	1170 ± 250		12.1 ± 2.6
9754.2± 6.6	5300 ± 700		54 ± 7
10017 ± 7	2300 ± 400		23 ± 4
10148 ± 7	950 ± 300		9.4 ± 3.0
10304 ± 7	11000 ±1500		105 ±15
10405 ± 7	1100 ± 300		10.8 ± 2.9
10566 ± 8	4300 ± 700		42 ± 7
10694 ± 8	4800 ± 800		46 ± 8
10878 ± 8	2600 ± 600		25 ± 6
11003 ± 8	7900 ±1600		75 ±15
11083 ± 8	3300 ± 800		31 ± 8
12025 ± 9	1400 ± 450		12.8 ± 4.1
12528 ±10	2500 ± 700		22 ± 6
12722 ±10	11000 ±2000		98 ±18
13196 ±11	8000 ±1600		70 ±14
13450 ±11	13800 ±2000		119 ±17
14406 ±12	14300 ±2000		119 ±17
14525 ±12	3600 ± 800		30 ± 7
14953 ±13	4900 ±1000		40 ± 8
15143 ±13	1500 ± 300		12.2 ± 2.4
15258 ±13	4100 ± 900		33 ± 7
15707 ±14	18000 ±3000		144 ±24
15829 ±14	9300 ±1800		74 ±14
16147 ±14	9100 ±1800		72 ±14
16431 ±15	10500 ±2000		82 ±16
17223 ±16	3700 ±1500		28 ±11
17568 ±16	5700 ±1000		43 ± 8
17810 ±17	9200 ±2000		69 ±15
18090 ±17	4800 ±1400		36 ±10
18207 ±17	4400 ±1400		33 ±10
18291 ±17	13000 ±2500		96 ±18
18600 ±18	5500 ±2000		40 ±15
18916 ±18	9300 ±2500		68 ±18
19801 ±19	4700 ±1000		33 ± 7

THERMAL CROSS SECTIONS

σ_γ = 2.4±0.2 b

RESONANCE PROPERTIES

I_γ = 6±2 b
R' = 7.0±0.6 fm
<D> = 185±20 eV
S_0 = 2.1±0.3

RESONANCE PARAMETERS

$1^\pi = 0^+$ %Abn = 12.7 S_n = 5566.8±1.0 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
97.9± 0.1	0.54± 0.06	0.055± 0.006
148.5± 0.2	8.0 ± 0.8	0.66 ± 0.07
397.9± 0.4	200 ± 20	10 ± 1
488.3± 0.6	2500 ± 100	113 ± 5
726.0± 1.1	3600 ± 400	134 ±15
949.9± 0.8	10 ± 7	0.32 ± 0.23
992.8± 0.9	7.4 ± 5.0	0.23 ± 0.16
1182.0± 0.6	15 ± 11	0.44 ± 0.32
1392.5± 0.7	1700 ± 200	45.6 ± 5.4
1571.5± 1.7	5400 ± 600	136 ±15
1606.8± 0.9	470 ± 40	12 ± 1
1915.9± 1.2	29 ± 18	0.66 ± 0.41
2009.3± 0.6	1200 ± 150	26.8 ± 3.4
2180.1± 0.7	2700 ± 300	57.8 ± 6.4
2487.1± 0.9	310 ± 50	6.2 ± 1.0
2508.8± 0.9	43 ± 30	0.86 ± 0.6
2722.4± 1.0	450 ± 70	8.6 ± 1.3
2929.1± 1.1	9000 ±1000	166 ±18
3234.3± 1.3	1760 ± 190	31 ± 3
3360.7± 2.7	48 ± 32	0.83 ± 0.55
3660.0± 1.5	1200 ± 140	20 ± 2
3781.1± 1.6	115 ± 20	1.87 ± 0.33
3792.3± 1.6	460 ± 60	7.5 ± 1.0
4300.3± 2.0	2000 ± 220	30 ± 3
4351.0± 2.0	1200 ± 150	18.2 ± 2.3
4620.2± 2.2	740 ± 100	10.9 ± 1.5
5037.7± 2.5	2700 ± 300	38 ± 4
5382.6± 2.7	6900 ± 800	94 ±11
5481.3± 2.8	640 ± 130	8.6 ± 1.8
5716.3± 3.0	24000 ±3000	320 ±40
6001.7± 3.2	3100 ± 400	40 ± 5
6315.8± 3.5	6000 ± 800	75 ±10
6480.4± 3.6	620 ± 100	7.7 ± 1.2
6722.6± 3.8	4300 ± 500	52 ± 6
6955.3± 4.0	6700 ± 800	80 ±10
7331.1± 4.3	2900 ± 400	34 ± 5
7555.2± 4.5	920 ± 180	10.6 ± 2.1
7801.5± 4.7	1450 ± 300	16.4 ± 3.4

$^{176}_{70}Yb$

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
8200.6± 5.1	2400 ± 300	27 ± 3
8595.5± 5.5	8500 ±1000	92 ±11
8739.1± 5.5	3400 ± 400	36 ± 4
8984.6± 5.9	9000 ±1000	95 ±11
9217.0± 6.1	5800 ± 800	60 ± 8
9495.7± 6.4	27000 ±3000	280 ±30
9721.3± 6.6	7800 ±1000	79 ±10
9853.9± 6.7	8900 ±1200	90 ±12
10515 ± 7	1700 ± 500	16.6 ± 4.9
11629 ± 9	1600 ± 500	14.8 ± 4.6
11733 ± 9	9000 ±1400	83 ±13
12043 ± 9	1500 ± 800	13.7 ± 7.3
12089 ± 9	1100 ± 600	10.0 ± 5.5
12432 ±10	12000 ±1700	108 ±15
12761 ±10	19000 ±3000	168 ±27
13408 ±11	23000 ±4000	199 ±35
13601 ±11	18500 ±3000	159 ±26
13732 ±11	21000 ±3000	179 ±26
14051 ±12	8900 ±1400	75 ±12
14242 ±12	6200 ±1200	52 ±10
15067 ±13	4100 ±1000	33 ± 8
15169 ±13	12500 ±2000	101 ±16
16077 ±44	3800 ±1200	30 ± 9
17713 ±16	13500 ±2600	101 ±20
17794 ±16	13000 ±3000	97 ±22
18156 ±17	11500 ±2000	85 ±15
18783 ±18	3700 ±1200	27 ± 9
18988 ±18	8900 ±2200	65 ±16
19499 ±19	24000 ±4000	172 ±29
19649 ±19	21000 ±3500	150 ±25

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Yb^{168,174,176}$	activation	PRIVATE COMM.(72)	Alstad
$Yb^{170-173}$	mass spectrometry	JMS,6,435(71)	Dobrozemsky
Yb^{168}	activation,ratio	70HELSINKI,2,589(70)	Ricabarra
$Yb^{168,174}$	activation	JIN,32,2839(70)	Sims
Yb	σ_t	70HELSINKI,1,651(70)	Vertebnyi
$Yb^{170-174}$		PRIVATE COMM.(69)	Walker
$Yb^{170-174,176}$	σ_t	PR,174,1400(68)	Mughabghab
Yb^{168}	activation	PR,170,1108(68)	Shera
Yb^{168}	activation	KE,10,25(67)	Albert
Yb	σ_t	NP/A,95,683(67)	Zimmerman
$Yb^{168,170-172,174}$	σ_α	YF,1,252(65)	Andreev
Yb^{174}	activation	ADP,12,225(63)	Alexander
Yb	diffraction	JCP,35,1950(61)	Atoji
Yb	σ_t diffraction	PR,121,610(61)	Atoji
Yb^{168}	activation	BAP,6,506(61)+	Hudson
Yb	local osci.	PR,83,641(51)	Pomerance
$Yb^{168,174,176}$		AMA,32A,2(46)	Atterling
$Yb^{168,174,176}$	activation	ZN,1,179(46)	Bothe

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Yb^{168}	$\sigma_t\sigma_\gamma$(SI)	22-189	PR/C,7,823(73)+	Liou
Yb^{170}	$\sigma_t\sigma_\gamma$(SI)	8.1-1328	PR/C,7,823(73)+	Liou
Yb^{171}	$\sigma_t\sigma_\gamma$(SI)	7.9-1685	PR/C,7,823(73)+	Liou
Yb^{172}	$\sigma_t\sigma_\gamma$(SI)	139-10102	PR/C,7,823(73)+	Liou
Yb^{173}	$\sigma_t\sigma_\gamma$(SI)	4.5-1797	PR/C,7,823(73)+	Liou
Yb^{174}	$\sigma_t\sigma_\gamma$(SI)	342-19801	PR/C,7,823(73)+	Liou
Yb^{176}	$\sigma_t\sigma_\gamma$(SI)	97-19649	PR/C,7,823(73)+	Liou
Yb^{173}	σ_γ(spectra)	4.5-106	72BUD,214(72)	Mughabghab
Yb^{171}	σ_γ(spectra)	7.9-127	BAP,16,496(71)	Cole
Yb^{173}	σ_γ(spectra)	4.5-106	71KNOX,2,804(71)	Mughabghab
Yb^{168}	$\sigma_t\sigma_\gamma$(SI)	22-170	NYO-72-190(70)	Liou
Yb^{170}	$\sigma_t\sigma_\gamma$(SI)	40-358	NYO-72-190(70)	Liou
Yb^{171}	$\sigma_t\sigma_\gamma$(SI)	7.9-354	NYO-72-190(70)	Liou
Yb^{172}	$\sigma_t\sigma_\gamma$(SI)	139-2724	NYO-72-190(70)	Liou
Yb^{173}	$\sigma_t\sigma_\gamma$(SI)	17-371	NYO-72-190(70)	Liou
Yb^{174}	$\sigma_t\sigma_\gamma$(SI)	342-3290	NYO-72-190(70)	Liou
Yb^{176}	$\sigma_t\sigma_\gamma$(SI)	98-3237	NYO-72-190(70)	Liou
Yb^{168}	σ_t	22.6	PR,174,1400(68)	Mughabghab
Yb^{170}	σ_t	8.1-449	PR,174,1400(68)	Mughabghab
Yb^{171}	σ_t	7.9-225	PR,174,1400(68)	Mughabghab
Yb^{172}	σ_t	139-818	PR,174,1400(68)	Mughabghab
Yb^{173}	σ_t	4.5-210	PR,174,1400(68)	Mughabghab
Yb^{174}	σ_t	345-885	PR,174,1400(68)	Mughabghab
Yb^{176}	σ_t	149-2188	PR,174,1400(68)	Mughabghab
Yb^{171}	$\sigma_t\sigma_\gamma$	7.9-147	YF,3,48(66)	Wang
Yb^{172}	$\sigma_t\sigma_\gamma$	141	YF,3,48(66)	Wang
Yb^{173}	$\sigma_t\sigma_\gamma$	4.5-130	YF,3,48(66)	Wang
Yb^{171}	σ_γ	13.5-134	ANL-6589(62)+	Carpenter
Yb^{173}	σ_γ	8.1-205	ANL-6589(62)+	Carpenter
Yb^{168}	σ_t	0.597	PR,100,1414(55)	Landon
Yb^{168}	σ_t	0.597	PR,96,1014(54)	Sailor

$_{71}$Lu

THERMAL CROSS SECTIONS

σ_γ = 77±3 b
σ_s = 8±2 b
σ_t = 84.7±0.5 b
a_{coh} = 7.3±0.2 fm

RESONANCE PROPERTIES

I_γ = 900±50 b
S_0 = 1.9±0.7

$^{175}_{71}$Lu

THERMAL CROSS SECTIONS

σ_γ = 23.4±2.0 b
σ_γ = 16.4±0.9 b [^{176}Lu^m]
σ_γ = 7±1 b [^{176}Lu^g]
σ_a < 0.06 mb

RESONANCE PROPERTIES

I_γ = 890±50 b
S_0 = 1.9±0.7

RESONANCE PARAMETERS

I^π = 7/2$^+$ %Abn = 97.4 S_n = 6293.2±1.2 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
2.583±0.006	0.209±0.003	4	69.9± 1.2	0.130±0.002
4.75 ±0.03	0.34 ±0.05	4		0.16 ±0.01
5.25 ±0.02	1.5 ±0.3	3		0.66 ±0.13
11.20 ±0.04	3.1 ±0.3	3	40 ±20	0.92 ±0.09
13.83 ±0.06	20 ±2	3		5.3 ±0.5
15.35 ±0.07	1.8 ±0.4	4		0.46 ±0.10
20.50 ±0.10	2.3 ±0.3	3	160 ±50	0.50 ±0.07
23.43 ±0.15	6.5 ±1.5	3		1.3 ±0.3
27.92 ±0.15	1.6 ±0.3	4		0.33 ±0.06
30.08 ±0.15	12 ±3			2.2 ±0.5
31.04 ±0.15	2.0 ±0.5			0.36 ±0.09
36.52 ±0.15	6.8 ±0.8	3	90 ±30	1.12 ±0.13
40.55 ±0.15	29 ±6	3	80 ±30	4.5 ±0.9
49.50 ±0.15	8 ±2			1.1 ±0.3
50.27 ±0.15	6 ±2			0.8 ±0.3
57.04 ±0.15	3.4 ±0.7			0.45 ±0.09
61.22 ±0.10				
69.53 ±0.10				
69.98 ±0.10				
73.65 ±0.15				
81.09 ±0.15				
85.50 ±0.15				

$^{175}_{71}Lu$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
88.52 ±0.20				
99.81 ±0.20				
100.80 ±0.20				
103.05 ±0.25				
107.55 ±0.25				
112.87 ±0.25				
115.00 ±0.25				
118.73 ±0.30				
127.40 ±0.30				
129.63 ±0.30				
137.76 ±0.35				
143.04 ±0.40				
146.28 ±0.40				
148.83 ±0.40				
151.04 ±0.40				
155.62 ±0.45				
158.64 ±0.45				
163.80 ±0.45				
169.15 ±0.25				
171.34 ±0.25				
175.46 ±0.25				
180.67 ±0.25				
185.41 ±0.30				
192.96 ±0.30				
196.38 ±0.30				
202.87 ±0.30				
204.62 ±0.30				
217.02 ±0.35				
223.28 ±0.35				
227.92 ±0.40				
229.25 ±0.40				
235.85 ±0.40				
243.16 ±0.40				
251.24 ±0.45				
255.66 ±0.50				
261.35 ±0.50				
273.82 ±0.50				
277.58 ±0.50				
282.19 ±0.50				
288.80 ±0.55				
291.50 ±0.55				
294.80 ±0.55				
304.75 ±0.60				
307.68 ±0.60				
313.68 ±0.60				
318.29 ±0.60				
322.69 ±0.60				
324.61 ±0.65				
330.12 ±0.65				
335.34 ±0.65				
338.15 ±0.70				
340.89 ±0.70				

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
343.66 ±0.70				
347.89 ±0.70				
355.84 ±0.70				
358.80 ±0.75				
364.45 ±0.75				
367.13 ±0.75				
379.37 ±0.80				
383.04 ±0.80				
385.11 ±0.80				
393.52 ±0.85				
398.26 ±0.85				
405.82 ±0.90				
413.02 ±0.90				
418.71 ±0.50				
422.25 ±0.50				
428.02 ±0.50				
434.14 ±0.50				
438.89 ±0.50				
443.97 ±0.55				
454.66 ±0.55				
467.12 ±0.55				
468.78 ±0.55				
473.54 ±0.55				
477.52 ±0.55				
484.45 ±0.60				
487.68 ±0.60				
494.23 ±0.60				
499.69 ±0.60				
504.62 ±0.60				
511.84 ±0.65				
515.03 ±0.65				
520.19 ±0.65				
528.07 ±0.65				
536.82 ±0.70				
539.90 ±0.70				
548.94 ±0.70				
551.41 ±0.70				
563.67 ±0.75				
566.24 ±0.75				
570.70 ±0.75				
577.86 ±0.75				
587.88 ±0.80				
592.59 ±0.80				
596.56 ±0.80				
601.38 ±0.80				
605.43 ±0.30				
614.51 ±0.85				
621.24 ±0.85				
627.22 ±0.85				
633.28 ±0.85				
638.55 ±0.90				
643.29 ±0.90				

$^{175}_{71}Lu$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
654.30 ±0.90				
657.52 ±0.95				
666.85 ±0.95				
671.12 ±0.95				
676.87 ±0.95				
682.20 ±1.0				
685.13 ±1.0				
692.57 ±1.0				
696.58 ±1.0				
699.10 ±1.0				
705.22 ±1.0				
718.21 ±1.0				
723.51 ±1.0				
725.65 ±1.1				
739.77 ±1.1				
750.35 ±1.1				
753.74 ±1.1				
761.16 ±1.1				
767.53 ±1.2				
774.56 ±1.2				
777.52 ±1.2				
783.49 ±1.2				
791.36 ±1.2				
796.26 ±1.2				
803.07 ±1.2				
820.97 ±0.65				
824.84 ±0.65				
829.40 ±0.65				
832.36 ±0.65				
836.65 ±0.65				
839.64 ±0.65				
843.65 ±0.65				
855.86 ±0.70				
862.06 ±0.70				
866.24 ±0.70				
874.67 ±0.70				
878.23 ±0.70				
883.96 ±0.70				
888.65 ±0.70				
893.75 ±0.75				
897.79 ±0.75				
905.20 ±0.75				
909.69 ±0.75				
913.46 ±0.75				
922.22 ±0.80				
928.77 ±0.80				
930.71 ±0.80				
940.11 ±0.80				
943.68 ±0.80				
954.08 ±0.80				
959.75 ±0.80				
965.07 ±0.80				

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
968.36 ±0.80				
974.58 ±0.85				
984.23 ±0.85				
989.48 ±0.85				
1004.84 ±0.85				
1008.78 ±0.90				
1012.30 ±0.90				
1022.97 ±0.90				
1027.46 ±0.90				
1034.71 ±0.90				
1042.96 ±0.90				
1048.99 ±0.95				
1050.38 ±0.95				
1055.06 ±0.95				
1058.82 ±0.95				
1063.08 ±0.95				
1066.41 ±0.95				
1079.40 ±0.95				
1084.8 ±1.0				
1091.2 ±1.0				
1103.1 ±1.0				
1109.6 ±1.0				
1113.2 ±1.0				
1122.4 ±1.0				
1131.7 ±1.0				
1138.5 ±1.0				
1143.8 ±1.0				
1147.0 ±1.0				
1152.9 ±1.0				
1165.3 ±1.0				
1175.2 ±1.0				
1180.1 ±1.0				
1186.3 ±1.0				
1201.5 ±1.0				

$^{176}_{71}Lu$

THERMAL CROSS SECTIONS

σ_γ = 2100±50 b
σ_γ = 7±2 b [161 day $^{177}Lu^{m2}$]
σ_γ = 315±60 b [0.160 ms $^{177}Lu^{m1}$]
σ_γ = 1778±75 b [$^{177}Lu^{g}$]
σ_a < 2 mb

RESONANCE PROPERTIES

I_γ = 1160±70 b
S_0 = 1.7±0.5

RESONANCE PARAMETERS

$I^\pi = 7^-$ %Abn = 2.6 S_n = 7072.1±1.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.1413±0.0003	.0865±0.0004	13/2	58.7±0.2	0.230±0.001
1.568 ±0.004	0.517 ±0.005		59.9±1.1	0.413±0.004
4.37 ±0.03	0.48 ±0.04			0.23 ±0.02
6.16 ±0.04	1.54 ±0.14			0.62 ±0.06
9.8 ±0.1	1.49 ±0.13			0.48 ±0.04
10.8 ±0.2	1.5 ±0.4			0.46 ±0.12
11.5 ±0.2	0.6 ±0.4			0.18 ±0.12
19.1 ±0.3	0.12 ±0.05			0.027±0.011
19.9 ±0.3	0.30 ±0.10			0.067±0.022
22.0 ±0.2	1.7 ±0.2			0.36 ±0.09
24.7 ±0.3	4.6 ±0.4			0.93 ±0.08
27.3 ±0.2	11 ±3			2.1 ±0.6
29.8 ±0.5	12 ±3			2.2 ±0.6
32.0 ±0.5	7 ±2			1.2 ±0.4
33.6 ±0.5	3.7 ±1.3			0.64 ±0.22
37.0 ±0.5	7.9 ±1.0			1.30 ±0.16
38.9 ±0.6	0.8 ±0.5			0.13 ±0.08
42.4 ±0.6	16 ±3			2.5 ±0.5
45.2 ±0.6	3 ±2			0.5 ±0.3
46.7 ±0.6	5.8 ±1.2			0.85 ±0.18

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Lu	σ_t	AKE,16,49(70)	Knorr
Lu	σ_t	70HELSINKI,1,651(70)	Vertebnyi
Lu,$Lu^{175,176}$	σ_t	BNL-50276,89(70)	Young
Lu^{175}	activation	PRIVATE COMM.(69)	Fabry
Lu^{175}	isom. ratio	PRIVATE COMM.(68)	Fabry
Lu^{175}	activation	68WASH,2,1263(68)-	Fabry
Lu^{176}	activation	KE,10,25(67)	Albert
Lu^{176}	activation	JIN,29,865(67)	Nethaway
Lu	σ_t	NP/A,95,683(67)	Zimmerman
Lu	σ_t	66PARIS,1,61(66)	Brunner
Lu	σ_a	YF,1,252(65)	Andreev
Lu^{176}	activation	NP,70,415(65)	Heiser
Lu^{176}	activation	ZFK-RN-23(64)	Alexander
Lu	pile osci.	NUK,6,245(64)	Sokolovski
Lu^{176}	activation	PL,1,321(62)	Jorgensen
Lu	σ_t diffraction	PR,121,610(61)	Atoji
Lu	diffraction	JCP,35,1950(61)	Atoji
$Lu^{175,176}$	σ_t	JNE,13,35(60)	Baston
Lu^{176}	σ_t	NSE,7,502(60)	Roberge
Lu	pile osci.	PR,83,641(51)	Pomerance
$Lu^{175,176}$	activation	ZN,1,179(49)	Bothe
Lu	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Lu^{176}	σ_t	0.14	PRIVATE COMM.(72)	Herdade
Lu^{175}	σ_γ(spectra)	2.6-40.6	PR/C,2,675(70)	Wasson
Lu^{175}	σ_t	2.5-1202	BAP,14,496(69)+	Wynchank
Lu	σ_t	0.14-2.6	EIR-123(67)	Brunner
Lu	σ_t	0.01-0.3	NP/A,95,683(67)	Zimmerman
Lu	σ_t	0.14-2.6	66PARIS,1,61(66)	Brunner
Lu^{176}	σ_t	0.14	JNE,13,35(60)	Baston
Lu^{176}	σ_t	0.14	NSE,7,502(60)	Roberge
Lu^{175}	σ_t	2.6-57.4	ORNL-2718,28(59)	Block
Lu^{176}	σ_t	1.5-46.7	ORNL-2718,28(59)	Block
Lu^{175}	σ_t	4.4-132	PR,99,10(55)	Harvey
Lu^{176}	σ_t	0.14	PR,100,1414(55)	Landon
Lu	σ_t	0.14-20.6	PR,96,1014(54)	Sailor
Lu	σ_t	0.14-31	PR,92,656(53)	Foote

$_{72}$Hf

THERMAL CROSS SECTIONS

σ_γ = 102±2 b
$\bar{\sigma}_s$ = 8±2 b
σ_t = 110±2 b
a_{coh} = 7.77±0.14 fm

RESONANCE PROPERTIES

I_γ = 2000±100 b
S_0 = 1.8±0.7

$^{174}_{72}$Hf

THERMAL CROSS SECTIONS

σ_γ = 390±55 b

RESONANCE PROPERTIES

I_γ^c = 465±50 b
<D> = 16±3 eV
S_0 = 2.8±1.0

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.17 S_n = 6708.8±0.5 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
13.38±0.08	4.8± 0.9	1.3±0.3
30.0 ±0.2	40 ± 8	7.3±1.5
70.5 ±0.3	12 ± 5	1.4±0.6
77.9 ±0.3	65 ± 6	7.4±0.7
107.1 ±0.6	122 ±25	11.8±2.4
124.6 ±0.7	50 ±20	4.5±1.8
147.6 ±1.0	120 ±40	9.9±3.3
153.5 ±1.0	85 ±20	6.9±1.6
211 ±2	180 ±60	12.4±4.1

THERMAL CROSS SECTIONS

σ_γ = 38±6 b

RESONANCE PROPERTIES

*I_γ = 700±50 b
<D> = 32±7 eV
S_0 = 1.4±0.6

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 5.2 S_n = 6380.8±3.9 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)	E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
48.3±0.1	125 ± 12	18.0 ±1.7	435.6±1.5	167 ± 30	8.00±1.44
53.3±0.2	1.9± 0.5	0.26±0.07	444.8±1.6	173 ± 35	8.20±1.70
67.1±0.2	15 ± 5	1.8 ±0.6	577.1±2.0	335 ± 75	13.9 ±3.1
123.9±0.5	42 ± 7	4.2 ±0.7	627.5±3.0	640 ±100	25.6 ±4.0
177.1±0.9	47 ± 13	3.5 ±1.0	657.5±3.0	270 ± 35	10.5 ±1.4
201.6±1.0	39 ± 6	2.7 ±0.4	870 ±4	280 ± 90	9.5 ±3.1
243.2±0.6	22 ± 5	1.4 ±0.3	921 ±5	145 ± 60	4.8 ±2.6
255.0±0.7	95 ± 11	6.0 ±0.7	956 ±5	300 ±120	9.7 ±3.9
286.0±0.8	285 ± 30	16.9 ±1.8	994 ±5	270 ±125	8.6 ±4.0
304.5±0.9	21 ± 8	1.2 ±0.5	1068 ±6	250 ±130	7.7 ±4.0
347.2±1.1	173 ± 23	9.28±1.23			

* There is a large discrepancy between measured and calculated absorption resonance integrals of Hf-176. It is possible that low energy resonances are not yet identified.

$^{177}_{72}Hf$

THERMAL CROSS SECTIONS

σ_γ = 365±20 b
σ_γ = 1.1±0.1 b [4.3 sec $^{178}Hf^m$]
σ_t = 372±23 b

RESONANCE PROPERTIES

I_γ = 7260±200 b
<D> = 2.4±0.3 eV
S_0 = 1.7±0.2

RESONANCE PARAMETERS

I^π = 7/2⁻ %Abn = 18.5 S_n = 7265±1 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1.098±0.02	1.92± 0.03	3	66 ± 1	1.83 ±0.03
2.380±0.004	8.8 ± 0.3	4	61 ± 1	5.7 ±0.2
5.89 ±0.02	5.1 ± 0.3	3		2.1 ±0.1
6.60 ±0.02	11.0 ± 2.2	4		4.3 ±0.9
8.88 ±0.02	6.8 ± 0.7	4		2.3 ±0.2
10.95 ±0.03	0.47± 0.04	3		0.14 ±0.01
13.67 ±0.03	0.82± 0.07	4		0.22 ±0.02
13.96 ±0.03	3.60± 0.35	3	84 ±16	0.96 ±0.09
21.97 ±0.03	2.25± 0.12	4		0.48 ±0.03
22.26 ±0.03	.73± .10	3		0.16 ±0.02
23.44 ±0.04	1.61± 0.09	4		0.33 ±0.02
25.64 ±0.04	0.46± .04	3		0.091±0.008
27.01 ±0.05	2.50± .20	3		0.48 ±0.04
31.58 ±0.05	.30± .04	3		0.053±0.007
32.82 ±0.05	1.55± 0.12	4		0.27 ±0.02
36.08 ±0.05	3.12± .19	3		0.52 ±0.03
36.95 ±0.05	10.63± 0.30	4	56 ± 8	1.75 ±0.05
43.05 ±0.05	5.67± 0.30	4		0.86 ±0.05
45.13 ±0.05	3.75± 0.19	4		0.56 ±0.03
46.22 ±0.05	7.83± 0.18	4	78 ±21	1.15 ±0.03
48.80 ±0.06	28.70± 1.78	3	82 ± 5	4.11 ±0.26
49.58 ±0.06	6.10± 0.41	4		0.87 ±0.06
54.77 ±0.06	17.78± 0.95	4	69 ±13	2.40 ±0.13
55.34 ±0.06	12.16± .47	3	70 ±14	1.62 ±0.06
57.02 ±0.06	4.50± 0.39	4		0.60 ±0.05
59.27 ±0.07	3.78± .22	3		0.49 ±0.03
62.18 ±0.07	1.24± .16	3		0.157±0.020
63.45 ±0.07	73.5 ± 2.5	4	55 ± 2	9.22 ±0.31
66.75 ±0.07	41 ± 3	3		5.02 ±0.61
70.02 ±0.07	0.50± 0.08	4		0.060±0.010
71.36 ±0.07	16.31± 0.63	4	54 ± 7	1.93 ±0.08
72.26 ±0.07	1.16± .22	3		0.14 ±0.03
75.60 ±0.07	1.93± .22	3		0.22 ±0.03
76.03 ±0.08	18.30± 0.99	4		2.10 ±0.11
82.37 ±0.08	0.56± 0.09	4		0.62 ±0.01
84.67 ±0.08	27.15± 1.53	4		2.95 ±0.17
86.78 ±0.08	1.04± 0.14	4		0.11 ±0.02

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
88.54 ±0.09	4.03± .28	3		0.43 ±0.03
93.17 ±0.09	3.88± 0.24	3		0.402±0.025
97.09 ±0.09	21.60± 1.70	4	59 ±14	2.19 ±0.17
99.03 ±0.09	0.97± 0.16	4		0.097±0.016
103.08 ±0.09	47.43± 2.91	3	63 ± 4	4.67 ±0.29
111.3 ±0.1	2.17± .14	3		0.206±0.013
111.9 ±0.1	4.43± 0.26	4		0.419±0.025
115.1 ±0.1	4.12± .28	3		0.385±0.026
114.5 ±0.1	0.23± .5	3		0.027±0.005
121.3 ±0.1	4.31± .34	3		0.384±0.026
122.6 ±0.1	0.54± .06	3		0.049±0.005
123.7 ±0.1	8.35± .49	3		0.751±0.044
126.1 ±0.1	0.69± 0.15	4		0.061±0.013
131.4 ±0.2	53.72± 4.38	3	67 ± 6	4.69 ±0.38
134.1 ±0.2	4.10± 0.26	4		0.354±0.022
136.2 ±0.2	0.62± .11	3		0.053±0.009
137.6 ±0.3	12.74± .70	4		1.086±0.010
141.2 ±0.2	26.9 ± 3.7	4	47 ±13	2.26 ±0.31
143.2 ±0.2	4.35± .39	3		0.364±0.033
143.8 ±0.3	11.31± .82	4		0.943±0.068
145.6 ±0.2	6.15± 0.40	3		0.510±0.033
148.6 ±0.2	18.68± 1.02	3		1.532±0.084
151.0 ±0.2	0.52± 0.16	4		0.042±0.013
152.9 ±0.2	2.13± 0.11	4		0.172±0.009
156.1 ±0.2	2.79± 0.24	3		0.223±0.019
160.1 ±0.2	3.83± 0.29	4		0.303±0.023
163.1 ±0.2	39.29± 5.76	3	58 ±11	3.076±0.451
167.4 ±0.2	7.25± 0.45	3		0.560±0.035
171.1 ±0.2	10.91± 0.76	3		0.834±0.058
174.4 ±0.2	13.23± 0.80	4		1.002±0.061
176.2 ±0.2	51 ± 20	3		3.84 ±1.51
176.9 ±0.2	130 ± 30	4		9.77 ±2.26
181.1 ±0.2	5.43± 0.50	4		0.403±0.037
184.7 ±0.2	1.53± 0.39	4		0.113±0.029
192.8 ±0.2	7.56± 0.59	4		0.545±0.042
194.2 ±0.2	7.37± .68	3		0.529±0.049
199.2 ±0.2	23.24± 1.50	4		1.650±0.106
201.9 ±0.2	16.11± 1.47	3		1.134±0.103
208.7 ±0.2	52 ± 8	4	49 ±13	3.60 ±0.55
210.1 ±0.2	3.96± 5.52	3		0.273±0.036
212.2 ±0.2	1.89± 0.53	3		0.130±0.036
217.2 ±0.2	6.90± 0.66	4		0.468±0.045
219.7 ±0.2	9.99± 0.89	3		0.674±0.060
222.4 ±0.2	3.30± 0.52	3		0.221±0.035
223.4 ±0.2	7.09± 0.62	4		0.474±0.042
224.8 ±0.2	153 ± 18	3		10.2 ±1.2
226.8 ±0.2	11.42± 1.02	4		0.758±0.068
229.2 ±0.2	6.48± 0.60	3		0.428±0.040
232.7 ±0.2	0.46± 0.46	4		0.030±0.030
236.3 ±0.2	10.32± 1.02	3		0.671±0.066
238.8 ±0.2	30 ± 9	3		1.94 ±0.58
240.9 ±0.2	20.18± 1.43	4		1.300±0.092

$^{177}_{72}Hf$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
249.0 ±0.2	25.00± 1.88	3		1.584±0.119
259.7 ±0.2	2.06± 0.55	4		0.128±0.034
264.7 ±0.3	81 ± 15	3	80 ±23	4.98 ±0.92
267.8 ±0.3	38 ± 12	4		2.32 ±0.73
272.3 ±0.3	70 ± 15	4		4.24 ±0.90
273.3 ±0.3	18.78± 3.06	3		1.136±0.185
284.9 ±0.3	150 ± 25	3	87 ±14	8.89 ±1.48
288.1 ±0.3	10.25± 1.01	4		0.604±0.060
294.5 ±0.3	4.17± 0.70	3		0.243±0.041
298.7 ±0.3	9.26± 1.21	3		0.536±0.070
307.2 ±0.4	107 ± 21			6.1 ±1.2
320.3 ±0.4	24 ± 12			1.3 ±0.7
323.8 ±0.4	80 ± 25			4.5 ±1.4
327.6 ±0.4	90 ± 25			5.0 ±1.4
333.7 ±0.4	13 ± 9			0.71 ±0.49
342.5 ±0.5	40 ± 14			2.2 ±0.8
384.9 ±0.5	70 ± 18			3.6 ±0.9
357.7 ±0.5	40 ± 14			2.1 ±0.7
368.0 ±0.5	60 ± 18			3.1 ±0.9
376.3 ±0.5	360 ± 50			18.6 ±2.6
406.8 ±0.6	50 ± 20			2.5 ±1.0
426.3 ±0.6	100 ± 30			4.8 ±1.5
415.2 ±0.6	95 ± 30			4.7 ±1.5
426.3 ±0.6	100 ± 30			4.8 ±1.5
433.7 ±0.6	100 ± 35			4.8 ±1.7
444.3 ±0.6	37 ± 19			1.8 ±0.9
447.0	60 ± 20			2.8 ±0.9
457.9	146 ± 45			6.8 ±2.1
471.5	66 ± 25			3.0 ±1.2
475.5	95 ± 35			4.4 ±1.6
489.2	130 ± 45			5.9 ±2.0
500	80 ± 40			3.6 ±1.8
508	55 ± 29			2.4 ±1.3
513	50 ± 30			2.2 ±1.3
526	110 ± 40			4.8 ±1.7
549	96 ± 40			4.1 ±1.7
578	120 ± 50			5.0 ±2.1
613	100 ± 50			4.0 ±2.0
629	114 ± 55			4.6 ±2.2
647	100 ± 50			3.9 ±2.0
686	100 ± 55			3.8 ±2.1
714	120 ± 75			4.5 ±2.8
809	350 ±130			12.3 ±4.6
895	330 ±160			11.0 ±5.3

THERMAL CROSS SECTIONS

σ_γ = 86±7 b
σ_γ = 53±6 b [18.6 sec $^{179}Hf^m$]
σ_γ = 33±8 b [$^{179}Hf^g$]
σ_t = 91±6 b

RESONANCE PROPERTIES

I_γ = 1950±100 b
<D> = 60±20 eV
S_0 = 1.7±0.7

RESONANCE PARAMETERS

$I^\pi = 0^+$ %fbn = 27.2 S_n = 6099.5±1.3 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
7.78±0.02	50 ± 3	17.9 ±1.1
104.5 ±0.4	7 ± 2	0.7 ±0.2
164.7 ±0.7	15 ± 3	1.2 ±0.2
255.5 ±1.4	280 ± 35	17.5 ±2.2
275.7	260 ± 35	15.7 ±2.1
353.1 ±2.5	8 ± 3	0.43±0.16
383.5 ±2.8	430 ± 30	2.2 ±1.5
447.7 ±3.3	180 ± 50	8.5 ±2.4
504.3 ±3.7	70 ± 28	3.1 ±1.3
528.7 ±3.9	168 ± 35	7.3 ±1.5
580.1 ±4.4	445 ± 60	18.5 ±2.5
723 ±5	1180 ±120	43.9 ±4.5
785 ±5	1000 ±140	35.7 ±5.0
866 ±5	130 ± 45	4.4 ±1.5
889 ±5	15 ± 12	0.50±0.40
1096 ±6	640 ±150	
1163 ±6	1400 ±350	19.3 ±4.5

$^{179}_{72}$Hf

THERMAL CROSS SECTIONS

σ_γ = 45±5 b
σ_γ = 0.34±0.03 b [5.5 hr ^{180}Hf^m]
σ_t = 51±6 b

RESONANCE PROPERTIES

I_γ = 600±60 b
<D> = 4.4±0.2 eV
S_0 = 1.6±0.2

RESONANCE PARAMETERS

I^π = 9/2$^+$ %Abn = 13.8 S_n = 7387.6±0.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	$2g\Gamma_n^0$ (meV)
5.68±0.03	4.2 ± 0.4	5	1.8 ±0.5
17.65±0.04	2.0 ± 0.2	4	0.48 ±0.05
19.13±0.04	0.12± 0.04	5	0.028±0.001
23.7 ±0.1	6.8 ± 1.5	5	1.4 ±0.3
26.50±0.05	1.2 ± 0.2	4	0.23 ±0.04
27.35±0.05	0.43± 0.14	5	0.082±0.027
31.14±0.05	6.6 ± 0.4	4	1.2 ±0.1
36.50±0.05	25 ± 5	5	4.1 ±0.8
40.12±0.05	25 ± 1	5	3.9 ±0.2
42.29±0.06	13 ± 2	4	2.0 ±0.3
50.77±0.06	1.6 ± 0.6	4	0.22 ±0.08
51.11±0.07		5	
54.79±0.07	4.7 ± 1.0	4	0.64 ±0.14
69.03±0.07	9 ± 1	4	1.1 ±0.1
73.53±0.07	8 ± 2	4	0.9 ±0.2
76.63±0.08	3.1 ± 0.5	5	0.35 ±0.06
82.94±0.08	5.4 ± 1.2	5	0.59 ±0.13
85.42±0.09	7.0 ± 1.5	4	0.76 ±0.16
92.07±0.09	46 ± 6	4	4.8 ±0.6
92.67±0.09		5	
101.2 ±0.1	110 ± 10	5	10.9 ±1.0
103.7 ±0.1	10 ± 3	5	0.98 ±0.29
107.8 ±0.1	11 ± 3	4	1.1 ±0.3
117.2 ±0.5	37 ± 6		3.4 ±0.6
120.1 ±0.1	~2.2	4	~0.20
121.9 ±0.1		4	
122.6 ±0.2	26 ± 6	5	2.2 ±0.5
129.9 ±0.2	10 ± 3	4	0.9 ±0.3
137.2 ±0.2	50 ± 10	5	4.3 ±0.9
138.1 ±0.2		4	
144.2 ±0.2	28 ± 6	5	2.3 ±0.5
147.0 ±0.2	11 ± 5	4	0.91 ±0.41
152.3 ±0.2		4	
156.3 ±0.2	44 ± 6	5	3.5 ±0.5
158.6 ±0.2		4	
165.7 ±0.3	22 ± 9	5	1.7 ±0.8
174.9 ±0.3	130 ± 25		10 ±2

E_0 (eV)	$2g\Gamma_n$ (meV)	J	$2g\Gamma_n^0$ (meV)
177.9 ±0.3	25 ± 10		1.9 ±0.8
182.6 ±0.3	48 ± 17	4	3.6 ±1.3
188.5 ±0.3	32 ± 12	5	2.3 ±0.9
189.8 ±0.3		4	
192.9	5 ± 3	4	0.4 ±0.2
197.9 ±0.3	20 ± 10	5	1.4 ±0.7
202.6 ±0.4	90 ± 13	5	6.3 ±0.9
204.1 ±0.4	134 ± 18	4	9.4 ±1.3
213.1 ±0.4	62 ± 8		4.3 ±0.6
224.0 ±0.5		4	
224.5 ±0.5	230 ± 30		15 ±2
227.7 ±0.5	67 ± 12		4.4 ±0.8
241.6 ±0.5	67 ± 12	4	4.3 ±0.8
242.9 ±0.5		5	
245.3 ±0.5	46 ± 9	4	2.9 ±0.6
251.8		4	
254.2 ±0.6	61 ± 12		3.8 ±0.8
263.9 ±0.6	9 ± 5	4	0.55 ±0.31
270.0 ±0.6		[5]	
273.5 ±0.6		5	
276.3 ±0.6	50 ± 15	5	3.0 ±0.9
284.7 ±0.6		4	
288.7 ±0.6		4	
292.4 ±0.6		5	
300.6 ±0.6	35 ± 13	4	2.0 ±0.8
306.3 ±0.6		4	
313.6 ±0.6		5	
322.5 ±0.6	8 ± 4	4	0.45 ±0.22
327.0 ±0.6	34 ± 12	5	1.9 ±0.7
332.9 ±0.6		4	
338.2 ±0.6	60 ± 10	5	3.3 ±0.5
346.1 ±0.6	65 ± 20	5	3.5 ±1.1
356.1 ±0.6		4	
360.7 ±0.6		5	
364.4 ±0.7	70 ± 21	5	3.7 ±1.1
372.1 ±0.7		5	
375.2 ±0.7		4	
381.7 ±0.7	345 ± 70	4	17.7 ±3.6
385.6 ±0.7			
389.0 ±0.7		4	
390.6 ±0.7	100 ± 30	5	5.06 ±1.52
395.3 ±0.7			
401.1 ±0.7		5	
403.8 ±0.7			
408.8 ±0.7			
411.4 ±0.8		4	
413.6 ±0.8	26 ± 12		1.3 ±0.6
423.5 ±0.8		5	
428.9 ±0.8		5	
431.9 ±0.8	185 ± 50	4	8.9 ±2.4
462.8 ±1.7	210 ± 55		9.8 ±2.6
489.6 ±0.8	75 ± 33		3.4 ±1.5

$^{179}_{72}$Hf

E_0 (eV)		$2g\Gamma_n$ (meV)		J	$2g\Gamma_n^0$ (meV)	
514		~30			~1.3	
532		140	± 50		6.1	±2.2
546		260	± 65		11.1	±2.8
571		130	± 50		5.4	±2.1
583		290	± 90		12.0	±3.7
587		110	± 50		4.5	±2.1
630		185	± 65		7.4	±2.6
652		210	± 70		8.2	±2.7
658		240	± 85		9.4	±3.3
689		270	± 95		10.3	±3.6
733		80	± 50		3.0	±1.9
751	±3	80	± 50		2.9	±1.8
848		125	±100		4.3	±3.4
893		150	± 85		5.0	±2.8
900	±4	100	± 75		3.3	±2.5
971		630	±225		20.2	±7.2
1010		220	±140		6.9	±4.4

$^{180}_{72}$Hf

THERMAL CROSS SECTIONS

σ_γ = 12.6±0.7 b

RESONANCE PROPERTIES

I_γ = 43±8 b
<D> = 100±40 eV
S_0 = 0.7±0.5

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 35.1 S_n = 5694.5±1.5 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
72.6±0.3	54 ± 4	6.3 ±0.5
171.7±0.3	116 ± 15	8.9 ±1.1
447.0±1.6	210 ± 30	9.9 ±1.4
477.0±1.7	130 ± 30	5.6 ±1.4
587.0±2.0	78 ± 24	3.2 ±1.0
792 ±4	1900 ±200	67.5 ±7.1
914 ±5	65 ± 25	2.15± .83

$^{181}_{72}$Hf

[42.4 day]

THERMAL CROSS SECTIONS

σ_γ = 40±30 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Hf^{176-180}$	σ_t	BAP,14,496(69)	Conrad
Hf^{180}	activation	CJP,47,2031(69)	Ricabarra
Hf^{179}	mass spectrometry	RCA,8,188(67)	Boudin
$Hf^{177,178}$	activation,ratio	EN,14,228(67)	Foglio
$Hf^{179,180}$	activation	PR,158,1105(67)	Goldhaber
Hf	pile osci.	66PARIS,1,479(66)	Carre
Hf	diffraction	ACR,17,1087(64)	Atoji
$Hf^{176-180}$	reactivity	PRIVATE COMM.(64)	Scoville
$Hf^{177,178}$	activation	NP,32,482(62)	Alexander
Hf^{174}	activation	BAP,6,70(61)	Esch
Hf	σ_t	NSE,11,29B(61)	Joki
Hf	pulsed n	NSE,9,132(61)	Meadows
Hf	σ_t	BAP,6,70(61)	Moore
Hf	σ_t	PRIVATE COMM.(61)	Schermer
Hf^{180}	mass spectrometry	PR,123,1354(61)	Wing
Hf	pile osci.	JNE,12,32(60)	Tattersall
Hf^{179}	activation	NP,6,561(58)	Gvozdev
Hf	diffraction	ACR,9,607(56)	Sidhu
$Hf^{177-179}$	pile osci.	PR,92,1527(53)	Bollinger
Hf	σ_t	PR,87,487(52)	Bernstein
$Hf^{174,176-180}$	local osci.	PR,88,412(52)	Pomerance
Hf	σ_t	NAT,167,895(51)	Egelstaff
$Hf^{174,176-180}$	local osci.	PR,83,641(51)	Pomerance
Hf	pile osci.	PPS/A,63,1175(50)	Colmer
Hf	pile osci.	PR,80,342(50)	Harris
Hf^{180}	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Hf^{177}	$\sigma_\gamma\sigma_\gamma$(SI)	10-300	72BWD,52(72)	Rohr
Hf^{177}	γ cascade	1.1-300	71ALBANY,447(71)	Coceva
Hf^{179}	γ cascade	5.6-431	71ALBANY,447(71)	Coceva
Hf^{177}	γ cascade	1.1-208	NP/A,117,586(68)	Coceva
Hf^{174}	σ_t	4.3-211	PRIVATE COMM.(66)	Harvey
Hf^{176}	σ_t	48.3-1068	PRIVATE COMM.(66)	Harvey
Hf^{177}	σ_t	1.1-1019	PRIVATE COMM.(66)	Harvey
Hf^{178}	σ_t	7.8-1163	PRIVATE COMM.(66)	Harvey
Hf^{179}	σ_t	5.7-1050	PRIVATE COMM.(66)	Harvey
Hf^{180}	σ_t	72.5-914	PRIVATE COMM.(66)	Harvey
Hf^{179}	σ_γ(spectra)	thermal	PR,146,844(66)	Namenson
Hf^{177}	$\bar{\sigma}_s$	1.1-2.4	NP,62,641(65)	Ceulemans
Hf^{177}		1.1-22.4	64PARIS,2,673(64)	Bollinger
Hf^{174}	σ_t	4.2-211	ORNL-3778,38(64)	Fuketa
Hf^{176}	σ_t	48.3-201	ORNL-3778,38(64)	Fuketa
Hf^{177}	σ_t	1.1-176.5	ORNL-3778,38(64)	Fuketa
Hf^{178}	σ_t	7.8-165	ORNL-3778,38(64)	Fuketa
Hf^{179}	σ_t	5.7-187	ORNL-3778,38(64)	Fuketa
Hf^{180}	σ_t	72.5-172	ORNL-3778,38(64)	Fuketa
Hf^{176}	σ_γ	67.1-659	BAP,8,80(63)	Russell
Hf^{177}	σ_γ	54.6-500	BAP,8,80(63)	Russell
Hf^{178}	σ_γ	104.6-864	BAP,8,80(63)	Russell
Hf^{179}	σ_γ	54.6-489.6	BAP,8,80(63)	Russell
Hf^{180}	σ_γ	72.6-911	BAP,8,80(63)	Russell
Hf^{177}	σ_γ		ANL-6589(62)+	Carpenter
Hf^{177}	σ_t	1-2.4	NSE,11,298(61)	Joki
Hf^{177}	σ_γ	1.1-2.4	NP,10,386(59)	Fenstermacher
Hf^{177}	σ_t	1.1-2.4	PR,101,726(56)	Igo
Hf^{177}	σ_t	2.3-6.6	PR,101,1328(56)	Levin
Hf^{174}	σ_t	30.5	PR,99,10(55)	Harvey
Hf^{177}	σ_t	5.9-105	PR,99,10(55)	Harvey
Hf^{178}	σ_t	7.8	PR,99,10(55)	Harvey
Hf^{179}	σ_t	5.7-110	PR,99,10(55)	Harvey
Hf^{180}	σ_t	73.9	PR,99,10(55)	Harvey
Hf^{177}	σ_t	1.1-13.6	PR,92,1527(53)	Bollinger
Hf^{178}	σ_t	7.6	PR,92,1527(53)	Bollinger
Hf^{179}	σ_t	5.6	PR,92,1527(53)	Bollinger
Hf^{177}	σ_t	1.1-2.2	NAT,167,896(51)	Egelstaff

$^{180}_{73}Ta$

THERMAL CROSS SECTIONS

σ_γ = 700±200 b

RESONANCE PROPERTIES

I_γ = 600±200 b

RESONANCE PARAMETERS

$I^\pi = 8^+$ %Abn = 0.012 S_n = 7644±22 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.433±0.004	0.12±0.02	30 ±5	0.18±0.03

$^{181}_{73}Ta$

THERMAL CROSS SECTIONS

σ_γ = 10.3±2.5 mb [16 min $^{182}Ta^m$]
σ_γ = 21.0±0.7 b [115 day $^{182}Ta^g$]
$\bar{\sigma}_s$ = 6.2±0.6 b
σ_t = 27.2±0.8 b
a_{coh} = 6.91±0.07 fm

RESONANCE PROPERTIES

I_γ = 710±20 b
<D> = 4.4±0.3 eV
S_0 = 1.8±0.2

RESONANCE PARAMETERS

$I^\pi = 7/2^+$ %Abn = 99.988 S_n = 6063.0±0.5 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
4.28±0.01	57 ± 4	4.4 ± 0.2	4	53 ± 4	2.13 ±0.11
10.34±0.05	60 ± 7	4.08± 0.18	3	55 ± 6	1.31 ±0.05
13.95±0.05	53 ± 4	1.14± 0.03	4	52 ± 4	0.31 ±0.01
20.3 ±0.1	61 ± 5	1.15± 0.04	3	60 ± 5	0.26 ±0.01
22.7 ±0.1	52 ±10	0.22± 0.03	[3]	52 ±10	0.046±0.006
23.9 ±0.1	60 ± 6	6.5 ± 0.2	4	53 ± 6	1.33 ±0.04
30.00±0.05	55 ±15	0.22± 0.04	3	55 ±15	0.04 ±0.007
35.16±0.05	76 ± 6	9.3 ± 0.4	3	65 ± 6	1.56 ±0.08
35.90±0.05	80 ± 8	16.9 ± 1.1	4	65 ± 7	2.8 ±2.3
39.13±0.06	100 ± 7	44.8 ± 0.9	4	60 ± 7	7.16 ±0.16
49.15±0.08	54 ± 4	1.05± 0.10	3	53 ± 6	0.150±0.014
55.8 ±0.3		0.02± 0.01			0.003±0.002
57.54±0.08		0.26± 0.03			0.034±0.004
59.05±0.08		0.12± 0.03			0.016±0.004
63.12±0.08	70 ± 7	5.8 ± 0.6	4	64 ± 7	0.73 ±0.08
76.85±0.08	60 ±15	12 ± 1	4	48 ±15	1.4 ±0.1

$^{181}_{73}$Ta

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
77.64±0.10	60 ±15	5.6 ± 0.8	4	54 ±15	0.63 ±0.10
78.95±0.10		1.7 ± 0.2	3		0.19 ±0.03
82.94±0.05	66 ± 8	14 ± 1	4	52 ± 8	1.5 ±0.1
85.10±0.05	62 ±12	4.1 ± 0.4	[3]	58 ±12	0.44 ±0.04
85.75±0.05		0.2 ± 0.1			0.02 ±0.01
89.60±0.05	58 ±18	3.3 ± 0.2		55 ±18	0.35 ±0.02
91.44±0.05		2.3 ± 0.2			0.24 ±0.02
97.00±0.06		3.2 ± 0.4			0.32 ±0.04
99.32±0.06	165 ± 9	115 ± 5	3	50 ±10	11.5 ±0.5
103.52±0.06		1.1 ± 0.2			0.11 ±0.02
105.54±0.07	80 ±10	30 ± 3	3	50 ±10	2.9 ±0.3
115.08±0.07	98 ±10	41 ± 4	4	57 ±10	3.8 ±0.4
118.32±0.08		2.4 ± 0.4			0.23 ±0.04
126.46±0.08	98 ±10	44 ± 4	3	54 ±10	3.9 ±0.4
136.48±0.09	69 ±10	22 ± 1	[4]	47 ±10	1.9 ±0.1
138.33±0.09	79 ±20	13 ± 1	[4]	66 ±20	1.1 ±0.1
144.21±0.09		1.8 ± 0.2	3		0.15 ±0.02
148.31±0.09		4.6 ± 0.5			0.38 ±0.04
149.7 ±0.1		5.5 ± 0.4			0.45 ±0.04
159.8 ±0.1		0.30± 0.15			0.02 ±0.01
166.4 ±0.1		8.5 ± 0.8	4		0.66 ±0.06
175.0 ±0.1		100 ± 13	[4]		7.6 ±1.0
176.0 ±0.1		66 ± 13			5.0 ±1.0
178.6 ±0.1		1.0 ± 0.3			0.08 ±0.02
182.8 ±0.1		0.95± 0.05			0.070±0.004
185.5 ±0.1		0.60± 0.09			0.044±0.007
189.3 ±0.1		0.70± 0.14			0.05 ±0.01
194.8 ±0.1		112 ± 30	4		8 ±2
200.0 ±0.2	102 ±12	40 ± 5	3	62 ±10	2.8 ±0.4
204.7 ±0.2		2.6 ± 0.3			0.18 ±0.02
208.4 ±0.2		11 ± 1			0.75 ±0.06
215.0 ±0.2		48 ± 7		65 ±16	3.3 ±0.5
216.6 ±0.2		18 ± 2			1.2 ±0.1
219.7 ±0.2		16.7 ± 1.5			1.13 ±0.10
222.3 ±0.2		2.2 ± 0.5		52 ±13	0.15 ±0.03
225.3 ±0.2		22.5 ± 1.5			1.5 ±0.1
230.5 ±0.2		18 ± 3			1.2 ±0.2
232.3 ±0.2		65 ± 16			4.3 ±1.1
237.3 ±0.2		1.4 ± 0.3			0.09 ±0.02
242.7 ±0.2		9.7 ± 1.2			0.62 ±0.08
247.2 ±0.2		6.3 ± 0.6			0.40 ±0.04
248.4 ±0.2		1.4 ± 0.4			0.089±0.031
253.0 ±0.2		0.30± 0.06			0.019±0.004
259.1 ±0.2		11.0 ± 1.7			0.685±0.100
263.3 ±0.2		45.4 ± 9.7			2.80 ±0.60
264.7 ±0.2		10.4 ± 1.3			0.64 ±0.08
271.8 ±0.2		9.9 ± 1.7			0.60 ±0.10
273.9 ±0.2		66.2 ± 6.6			4.00 ±0.40
277.2 ±0.3		33.3 ± 6.7			2.00 ±0.40
280.3 ±0.3		18.4 ± 1.7			1.10 ±0.10
287.7 ±0.3		18.7 ± 1.7			1.10 ±0.10
290.4 ±0.3		13.6 ± 3.4			0.80 ±0.20

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
291.1 ±0.3		9.6 ± 1.7			0.56 ±0.10
304.0 ±0.3		3.8 ± 0.4			0.22 ±0.02
306.2 ±0.3		21.0 ± 1.8			1.20 ±0.10
311.7 ±0.3		17.7 ± 1.8			1.00 ±0.10
313.2 ±0.3		110 ± 21			6.20 ±1.20
322.8 ±0.3		7.2 ± 0.7			0.40 ±0.04
327.6 ±0.3		1.8 ± 1.8			0.10 ±0.10
329.4 ±0.2		65.3 ± 7.3			3.60 ±0.40
341.6 ±0.2		4.8 ± 0.4			0.26 ±0.02
344.5 ±0.2		20.4 ± 1.9			1.10 ±0.10
346.8 ±0.2		14.9 ± 1.9			0.80 ±0.10
349.2 ±0.2		24.3 ± 1.9			1.30 ±0.10
354.3 ±0.2		32.0 ± 3.0			1.70 ±0.16
357.3 ±0.2		3.8 ± 0.4			0.20 ±0.02
370.2 ±0.2		37.7 ± 3.8			1.96 ±0.20
378.6 ±0.2		15.6 ± 3.9			0.80 ±0.20
379.8 ±0.2		3.9 ± 0.2			0.20 ±0.01
382.1 ±0.2		0.35± 0.12			0.018±0.006
388.9 ±0.2		35.6 ± 2.0			1.30 ±0.10
396.5 ±0.2		12.0 ± 8.0			0.60 ±0.40
397.5 ±0.2		35.9 ± 8.0			1.80 ±0.40
403.7 ±0.3		0.20± 0.12			0.010±0.006
409.9 ±0.3		81.0 ± 8.1			4.00 ±0.40
415.7 ±0.3		65.2 ± 16.3			3.20 ±0.80
417.1 ±0.3		65.4 ± 16.3			3.20 ±0.80
419.6 ±0.3		2.1 ± 2.1			0.10 ±0.10
421.8 ±0.3		2.9 ± 0.4			0.14 ±0.02
428.9 ±0.3		6.6 ± 0.8			0.32 ±0.04
434.2 ±0.3		24.2 ± 2.1			1.16 ±0.10
439.2 ±0.3		62.9 ± 8.4			3.00 ±0.40
443.8 ±0.3		71.6 ± 8.4			3.40 ±0.40
446.1 ±0.3		63.4 ± 8.5			3.00 ±0.40
449.7 ±0.3		12.7 ± 1.3			0.60 ±0.06
461.4 ±0.3		39.5 ± 4.3			1.84 ±0.20
465.2 ±0.3		4.3 ± 0.9			0.20 ±0.04
467.7 ±0.4		86.5 ± 8.7			4.00 ±0.40
471.5 ±0.4		39.1 ± 3.5			1.80 ±0.16
473.6 ±0.4		1.7 ± 0.9			0.08 ±0.04
477.3 ±0.4		0.9 ± 0.4			0.04 ±0.02
482.2 ±0.4		15.4 ± 1.3			0.70 ±0.06
483.6 ±0.4		13.2 ± 1.3			0.60 ±0.06
490.2 ±0.4		36.3 ± 3.5			1.64 ±0.16
493.8 ±0.4		13.3 ± 1.3			0.60 ±0.06
495.3 ±0.4		6.0 ± 1.3			0.27 ±0.06
497.5 ±0.4		0.45± 0.45			0.02 ±0.02
500.0 ±0.4		2.2 ± 0.9			0.10 ±0.04
502.0 ±0.4		33.8 ± 9.0			2.40 ±0.40
519.4 ±0.4		15.0 ± 1.4			0.66 ±0.06
522.8 ±0.4		91.5 ± 18.3			4.00 ±0.80
524.3 ±0.4		4.6 ± 2.3			0.20 ±0.10
527.1 ±0.4		91.8 ± 13.8			4.00 ±0.60
533.9 ±0.4		78.6 ± 13.9			3.40 ±0.60

$^{181}_{73}Ta$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
536.3 ±0.4		13.9 ± 1.4			0.60 ±0.06
542.5 ±0.4		41.9 ± 4.7			1.80 ±0.20
548.9 ±0.4		2.3 ± 2.3			0.10 ±0.10
554.3 ±0.4		1.4 ± 0.5			0.06 ±0.02
557.0 ±0.4		44.8 ± 4.7			1.90 ±0.20
561.3 ±0.4		1.2 ± 0.2			0.05 ±0.01
567.2 ±0.4		2.4 ± 0.5			0.10 ±0.02
569.5 ±0.4		52.5 ± 4.8			2.20 ±0.20
576.3 ±0.4		4.3 ± 0.5			0.18 ±0.02
581.5 ±0.4		0.24± 0.24			0.01 ±0.01
589.0 ±0.4		0.39± 0.24			0.016±0.010
591.6 ±0.4		48.6 ± 4.9			2.00 ±0.20
596.6 ±0.4		293.0 ± 97.7			12.00 ±4.00
600.5 ±0.4		1.2 ± 0.7			0.05 ±0.03
606.0 ±0.4		7.4 ± 2.5			0.30 ±0.10
608.8 ±0.4		44 ± 15			1.8 ±0.6
617.4 ±0.4		79.5 ± 14.9			3.20 ±0.60
624.1 ±0.2		37.5 ± 2.5			1.50 ±0.10
626.4 ±0.2		110 ± 10			4.40 ±0.40
636.0 ±0.2		5.0 ± 0.5			0.20 ±0.02
644.7 ±0.2		6.1 ± 1.0			0.24 ±0.04
647.4 ±0.2		76.3 ± 10.1			3.00 ±0.40
651.1 ±0.2		86.8 ± 10.2			3.40 ±0.40
658.1 ±0.2		8.2 ± 1.0			0.32 ±0.04
666.5 ±0.3		5.7 ± 2.1			0.22 ±0.08
668.4 ±0.3		3.1 ± 1.0			0.12 ±0.04
675.1 ±0.3		1.6 ± 0.5			0.06 ±0.02
677.9 ±0.3		7.8 ± 1.0			0.30 ±0.04
680.7 ±0.3		52.2 ± 7.8			2.0 ±0.3
695.9 ±0.3		52.8 ± 5.3			2.0 ±0.2
699.8 ±0.3		0.79± 0.26			0.03 ±0.01
702.5 ±0.3		21.2 ± 2.1			0.80 ±0.08
706.5 ±0.3		31.9 ± 21.3			1.20 ±0.80
710.3 ±0.3		8.0 ± 2.7			0.30 ±0.10
716.0 ±0.3		112 ± 21			4.0 ±0.80
719.7 ±0.3		0.54± 0.54			0.02 ±0.02
729.2 ±0.3		15.1 ± 4.3			0.56 ±0.16
731.9 ±0.3		162 ± 27			6.0 ±1.0
735.5 ±0.3		35 ± 27			1.3 ±0.1
739.4 ±0.3		120 ± 22			4.4 ±0.8
747.2 ±0.3		60 ± 5			2.2 ±0.2
757.3 ±0.3		66 ± 6			2.4 ±0.2
760.3 ±0.3		22 ± 6			0.8 ±0.2
769.2 ±0.3		6 ± 1			0.20 ±0.04
776.8 ±0.3		70 ± 14			2.50 ±0.50
782.7 ±0.3		1.2 ± 0.3			0.044±0.010
789.1 ±0.3		51 ± 6			1.8 ±0.2
797.6 ±0.3		40 ± 6			1.4 ±0.2
805.2 ±0.4		1.9 ± 0.9			0.07 ±0.03
808.2 ±0.4		54 ± 9			1.90 ±0.30
813.1 ±0.4		131 ± 23			4.6 ±0.8
820.8 ±0.4		143 ± 23			5.0 ±0.8

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
825.5 ±0.4		29 ± 6			1.0 ±0.2
829.2 ±0.4		0.58± 0.58			0.02 ±0.02
833.3 ±0.4		40 ± 12			1.4 ±0.4
846.3 ±0.4		41 ± 6			1.4 ±0.2
852.5 ±0.4		53 ± 6			1.8 ±0.2
862.7 ±0.4		0.59± 0.59			0.02 ±0.02
870.0 ±0.4		21 ± 3			0.70 ±0.10
873.9 ±0.4		53 ± 6			1.8 ±0.2
878.9 ±0.4		56 ± 3			1.9 ±0.1
880.7 ±0.4		15 ± 9			0.5 ±0.3
888.3 ±0.4		8.9 ± 3.0			0.30 ±0.10
894.6 ±0.4		66 ± 12			2.2 ±0.4
896.9 ±0.4		42 ± 12			1.4 ±0.4
908.4 ±0.4		72 ± 12			2.4 ±0.4
912.8 ±0.4		60 ± 18			2.0 ±0.6
915.3 ±0.4		48 ± 12			1.6 ±0.4
919.2 ±0.4		49 ± 6			1.6 ±0.2
925.6 ±0.4		43 ± 6			1.4 ±0.2
929.8 ±0.4		152 ± 30			5.0 ±1.0
931.8 ±0.4		122 ± 31			4.0 ±1.0
936.4 ±0.4		6.1 ± 1.2			0.20 ±0.04
942.8 ±0.4		184 ± 31			6.0 ±1.0
945.3 ±0.4		277 ± 62			9.0 ±2.0
947.5 ±0.4		246 ± 62			8.0 ±2.0
952.4 ±0.4		37 ± 6			1.2 ±0.2
956.0 ±0.4		3.7 ± 0.6			0.12 ±0.02
966.0 ±0.4		75 ± 31			2.4 ±1.0
968.2 ±0.4		40 ± 6			1.3 ±0.2
973.6 ±0.4		75 ± 13			2.4 ±0.4
982.9 ±0.4		69 ± 13			2.2 ±0.4
988.3 ±0.4		3.8 ± 1.3			0.12 ±0.04
993.4 ±0.4		28 ± 9			0.9 ±0.3
996.0 ±0.4		82 ± 19			2.6 ±0.6
1001.6±0.5		63 ± 6			2.0 ±0.2
1006.2±0.5		14 ± 1			0.44 ±0.04
1015.6±0.5		38 ± 6			1.2 ±0.2
1018.6±0.5		51 ± 6			1.6 ±0.2
1025.5±0.5		9.6 ± 1.9			0.30 ±0.06
1031.0±0.5		6.4 ± 1.9			0.20 ±0.08
1035.4±0.5		386 ± 64			12.0 ±2.0
1043.0±0.5		161 ± 32			5.0 ±1.0
1052.1±0.5		0.65± 0.65			0.02 ±0.02
1055.8±0.5		39 ± 6			1.2 ±0.2
1063.3±0.5		55 ± 7			1.7 ±0.2
1071.2±0.5		260 ± 65			8.0 ±2.0
1080.2±0.5		164 ± 33			5.0 ±1.0
1081.9±0.5		66 ± 33			2.0 ±1.0
1090.4±0.5		165 ± 33			5.0 ±1.0
1093.4±0.5		26 ± 7			0.8 ±0.2
1096.8±0.5		132 ± 33			4.0 ±1.0
1103.3±0.5		10 ± 3			0.3 ±0.1
1106.1±0.5					

$^{181}_{73}Ta$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1112.9±0.5		47 ± 3			1.4 ±0.1
1119.1±0.5		8 ± 2			0.24 ±0.06
1130.9±0.5		201 ± 34			6.0 ±0.1
1138.5±0.5		13 ± 3			0.4 ±0.1
1145.1±0.5		68 ± 14			2.0 ±0.4
1151.0±0.5		170 ± 34			5.0 ±1.0
1156.9±0.5		51 ± 10			1.5 ±0.3
1165.0±0.5		102 ± 20			3.0 ±0.6
1169.9±0.5		0.68± 0.68			0.02 ±0.02
1174.8±0.5		254 ± 55			7.4 ±1.6
1177.9±0.5		412 ± 69			12.0 ±2.0
1191.6±0.5		690 ±138			20.0 ±4.0
1203.5±0.6		21 ± 7			0.6 ±0.2
1208.1±0.6		24 ± 10			0.7 ±0.3
1211.8±0.6		17 ± 7			0.5 ±0.2
1216.0±0.6					
1218.5±0.6		35 ± 7			1.0 ±0.2
1226.6±0.6		119 ± 28			3.4 ±0.8
1233.0±0.6		7 ± 1.4			0.20 ±0.04
1239.7±0.6		25 ± 5			0.70 ±0.14
1246.6±0.6		247 ± 49			7.0 ±1.4
1251.1±0.6					
1259.0±0.6		213 ± 43			6.0 ±1.2
1263.0±0.6		50 ± 14			1.4 ±0.4
1268.0±0.6		7 ± 4			0.2 ±0.1
1275.7±0.6		114 ± 21			3.2 ±0.6
1280.0±0.6		4 ± 1			0.10 ±0.04
1283.2±0.6		29 ± 7			0.8 ±0.2
1286.7±0.6		14 ± 4			0.4 ±0.1
1293.0±0.6		144 ± 36			4.0 ±1.0
1299.7±0.6		187 ± 43			5.2 ±1.2
1307.0±0.7		14 ± 4			0.4 ±0.1
1312.1±0.7		109 ± 29			3.0 ±0.8
1316.9±0.7		87 ± 22			2.4 ±0.6
1323.5±0.7		15 ± 4			0.4 ±0.1
1328.4±0.7		255 ± 58			7.0 ±1.6
1332.0±0.7		255 ± 58			7.0 ±1.6
1335.0±0.7		183 ± 37			5.0 ±1.0
1342.8±0.7		7 ± 4			0.2 ±0.1
1348.7±0.7					
1352.0±0.7		11 ± 4			0.30 ±0.10
1356.0±0.7					
1361.0±0.7		369 ± 74			10.0 ±2.0
1363.0±0.7		148 ± 37			4.0 ±1.0
1371.8±0.7		37 ± 7			1.0 ±0.2
1376.7±0.7		134 ± 37			3.6 ±1.0
1388.0±0.7		60 ± 15			1.6 ±0.4
1391.5±0.7		112 ± 22			3.0 ±0.6
1397.9±0.7		224 ± 75			6.0 ±2.0

$^{182}_{73}Ta$

[115 day]

THERMAL CROSS SECTIONS

σ_γ = 8200±600 b

RESONANCE PROPERTIES

I_γ^c = 1000±100 b
S_0 = 1.0±0.5

RESONANCE PARAMETERS

$I^\pi = 3^-$ S_n = 6928±11 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
0.147±0.002	0.35±0.02	67 ±2	0.94±0.06
1.82 ±0.01	1.16±0.08	67 ±2	0.86±0.06
5.98 ±0.01	0.47±0.05	67 ±3	0.19±0.02
12.93 ±0.03	0.58±0.11		0.16±0.03
21.5 ±0.1	1.62±0.23		0.35±0.05
26.7 ±0.2	3.36±0.26		0.65±0.05
29.4 ±0.2	1.52±0.16		0.28±0.03
32.97 ±0.2	11.48±0.98		2.00±0.17
34.7 ±0.3			
49.5 ±0.3			
53.3 ±0.4			
58.3 ±0.4			
61.3 ±0.3			
69.3 ±0.4			
72.8 ±0.4			
75.8 ±0.4			
82.0 ±0.4			
88.0 ±0.5			

Isotope	Measurement	Reference	Author
Ta	Christiansen filters	ZN/A,26,391(71)	Koester
Ta	σ_γ moxon rae	NIM,86,83(70)	Malik
Ta^{182}	σ_t	NSE,33,16(68)	Stokes
Ta	σ_t	JNE,21,425(67)	Adib
Ta^{181}	activation	NYO-10175(64)	Arino
Ta^{181}	activation	PR,121,1158(61)	Sunyar
Ta^{181}	activation	NSE,8,378(60)	Lyon
Ta^{181}	activation	60VIENNA,63(60)	Maier-Leibnitz
Ta	σ_t	NSE,7,193(60)	Schmunk
Ta	pile osci.	JNE,12,32(60)	Tattersall
Ta^{182}	activation	PR,97,1023(55)	Der Mateosian
Ta^{182}	activation	PR,97,1007(55)	Murray
Ta^{182}	activation	IDO-16238(55)	Smith
Ta	local osci.	PR,83,641(51)	Pomerance
Ta	pile osci.	PPS/A,63,1175(50)	Colmer
Ta	pile osci.	PR,80,342(50)	Harris
Ta^{181}	activation	PR,72,888(47)	Seren
Ta	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Ta	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Ta^{181}	$\sigma_t \sigma_\gamma$(SI)	4.2-1398	BAP,18,96(73)	Hacken
Ta^{181}	σ_t	4.2-1398	PRIVATE COMM.(73)	Liou
Ta^{181}	σ_γ(spectra)	4.3-200	NP/A,198,430(72)	Riehs
Ta^{181}	σ_γ(spectra)	4.3-35	NP/A,132,161(69)	Wasson
Ta^{182}	σ_t	0.147-88	NSE,33,16(68)	Stokes
Ta^{181}	polarization	4.3-10.3	PR,155,1330(67)	Stolovy
Ta^{181}	σ_t	30-1398	PRIVATE COMM.(66)	Garg
Ta^{181}	σ_t	4.3-200	61DUBNA,57(61)	Doil'nitsyn
Ta^{181}	σ_γ(SI)	76.9-330	PR,120,2214(60)	Desjardins
Ta^{180}	σ_t	0.43-5.96	ORNL-2718,26(59)	Block
Ta^{181}	$\sigma_t \bar{\sigma}_s \sigma_\gamma$	4.3-98.8	NP,9,205(58)	Evans
Ta^{181}	σ_t	20.2-98.8	NP,9,198(58)	Firk
Ta^{180}	σ_t	0.43-5.96	BAP,3,364(58)	Harvey
Ta^{181}	σ_t	14.0-147	PR,103,1778(56)	Fluharty
Ta^{181}	σ_t	10.2-197	AE,1,(5),55(56)	Radkevich
Ta^{181}	σ_t	4.3	PR,104,736(56)	Sailor
Ta^{181}	$\bar{\sigma}_s$	4.3	PR,104,1425(56)	Wood
Ta^{180}	σ_t	0.43	PR,97,565(55)	Evans
Ta^{181}	σ_t	10.4-127	PR,99,10(55)	Harvey
Ta^{181}	σ_γ	10.4-38.5	KAPL-1084(54)	Gaerttner
Ta^{181}	σ_t	4.3-39.4	PR,92,1509(53)	Christensen
Ta^{181}	σ_t	6.1-38.2	PR,92,702(53)	Melkonian
Ta^{181}	σ_t	4.1-37	PR,71,165(47)	Havens

$_{74}$W

THERMAL CROSS SECTIONS

σ_γ = 18.5±0.5 b
a_{coh} = 4.77±0.05 fm

RESONANCE PROPERTIES

I_γ = 352±30 b
R' = 7.3±0.3 fm
S_0 = 2.4±0.3
S_1 = 0.3±0.1

$^{180}_{74}$W

THERMAL CROSS SECTIONS

$\sigma_\gamma{}^c$ = 3.5 b [140 day ^{181}W]

RESONANCE PROPERTIES

$I_\gamma{}^c$ = 200 b
R' = 7.3±0.3 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.13 S_n = 6650±200 keV

E_0 (eV)	Γ_n (meV)	Γ_n^0 (meV)
15.9±0.1	12.5±1.5	3.0 ±0.4
49.3±0.1	6.2±0.7	0.88±0.10
62.7±0.2	1.4±0.2	0.18±0.03
75.2±0.2	35 ±2.0	4.0 ±0.2
87.4±0.3	7.3±0.5	0.78±0.05

The known resonance parameters contribute 3.5 b and 200 b to the thermal absorption cross section and absorption resonance integrals respectively.

$^{182}_{74}W$

THERMAL CROSS SECTIONS

σ_γ = 20.7±0.5 b
a_{coh} = 8.33±0.14 fm

RESONANCE PROPERTIES

I_γ^c = 590±90 b
R' = 7.3±0.3 fm
<D> = 66±5 eV
S_0 = 2.5±0.3
S_1 = 0.3±0.1

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 26.3 S_n = 6191.4±1.4 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
Bound level			
4.16± 0.02	1.47± 0.03	50 ± 3	0.72± 0.02
21.2 ± 0.1	39 ± 1	62 ± 6	8.5 ± 0.2
114.4 ± 0.4	270 ± 10	60 ± 3	25.3 ± 0.9
212.8 ± 0.2	2.6 ± 0.3		0.18± 0.02
248.0 ± 0.2	960 ± 60		61.0 ± 3.8
341.6 ± 0.4	6.8 ± 1.0		0.37± 0.05
376.2 ± 0.4	140 ± 20	65 ±13	7.2 ± 1.0
428.5 ± 0.3	260 ± 25	55 ± 7	12.6 ± 1.2
484.2 ± 0.3	460 ± 40	49 ± 7	20.9 ± 1.8
578.2 ± 0.4	270 ± 25	57 ± 7	11.2 ± 1.0
655.2 ± 0.5	140 ± 20	59 ± 7	5.5 ± 0.8
781.7 ± 0.6	12 ± 2		0.43± 0.07
862.8 ± 0.3	4.1 ± 1.5		0.14± 0.05
918.8 ± 0.4	345 ± 40		11.4 ± 1.3
947.3 ± 0.4	2000 ± 200		65.0 ± 6.5
1007.0 ± 0.4	510 ± 50		16.1 ± 1.6
1095.0 ± 0.5	1500 ± 200	69 ± 8	45.3 ± 6.0
1161.0 ± 0.6	484 ± 25		14.2 ± 0.7
1275.0 ± 0.6	39 ± 6		1.1 ± 0.2
1287.0 ± 0.7	90 ± 20		2.5 ± 0.6
1326.0 ± 0.7	25 ± 8		0.69± 0.22
1408.0 ± 0.7	130 ± 30		3.47± 0.80
1502.0 ± 0.8	440 ± 30	70 ±10	11.4 ± 0.8
1514.0 ± 0.8	440 ± 60		11.3 ± 1.5
1582.0 ± 0.9	78 ± 15		2.0 ± 0.4
1646.0 ± 0.9	62 ± 15		1.53± 0.37
1772.0 ± 0.5	3000 ± 250		71.2 ± 5.9
1793.0 ± 0.5	250 ± 40		5.90± 0.95
1921.0 ± 2.0	60 ± 10		1.4 ± 0.2
2061.0 ± 0.7	1400 ± 150		30.8 ± 3.3
2104.0 ± 0.7	316 ± 25		6.9 ± 0.6
2180.0 ± 0.7	625 ± 50	50 ± 5	13.4 ± 1.1
2226.0 ± 0.7	760 ± 50	92 ± 9	16.1 ± 1.1
2328.0 ± 0.8	620 ± 60	86 ± 7	12.8 ± 1.2
2384.0 ± 0.8	850 ± 100	50 ± 6	17.4 ± 2.1

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
2412.0 ± 0.8	213 ± 30		4.34± 0.61
2530.0 ± 0.9	225 ± 30		4.47± 0.60
2576.0 ± 0.9	900 ± 100		17.7 ± 2.0
2607.0 ± 0.9	210 ± 30		4.1 ± 0.6
2790 ± 1	2850 ± 250		54.0 ± 4.7
2871 ± 1	253 ± 40		4.7 ± 0.8
2941 ± 1	295 ± 40		5.4 ± 0.7
3048 ± 1	1460 ± 150		26.5 ± 2.7
3119 ± 1	165 ± 30		3.0 ± 0.5
3203 ± 1.3	290 ± 30		5.1 ± 0.5
3257 ± 1	600 ± 80		10.5 ± 0.9
3306 ± 1.3	1565 ± 150		27.2 ± 2.6
3343 ± 1	170 ± 30		2.9 ± 0.5
3413 ± 1	2620 ± 300		44.9 ± 5.1
3494 ± 1	1710 ± 150		28.9 ± 2.5
3523 ± 2	510 ± 60		8.6 ± 1.0
3564 ± 2	430 ± 40		7.2 ± 0.7
3602 ± 2	1250 ± 150		20.8 ± 2.5
3786 ± 2	95 ± 20		1.54± 0.33
3846 ± 2	4600 ± 600		74.2 ± 9.7
3879 ± 2	1950 ± 250		31.3 ± 4.0
3975 ± 2	1675 ± 200		26.6 ± 3.2
3996 ± 2	290 ± 50		4.6 ± 0.8
4062 ± 2	1140 ± 175		17.9 ± 2.8
4212 ± 2	290 ± 30		4.5 ± 0.5
4266 ± 2	210 ± 30		3.2 ± 0.5
4313 ± 2	2000 ± 200		30.5 ± 3.1
4367 ± 2	85 ± 20		1.3 ± 0.3
4431 ± 2	2916 ± 250		43.8 ± 3.8
4492 ± 2	440 ± 50		6.6 ± 0.8
4715 ± 2	950 ± 100		13.8 ± 1.5
4832 ± 2	3000 ± 350		43.2 ± 5.0
4846 ± 2	153 ± 35		2.2 ± 0.5
4911 ± 2	1360 ± 200		19.4 ± 2.9
4961 ± 2	380 ± 50		5.4 ± 0.7
5138 ± 3	1113 ± 150		15.5 ± 2.1
5199 ± 3	5220 ± 400		72.4 ± 5.6
5435 ± 3	6300 ± 600		85.5 ± 8.1
5538 ± 3	575 ± 150		7.7 ± 2.0
5563 ± 3	700 ± 100		9.4 ± 1.3
5656 ± 3	14000 ±2000		186.2 ±26.6
5884 ± 3	385 ± 100		5.0 ± 1.3
6019 ± 3	240 ± 100		3.09± 1.29
6189 ± 3	4550 ± 400		57.8 ± 5.1
6259 ± 3	2590 ± 300		32.7 ± 3.8
6404 ± 4	3800 ± 400		47.5 ± 5.0
6514 ± 4	910 ± 150		11.3 ± 1.9
6536 ± 4	1890 ± 200		23.38± 2.47
6605 ± 4	380 ± 80		4.68± 0.98
6667 ± 4	4800 ± 500		58.8 ± 6.1
6732 ± 4	465 ± 100		5.7 ± 1.2
6743 ± 4	633 ± 100		7.7 ± 1.2

$^{182}_{74}W$

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
6858 ± 4	1250 ± 150		15.1 ± 1.8
6961 ± 4	2800 ± 300		33.6 ± 3.6
7012 ± 4	590 ± 100		7.1 ± 1.2
7102 ± 4	485 ± 100		5.76± 1.19
7155 ± 4	2030 ± 300		24.0 ± 3.55
7243 ± 4	1080 ± 150		12.7 ± 1.8
7286 ± 4	344 ± 100		4.03± 1.17
7472 ± 4	3900 ± 300		45.1 ± 3.5
7552 ± 5	3350 ± 300		38.6 ± 3.5
7586 ± 5	540 ± 100		6.2 ± 1.2
7694 ± 5	3900 ± 300		44.5 ± 3.4
7745 ± 5	1235 ± 150		14.0 ± 1.7
7810 ± 5	3000 ± 250		33.95± 2.83
7834 ± 5	1300 ± 250		14.7 ± 2.8
8013 ± 5	1320 ± 200		14.8 ± 2.2
8192 ± 5	1640 ± 200		18.1 ± 2.2
8394 ± 5	1820 ± 250		19.9 ± 2.7
8506 ± 5	610 ± 150		6.6 ± 1.6
8533 ± 5	605 ± 150		6.55± 1.62
8725 ± 6	4480 ± 400		48.0 ± 4.3
8815 ± 6	1880 ± 250		20.0 ± 2.7
9005 ± 6	860 ± 150		9.1 ± 1.6
9231 ± 6	4050 ± 400		42.2 ± 4.2
9454 ± 6	3550 ± 450		36.5 ± 4.6
9472 ± 6	1250 ± 350		12.8 ± 3.6
9823 ± 7	2500 ± 250		25.2 ± 2.5
9896 ± 7	1640 ± 200		16.5 ± 2.0
9944 ± 7	660 ± 200		6.6 ± 2.0
9998 ± 7	3200 ± 600		32.0 ± 6.0
10025 ± 7	3300 ± 600		33.0 ± 6.0
10140 ± 7	1660 ± 200		16.5 ± 2.0
10260 ± 7	3720 ± 350		36.7 ± 3.5
10630 ± 8	1880 ± 250		18.2 ± 2.4
10900 ± 8	890 ± 300		8.5 ± 2.9
11000 ± 8	1835 ± 200		17.5 ± 1.9
11174 ± 8	1300 ± 250		12.3 ± 2.4
11310 ± 8	3150 ± 300		29.6 ± 2.8
11380 ± 8	6000 ± 600		56.3 ± 5.6
11560 ± 8	2555 ± 300		23.8 ± 2.8
11710 ± 9	3740 ± 350		34.6 ± 3.2
11780 ± 9	640 ± 150		5.9 ± 1.4
11820 ± 9	2740 ± 300		25.2 ± 2.8
11890 ± 9	3150 ± 300		28.9 ± 2.8
11910 ± 9	2540 ± 300		23.3 ± 2.8
12210 ± 9	1940 ± 300		17.6 ± 2.7
12361 ± 9	1100 ± 300		9.9 ± 2.7
12490 ±10	3200 ± 300		28.6 ± 2.7
12540 ±10	2860 ± 300		25.5 ± 2.7
12680 ±10	2000 ± 300		17.8 ± 2.7
13057 ±10	3050 ± 300		26.7 ± 2.6
13180 ±10	5000 ± 700		43.6 ± 6.1
13253 ±10	3300 ± 350		28.7 ± 3.0

THERMAL CROSS SECTIONS

σ_γ = 10.2±0.3 b
a_{coh} = 4.3±0.5 fm

RESONANCE PROPERTIES

I_γ^c = 345±50 b
R' = 7.3±0.3 fm
<D> = 12±1 eV
S_0 = 2.1±0.4
S_1 = 0.3±0.1

RESONANCE PARAMETERS

I^π = 1/2$^-$ %Abn = 14.3 S_n = 7411.1±1.4 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
7.65±0.03	2.63± 0.15	1	70 ± 5	0.95 ± 0.06
27.05±0.03	63.0 ± 3.0	1	77 ± 6	12.2 ± 0.6
40.68±0.03	3.1 ± 0.6	1	68 ±30	0.51 ± 0.09
46.24±0.07	210 ± 6	1	69 ± 8	30.8 ± 1.4
47.8 ±0.04	57.5 ± 5.0	0	78 ±10	8.3 ± 0.7
65.34±0.03	3.3 ± 0.5	1	103 ±20	0.41 ± 0.05
101.1 ±0.1	120 ± 10	1	65 ±30	12 ± 1
103.9 ±0.1	4.1 ± 0.5			0.40 ± 0.05
138.0 ±0.1	4.5 ± 0.8		75 ±20	0.39 ± 0.06
144.2 ±0.1	47.5 ± 4.5	0	90 ±20	3.90 ± 0.35
154.4 ±0.1	205 ± 20	0	75 ± 8	16.5 ± 1.5
157.0 ±0.7	80 ± 12	1	120 ±30	6.4 ± 0.9
173.8 ±0.1	75 ± 8	1	90 ±30	5.7 ± 0.6
192.1 ±0.2	53 ± 6	1	70 ±30	3.8 ± 0.5
203.0 ±0.4	2.0 ± 0.5			8.14 ± 0.04
220.0 ±0.4	5.3 ± 0.7			0.36 ± 0.05
227.0 ±0.4	1.5 ± 0.3			1.0 ± 0.2
235.1 ±0.2	9.4 ± 1.2			0.62 ± 0.08
240.3 ±0.2	14.4 ± 3.0			0.92 ± 0.18
243.4 ±0.4	7 ± 2	1		0.45 ± 0.13
246.0 ±0.4	1.7 ± 0.3			0.11 ± 0.02
247.0 ±0.4	1.9 ± 0.4			0.12 ± 0.03
258.9 ±0.2	104 ± 14	0		6.46 ± 0.88
279.6 ±0.2	200 ± 20	1	77 ±10	12.0 ± 1.2
288.0 ±0.4	7.5 ± 2.0			0.44 ± 0.12
296.3 ±0.2	34 ± 4	1	99 ±26	2.0 ± 0.2
321.8 ±0.2	119 ± 16	1	98 ±26	6.64 ± 0.90
337.0 ±0.2	7.8 ± 1.2			0.42 ± 0.06
347.3 ±0.2	200 ± 18	1	95 ±19	10.8 ± 1.0
352.8 ±0.2	1.0 ± 0.6			0.054± 0.032
360.4 ±0.2	48 ± 6	1	70 ±12	2.52 ± 0.32
377.6 ±0.2	110 ± 23	1	78 ±22	5.7 ± 1.2
390.9 ±0.4	50 ± 8			2.6 ± 0.4
417.8 ±0.3	62 ± 12			3.0 ± 0.6
424.0 ±0.6	36 ± 6			1.8 ± 0.3
428.0 ±0.6	110 ± 30			5.3 ± 1.4

$^{183}_{74}W$

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
459.0 ±0.7	20 ± 3			0.94 ± 0.14
468.3 ±0.7	3.0 ± 1.0			0.138± 0.046
479.0 ±0.4	263 ± 30	[1]	65 ± 7	12.0 ± 1.4
492.7 ±0.4	3.2 ± 0.3			0.14 ± 0.01
497.0 ±0.7	1.0 ± 0.4			0.045± 0.016
511.0 ±0.7	7.6 ± 0.4			0.34 ± 0.02
512.5 ±0.4	1.5 ± 0.4			0.056± 0.018
533.0 ±0.7	24.8 ± 7.0			1.08 ± 0.30
550.0 ±0.4	108 ± 16			4.66
558.2 ±0.4	120 ± 20			5.06 ± 0.82
567.7 ±0.4	46 ± 10			1.94 ± 0.42
570.0 ±0.7	88 ± 8	[0]		3.7 ± 0.4
587.9 ±0.4	46 ± 6			1.90 ± 0.24
603.0 ±0.4	116 ± 20			4.74 ± 0.82
608.3 ±0.4	26 ± 4	[0]		1.1 ± 0.16
645.0 ±0.7	840 ± 35		70 ± 7	33.1 ± 1.4
674.0 ±0.7	188 ± 15	(1)	45 ± 6	7.2 ± 0.6
689.0 ±0.7	540 ± 23		70 ± 6	20.6 ± 0.9
694.0 ±0.8	65 ± 8	(0)	40 ± 6	2.5 ± 0.3
699.0 ±0.8	360 ± 50	(1)	70 ± 8	13.6 ± 1.9
721.0 ±0.8	1635 ±300	(1)	90 ±20	60.9 ±11.2
752.0 ±0.6	240 ± 40			8.76 ± 1.46
760.0 ±0.7	142 ± 13	(0)	47 ± 8	5.15 ± 0.47
778				
790				
796				
801				
807.7 ±0.6	40 ± 10			1.40 ± 0.36
852.1 ±0.3	20 ± 6			0.68 ± 0.20
862.5 ±0.3	80 ± 20			2.72 ± 0.68
867.3 ±0.3	30 ± 16			1.02 ± 0.6
869.4 ±0.3	180 ± 80			6.2 ± 2.8
894.0 ±0.3	88 ± 16			3.0 ± 0.6
905				
925				
940.9 ±0.4	80 ± 20			2.6 ± 0.6
949				
958				
981				
997				
1003				
1008				
1021				
1059 ±1	26 ± 10			0.80 ± 0.30
1062 ±1	74 ± 20			2.28 ± 0.62
1081				
1096				
1114 ±1	42 ± 10			1.26 ± 0.30
1126				
1141 ±1	680 ± 80			20.2 ± 2.4
1151 ±1	54 ± 16			1.60 ± 0.48
1163				

E_0 (eV)		$2g\Gamma_n$ (meV)		J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1176	±1	54	± 8			1.58 ± 0.24
1192						
1199						
1207						
1221						
1241	±1	530	± 70	1		15.04 ± 1.98
1270						
1286						
1313	±1	230	± 40			6.34 ± 1.10
1324						
1328						
1352						
1370	±1	260	± 60			7.02 ± 1.62
1381						
1392						
1396						
1442						
1451	±1	52	± 10			1.36 ± 0.26
1457						
1471						
1478						
1509						
1521	±1	82	± 16			2.0 ± 0.4
1539						
1556						
1567	±1	60	± 6			1.52 ± 0.30
1582						
1626	±1	1.66	± 16			4.2 ± 0.4
1631						
1663	±1	160	± 60			4.0 ± 1.4
1685	±1	46	± 14			1.12 ± 0.34
1688						
1710	±1	400	±120			9.68 ± 2.90
1738	±1	132	± 30			3.2 ± 0.8
1754	±1	94	± 30			2.2 ± 0.8
1762						
1780						
1791						
1801						
1820	±1	220	± 50			5.16 ± 1.18
1836	±1	440	± 70			10.26 ± 1.64
1843						
1857	±1	530	± 60			12.30 ± 1.40
1866	±1	300	±100			6.94 ± 2.32
1870	±1	340	±120			7.86 ± 2.78
1904						
1919						
1948						
1955	±1	168	± 40			3.8 ± 1.0
1993	±1	350	± 70			7.84 ± 1.56
2012						
2040						

$^{183}_{74}W$

E_0 (eV)		$2g\Gamma_n$ (meV)		J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
2061						
2080						
2093						
2116						
2144	±1	400	± 80			8.64 ± 1.72
2158	±1	440	± 80			9.48 ± 1.72
2167	±1	460	± 80			9.88 ± 1.72
2190						
2219	±1	720	±140			15.2 ± 3.0
2237	±1	200	±100			4.2 ± 2.0
2260	±1	118	± 50			2.48 ± 1.06
2281	±1	240	± 60			5.02 ± 1.26
2316	±1	660	±140			13.72 ± 2.90

$^{184}_{74}W$

THERMAL CROSS SECTIONS

σ_γ = 1.8±0.2 b
σ_γ = 2.0±1.0 mb [1.7 min $^{185}W^m$]
a_{coh} = 7.59±0.09 fm

RESONANCE PROPERTIES

I_γ^c = 14±2 b
R' = 7.3±0.3 fm
<D> = 95±7 eV
S_0 = 2.6±0.3
S_1 = 0.3±0.1

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 30.7 S_n = 5749.7±3.1 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
Bound level			
101.7± 0.1	3.3± 0.3		0.33± 0.03
184.2± 0.1	1150 ± 50	57 ± 5	84.6 ± 3.7
242.0± 0.1	2.3± 1.8		0.15± 0.12
310.7± 0.3	75 ± 6	51 ± 9	4.26± 0.34
422.8± 0.3	45 ± 5		2.2 ± 0.2
683.0± 0.5	650 ± 50	78 ± 8	24.9 ± 1.9
703.7± 0.5	6.5± 1.0		0.25± 0.04
783.0± 0.7	21 ± 4		0.75± 0.14
799.3± 0.6	1680 ± 150	79 ± 8	59.4 ± 5.3
957.3± 0.4	1475 ± 150		47.7 ± 4.9
998.5± 0.4	87 ± 10		2.8 ± 0.3
1086.0± 0.5	3300 ± 200	95 ±10	100 ± 6
1132.0± 0.5	340 ± 50		10.1 ± 1.5
1261.0± 0.6	1250 ± 100	63 ± 7	35.2 ± 2.8

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
1335.0± 0.7	18 ± 3		0.49± 0.08
1400.0± 0.7	3300 ± 200		88.2 ± 5.4
1424.0± 0.8	660 ± 100		17.5 ± 2.7
1514.0± 0.8	1400 ± 150		360 ± 3.9
1552.0± 0.9	68 ± 7		1.7 ± 0.2
1655.0± 0.9	260 ± 30		6.4 ± 0.7
1792.0± 0.5	1230 ± 150	65 ±10	29.1 ± 3.5
1920.0± 0.6	240 ± 30		5.5 ± 0.7
2045.0± 0.6	1100 ± 100	60 ±18	102.4 ± 8.8
2092.0± 0.7	4630 ± 400		101.2 ± 8.8
2211.0± 0.7	300 ± 30		6.4 ± 0.6
2252.0± 0.7	540 ± 40		11.4 ± 0.8
2411.0± 0.8	1200 ± 100		24.4 ± 2.0
2459.0± 0.8	600 ± 100		12.1 ± 2.0
2540.0± 0.9	630 ± 50		12.5 ± 1.0
2621.0	1290 ± 100		25.2 ± 2.0
2922 ± 1	2100 ± 200		38.9 ± 3.7
2982 ± 1	830 ± 90		15.2 ± 1.7
3133 ± 1	450 ± 60		8.04± 1.07
3182 ± 1	1000 ± 150		17.7 ± 2.7
3203 ± 1	2190 ± 200		38.7 ± 3.5
3232 ± 1	330 ± 30		5.8 ± 0.5
3457 ± 1	2280 ± 200		38.8 ± 3.4
3539 ± 1	1310 ± 150		22.0 ± 2.5
3596 ± 2	85 ± 20		1.4 ± 0.3
3736 ± 2	3225 ± 250		52.8 ± 4.1
3807 ± 2	4150 ± 400		67.3 ± 6.5
3941 ± 2	280 ± 50		4.5 ± 0.8
4008 ± 2	390 ± 100		6.2 ± 1.6
4186 ± 2	2560 ± 250		39.6 ± 3.9
4249 ± 2	1060 ± 150		16.3 ± 2.3
4547 ± 2	590 ± 100		8.8 ± 1.5
4614 ± 2	330 ± 60		4.9 ± 0.9
4802 ± 2	1850 ± 200		26.7 ± 2.9
4928 ± 2	1700 ± 250		24.2 ± 3.6
5053 ± 2	475 ± 70		6.7 ± 1.0
5090 ± 3	2800 ± 300		39.3 ± 4.2
5189 ± 3	1620 ± 200		22.5 ± 2.8
5807 ± 3	450 ± 75		5.9 ± 1.0
5884 ± 3	5140 ± 700		67.0 ± 9.1
6067 ± 3	395 ± 60		5.1 ± 0.8
6127 ± 3	11400 ±2500		145.6 ±31.9
6232 ± 3	960 ± 200		12.2 ± 2.5
6411 ± 4	220 ± 80		2.8 ± 1.0
6475 ± 4	750 ± 100		9.3 ± 1.2
6548 ± 4	680 ± 100		8.4 ± 1.2
6789 ± 4	990 ± 150		12.0 ± 1.8
6913 ± 4	370 ± 100		4.5 ± 1.2
6964 ± 4	970 ± 150		11.6 ± 1.8
7049 ± 4	6200 ± 700		73.9 ± 8.3
7122 ± 4	1570 ± 300		18.6 ± 3.6
7205 ± 4	435 ± 100		5.1 ± 1.2

$^{184}_{74}W$

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
7303 ± 4	1840 ± 250		21.5 ± 2.9
7334 ± 4	840 ± 150		9.8 ± 1.8
7472 ± 5	6550 ± 600		75.8 ± 6.9
7552 ± 5	6200 ± 600		71.4 ± 6.9
7777 ± 5	1190 ± 250		13.5 ± 2.8
8167 ± 5	3650 ± 400		40.4 ± 4.4
8310 ± 5	1515 ± 250		16.6 ± 2.7
8458 ± 5	5350 ± 600		58.2 ± 6.5
8549 ± 5	5050 ± 500		54.6 ± 5.4
8603 ± 6	1140 ± 200		12.3 ± 2.2
8741 ± 6	1090 ± 200		11.7 ± 2.1
8889 ± 6	1880 ± 200		19.9 ± 2.1
8987 ± 6	1200 ± 250		12.7 ± 2.6
9046 ± 6	7700 ± 700		81.0 ± 7.4
9286 ± 6	2080 ± 250		21.6 ± 2.6
9372 ± 6	6430 ± 600		66.4 ± 6.2
9665 ± 7	595 ± 150		6.1 ± 1.5
9816 ± 7	1460 ± 350		14.7 ± 3.5
9843 ± 7	3320 ± 400		33.5 ± 4.0
10050 ± 7	5000 ± 500		49.9 ± 5.0
10250 ± 7	10300 ± 900		101.7 ± 9.0
10420 ± 7	1110 ± 250		10.9 ± 2.5
10680 ± 8	3360 ± 400		32.5 ± 3.9
10740 ± 8	920 ± 250		8.9 ± 2.4
11070 ± 8	9100 ±1000		86.5 ± 9.5
11280 ± 8	3150 ± 400		29.7 ± 3.8
11370 ± 8	970 ± 250		9.1 ± 2.4
11450 ± 8	900 ± 250		8.4 ± 2.3
11650 ± 8	1140 ± 200		10.6 ± 1.9
11710 ± 9	6900 ± 700		63.8 ± 6.5
11820 ± 9	5450 ± 700		50.1 ± 6.4
11850 ± 9	9100 ±1000		83.6 ± 9.2
12020 ± 9	1120 ± 350		10.2 ± 3.2
12170 ± 9	1340 ± 250		12.2 ± 2.3
12430 ± 9	2300 ± 250		20.6 ± 2.2
12660 ±10	1545 ± 250		13.7 ± 2.2
13000 ±10	4200 ± 400		36.8 ± 3.5
13080 ±10	960 ± 250		8.4 ± 2.2
13200 ±10	20000 ±2500		174.1 ±21.8
13360 ± 5	3400 ± 400		29.4 ± 3.5
13390 ± 5	3675 ± 500		31.8 ± 4.3
13480 ± 5	7000 ± 900		60.3 ± 7.8
13500 ± 5	420 ± 160		3.6 ± 1.4
13610 ± 5	780 ± 200		6.7 ± 1.7
13680 ± 5	1740 ± 250		14.9 ± 2.1
13930 ± 5	3600 ± 400		30.5 ± 3.4
14420 ± 5	11000 ±1500		91.6 ±12.5
14860 ± 6.1	6100 ± 700		50.0 ± 5.7
15070 ± 6	1390 ± 250		11.3 ± 2.0
15170 ± 6	2000 ± 250		16.2 ± 2.0
15250 ± 6	2250 ± 250		18.2 ± 2.0
15350 ± 6	1800 ± 250		14.5 ± 2.0

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
1335.0± 0.7	18 ± 3		0.49± 0.08
1400.0± 0.7	3300 ± 200		88.2 ± 5.4
1424.0± 0.8	660 ± 100		17.5 ± 2.7
1514.0± 0.8	1400 ± 150		360 ± 3.9
1552.0± 0.9	68 ± 7		1.7 ± 0.2
1655.0± 0.9	260 ± 30		6.4 ± 0.7
1792.0± 0.5	1230 ± 150	65 ±10	29.1 ± 3.5
1920.0± 0.6	240 ± 30		5.5 ± 0.7
2045.0± 0.6	1100 ± 100	60 ±18	102.4 ± 8.8
2092.0± 0.7	4630 ± 400		101.2 ± 8.8
2211.0± 0.7	300 ± 30		6.4 ± 0.6
2252.0± 0.7	540 ± 40		11.4 ± 0.8
2411.0± 0.8	1200 ± 100		24.4 ± 2.0
2459.0± 0.8	600 ± 100		12.1 ± 2.0
2540.0± 0.9	630 ± 50		12.5 ± 1.0
2621.0	1290 ± 100		25.2 ± 2.0
2922 ± 1	2100 ± 200		38.9 ± 3.7
2982 ± 1	830 ± 90		15.2 ± 1.7
3133 ± 1	450 ± 60		8.04± 1.07
3182 ± 1	1000 ± 150		17.7 ± 2.7
3203 ± 1	2190 ± 200		38.7 ± 3.5
3232 ± 1	330 ± 30		5.8 ± 0.5
3457 ± 1	2280 ± 200		38.8 ± 3.4
3539 ± 1	1310 ± 150		22.0 ± 2.5
3596 ± 2	85 ± 20		1.4 ± 0.3
3736 ± 2	3225 ± 250		52.8 ± 4.1
3807 ± 2	4150 ± 400		67.3 ± 6.5
3941 ± 2	280 ± 50		4.5 ± 0.8
4008 ± 2	390 ± 100		6.2 ± 1.6
4186 ± 2	2560 ± 250		39.6 ± 3.9
4249 ± 2	1060 ± 150		16.3 ± 2.3
4547 ± 2	590 ± 100		8.8 ± 1.5
4614 ± 2	330 ± 60		4.9 ± 0.9
4802 ± 2	1850 ± 200		26.7 ± 2.9
4928 ± 2	1700 ± 250		24.2 ± 3.6
5053 ± 2	475 ± 70		6.7 ± 1.0
5090 ± 3	2800 ± 300		39.3 ± 4.2
5189 ± 3	1620 ± 200		22.5 ± 2.8
5807 ± 3	450 ± 75		5.9 ± 1.0
5884 ± 3	5140 ± 700		67.0 ± 9.1
6067 ± 3	395 ± 60		5.1 ± 0.8
6127 ± 3	11400 ±2500		145.6 ±31.9
6232 ± 3	960 ± 200		12.2 ± 2.5
6411 ± 4	220 ± 80		2.8 ± 1.0
6475 ± 4	750 ± 100		9.3 ± 1.2
6548 ± 4	680 ± 100		8.4 ± 1.2
6789 ± 4	990 ± 150		12.0 ± 1.8
6913 ± 4	370 ± 100		4.5 ± 1.2
6964 ± 4	970 ± 150		11.6 ± 1.8
7049 ± 4	6200 ± 700		73.9 ± 8.3
7122 ± 4	1570 ± 300		18.6 ± 3.6
7205 ± 4	435 ± 100		5.1 ± 1.2

$^{184}_{74}W$

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
7303 ± 4	1840 ± 250		21.5 ± 2.9
7334 ± 4	840 ± 150		9.8 ± 1.8
7472 ± 5	6550 ± 600		75.8 ± 6.9
7552 ± 5	6200 ± 600		71.4 ± 6.9
7777 ± 5	1190 ± 250		13.5 ± 2.8
8167 ± 5	3650 ± 400		40.4 ± 4.4
8310 ± 5	1515 ± 250		16.6 ± 2.7
8458 ± 5	5350 ± 600		58.2 ± 6.5
8549 ± 5	5050 ± 500		54.6 ± 5.4
8603 ± 6	1140 ± 200		12.3 ± 2.2
8741 ± 6	1090 ± 200		11.7 ± 2.1
8889 ± 6	1880 ± 200		19.9 ± 2.1
8927 ± 6	1200 ± 250		12.7 ± 2.6
9046 ± 6	7700 ± 700		81.0 ± 7.4
9286 ± 6	2080 ± 250		21.6 ± 2.6
9372 ± 6	6430 ± 600		66.4 ± 6.2
9665 ± 7	595 ± 150		6.1 ± 1.5
9816 ± 7	1460 ± 350		14.7 ± 3.5
9843 ± 7	3320 ± 400		33.5 ± 4.0
10050 ± 7	5000 ± 500		49.9 ± 5.0
10250 ± 7	10300 ± 900		101.7 ± 9.0
10420 ± 7	1110 ± 250		10.9 ± 2.5
10680 ± 8	3360 ± 400		32.5 ± 3.9
10740 ± 8	920 ± 250		8.9 ± 2.4
11070 ± 8	9100 ±1000		86.5 ± 9.5
11280 ± 8	3150 ± 400		29.7 ± 3.8
11370 ± 8	970 ± 250		9.1 ± 2.4
11450 ± 8	900 ± 250		8.4 ± 2.3
11650 ± 8	1140 ± 200		10.6 ± 1.9
11710 ± 9	6900 ± 700		63.8 ± 6.5
11820 ± 9	5450 ± 700		50.1 ± 6.4
11850 ± 9	9100 ±1000		83.6 ± 9.2
12020 ± 9	1120 ± 350		10.2 ± 3.2
12170 ± 9	1340 ± 250		12.2 ± 2.3
12430 ± 9	2300 ± 250		20.6 ± 2.2
12660 ±10	1545 ± 250		13.7 ± 2.2
13000 ±10	4200 ± 400		36.8 ± 3.5
13080 ±10	960 ± 250		8.4 ± 2.2
13200 ±10	20000 ±2500		174.1 ±21.8
13360 ± 5	3400 ± 400		29.4 ± 3.5
13390 ± 5	3675 ± 500		31.8 ± 4.3
13480 ± 5	7000 ± 900		60.3 ± 7.8
13500 ± 5	420 ± 160		3.6 ± 1.4
13610 ± 5	780 ± 200		6.7 ± 1.7
13680 ± 5	1740 ± 250		14.9 ± 2.1
13930 ± 5	3600 ± 400		30.5 ± 3.4
14420 ± 5	11000 ±1500		91.6 ±12.5
14860 ± 6.1	6100 ± 700		50.0 ± 5.7
15070 ± 6	1390 ± 250		11.3 ± 2.0
15170 ± 6	2000 ± 250		16.2 ± 2.0
15250 ± 6	2250 ± 250		18.2 ± 2.0
15350 ± 6	1800 ± 250		14.5 ± 2.0

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
15450 ± 7	9200 ±1500		74.0 ±12.1
15630 ± 7	19000 ±2500		152.0 ±20.0
15970 ± 7	11000 ±2000		87.0 ±15.8
16200 ± 7	3650 ± 400		28.7 ± 3.1
16320 ± 7	4000 ± 500		31.3 ± 3.9
16450 ± 7	1920 ± 300		15.0 ± 2.3

THERMAL CROSS SECTIONS

σ_γ = 37.8±1.5 b
a_{coh} = -1.19±0.05 fm

RESONANCE PROPERTIES

I_γ = 500±35 b
R' = 7.3±0.2 fm
<D> = 125±9 eV
S_0 = 2.2±0.3
S_1 = 0.3±0.1

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 28.6 S_n = 5466.1±1.4 keV

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
18.84± 0.02	287 ± 5	50 ± 5	65.6 ± 1.1
170.7 ± 0.1	27 ± 3	65 ±20	2.1 ± 0.2
217.5 ± 0.2	500 ± 30	62 ± 6	33.9 ± 2.0
286.7 ± 0.3	30 ± 5		1.8 ± 0.3
405.7 ± 0.3	86 ± 8	62 ±15	4.3 ± 0.4
509.4 ± 0.3	82 ± 10	49 ±12	3.6 ± 0.4
541.0 ± 0.4	490 ± 40	65 ± 8	21.1 ± 1.7
662.6 ± 0.4	650 ± 35		25.3 ± 1.4
720.0 ± 0.5	2150 ± 200		80.1 ± 7.5
831.0 ± 0.3	26 ± 4		0.90± 0.14
963.4 ± 0.4	1060 ± 100	72 ±10	34.2 ± 3.2
1071.0 ± 0.5	515 ± 60	61 ± 7	15.7 ± 1.8
1121.0 ± 0.5	400 ± 40		12.0 ± 1.2
1187.0 ± 0.6	840 ± 80		24.4 ± 2.3
1418.0 ± 0.7	100 ± 20		2.7 ± 0.5
1500.0 ± 0.8	1250 ± 100		32.3 ± 2.6
1795.0 ± 0.5	30 ± 8		0.71± 0.19
1933.0 ± 0.6	780 ± 80	60 ±11	17.7 ± 1.8
2025.0 ± 0.6	550 ± 65		12.2 ± 1.4
2105.0 ± 0.7	150 ± 35		3.3 ± 0.8
2349.0 ± 0.8	200 ± 30		4.1 ± 0.6
2515.0 ± 0.9	700 ± 75		14.0 ± 1.5
2590.0 ± 0.9	1030 ± 100		20.2 ± 2.0

$^{186}_{74}W$

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
2659 ± 1	4850 ± 300		94.1 ± 5.8
2779 ± 1	430 ± 70		8.2 ± 1.3
2976 ± 1	114 ± 30		2.1 ± 0.6
3039 ± 2	11150 ±1200		202.3 ±21.8
3158 ± 1	2400 ± 200		42.7 ± 3.6
3312 ± 1	850 ± 100		14.8 ± 1.7
3423 ± 1	3200 ± 300		54.5 ± 5.1
3541 ± 2	500 ± 60		8.4 ± 1.0
3713 ± 2	165 ± 50		2.7 ± 0.8
3768 ± 2	1560 ± 150		25.4 ± 2.4
3871 ± 2	3250 ± 300		52.2 ± 4.8
3963 ± 2	700 ± 70		11.1 ± 1.1
4165 ± 2	1530 ± 150		23.7 ± 2.3
4221 ± 2	2760 ± 250		42.5 ± 3.9
4395 ± 2	1900 ± 200		28.7 ± 3.0
4540 ± 2	2240 ± 200		33.3 ± 3.0
4805 ± 2	6050 ± 300		87.3 ± 4.3
4976 ± 2.4	450 ± 120		6.4 ± 1.7
5158 ± 2.5	2700 ± 250		37.6 ± 3.5
5282 ± 2.7	415 ± 60		5.7 ± 0.8
5383 ± 2.7	1060 ± 150		14.5 ± 2.0
5402 ± 2.7	540 ± 60		7.4 ± 0.8
5667 ± 2.9	5300 ± 400		70.4 ± 5.3
5777 ± 3.0	5200 ± 400		68.4 ± 5.3
6293 ± 3	1350 ± 150		17.0 ± 1.9
6386 ± 4	1750 ± 200		21.9 ± 2.5
6489 ± 4	5075 ± 400		63.0 ± 5.0
6698 ± 4	245 ± 60		3.0 ± 0.7
6754 ± 4	4100 ± 350		49.9 ± 4.3
6949 ± 4	1100 ± 150		13.2 ± 1.8
6968 ± 4	1780 ± 180		21.3 ± 2.2
7114 ± 4	580 ± 90		6.9 ± 1.1
7176 ± 4	1400 ± 150		16.5 ± 1.8
7324 ± 4	680 ± 100		7.95± 1.17
7472 ± 4	5500 ± 500		63.6 ± 5.8
7634 ± 5	1740 ± 200		19.9 ± 2.3
7712 ± 5	2360 ± 250		26.9 ± 2.9
7844 ± 5	1000 ± 200		11.3 ± 2.3
7978 ± 5	1050 ± 150		11.8 ± 1.7
8132 ± 5	780 ± 100		8.7 ± 1.1
8295 ± 5	2600 ± 300		28.6 ± 3.3
8347 ± 5	880 ± 200		9.6 ± 2.2
8625 ± 6	875 ± 175		9.4 ± 1.8
8669 ± 6	640 ± 160		6.9 ± 1.7
9177 ± 6	4100 ± 400		42.8 ± 4.2
9201 ± 6	270 ± 100		2.8 ± 1.0
9286 ± 6	8500 ± 900		88.2 ± 9.3
9410 ± 6	9100 ± 900		93.8 ± 9.3
9542 ± 6	3000 ± 600		30.7 ± 6.1
9587 ± 6	27300 ±3000		278.8 ±30.6
9843 ± 7	2350 ± 250		23.7 ± 2.5
10270 ± 7	2080 ± 300		20.5 ± 3.0

E_0 (eV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
10350 ± 7	8300 ± 900		81.6 ± 8.9
10580 ± 7	1060 ± 250		10.3 ± 2.4
10630 ± 8	2970 ± 400		28.8 ± 3.9
10770 ± 8	3500 ± 400		33.7 ± 3.85
10850 ± 8	11000 ±1500		105.6 ±14.4
11750 ± 9	3600 ± 400		33.2 ± 3.7
11870 ± 9	1140 ± 400		10.5 ± 3.7
12310 ± 9	8000 ±1500		72.1 ±13.5
12410 ±10	11150 ±2000		100.1 ±18.0
12590 ±10	4200 ±1000		37.4 ± 8.9
12620 ±10	8000 ±1700		71.2 ±15.1
13200 ±10	3100 ± 450		27.0 ± 3.9
13320 ±11	2050 ± 500		17.8 ± 4.3
13570 ± 5.4	5900 ± 900		50.7 ± 7.7
14020 ± 5.6	3600 ± 600		30.4 ± 5.1
15200 ± 6.4	8150 ±1200		66.1 ± 9.7
15440 ± 6.6	6100 ±1500		49.1 ±12.1
15480 ± 6.6	5850 ±1500		47.0 ±12.1
15650 ± 6.7	1900 ±3000		151.9 ±24.0
15720 ± 6.7	2775 ± 600		22.1 ± 4.8
16490 ± 7.2	8700 ±1500		67.8 ±11.7
16630 ± 7.3	9700 ±1500		75.2 ±11.6
16930 ± 7	8000 ±1200		61.5 ± 9.2
17060 ± 8	1500 ± 600		11.5 ± 4.6
17300 ± 8	5900 ±1000		44.9 ± 7.6
17340 ± 8	1250 ± 400		9.5 ± 3.0

$^{187}_{74}W$ [23.9 hr]

THERMAL CROSS SECTIONS

σ_γ = 64±10 b

RESONANCE PROPERTIES

I_γ = 2760±550 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
W^{186}	activation	IN-1317,53(70)	Hogg
$W^{182,183,184,186}$	diffraction	YF,10,328(69)	Alexandrov
W	Christiansen filters	ZP,219,300(69)	Koester
W^{186}	activation	PRIVATE COMM.(67)	Dample
$W,W^{182-184,186}$	σ_γ	NSE,26,487(66)	Friesenhahn
$W^{186,187}$	activation	ORNL-4013,5(66)	Gillette
W^{184}	activation	BAP,8,71(63)	Kramer
W^{184}	activation	NP,36,542(62)	Mangal
$W^{184,186}$	activation	NSE,8,378(60)	Lyon
W	σ_t	NSE,7,193(60)	Schmunk
W	pile osci.	JNE,12,32(60)	Tattersall
$W^{180,182-184,186}$	pile osci.	PR,88,412(52)	Pomerance
W^{187}	activation	PR,84,240(51)	Lindner
W	local osci.	PR,83,641(51)	Pomerance
W	diffraction	PR,81,527(51)	Shull
W	pile osci.	PPS/A,63,1175(50)	Colmer
W	pile osci.	PR,80,342(50)	Harris
$W^{184,186}$	activation	PR,72,888(47)	Seren
W	$\bar{\sigma}_s$ (7.8 b)	PRS/A,162,127(37)	Goldhaber
W	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
W^{182}	$\sigma_t\sigma_\gamma$(SI)	21-13253	CU-293(71)	Camarda
W^{184}	$\sigma_t\sigma_\gamma$(SI)	102-16450	CU-293(71)	Camarda
W^{186}	$\sigma_t\sigma_\gamma$(SI)	19-17340	CU-293(71)	Camarda
W^{182}	$\sigma_t\sigma_\gamma$	212-3598	NSE,37,137(69)	Bartolome
W^{183}	$\sigma_t\sigma_\gamma$	154-13077	NSE,37,137(69)	Bartolome
W^{184}	$\sigma_t\sigma_\gamma$	165-19701	NSE,37,137(69)	Bartolome
W^{186}	$\sigma_t\sigma_\gamma$	171-19914	NSE,37,137(69)	Bartolome
W^{183}	σ_γ(spectra)	7-101	BAP,13,1421(68)+	Beer
W^{182}	σ_t	4.2	PRIVATE COMM.(67)	Ideno
W^{183}	σ_t	7.6	PRIVATE COMM.(67)	Ideno
W^{186}	activation	18.8	PRIVATE COMM.(66)	Dample
W^{182}	σ_γ	0.01-10	NSE,26,487(66)	Friesenhahn
W^{183}	σ_γ	0.01-10	NSE,26,487(66)	Friesenhahn
W^{184}	σ_γ	0.01-10	NSE,26,487(66)	Friesenhahn
W^{186}	σ_γ	0.01-10	NSE,26,487(66)	Friesenhahn
W^{184}	σ_t	102-2090	NSE,25,31(66)	Khan
W^{182}	$\sigma_t\sigma_\gamma$	98-1100	ORNL-3924,31(65)	Block
W^{183}	$\sigma_t\sigma_\gamma$	40.7-392	ORNL-3924,31(65)	Block
W^{184}	$\sigma_t\sigma_\gamma$	102.1-1930	ORNL-3924,31(65)	Block
W^{186}	$\sigma_t\sigma_\gamma$	111.3-245	ORNL-3924,31(65)	Block
W^{180}	σ_t	15.9-87.4	ORNL-3924,30(65)	Jung
W^{182}	σ_γ	1281-4005	ORNL-3778,53(64)	Block
W^{183}	σ_γ	419.1-2658	ORNL-3778,53(64)	Block
W^{184}	σ_γ	2053-4025	ORNL-3778,53(64)	Block
W^{180}	σ_γ	2360-3985	ORNL-3778,53(64)	Block

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
W^{182}	σ_t	4.16-21.09	ORNL-3582,58(64)	Paya
W^{183}	σ_t	7.67-27.08	ORNL-3582,58(64)	Paya
W^{186}	σ_t	18.84	ORNL-3582,58(64)	Paya
W^{180}	σ_γ	15.8-75.2	PRIVATE COMM.(64)	Russell
W^{182}	σ_γ	4.14-487.3	PRIVATE COMM.(64)	Russell
W^{183}	σ_γ	7.65-460.0	PRIVATE COMM.(64)	Russell
W^{184}	σ_γ	102.2-424.7	PRIVATE COMM.(64)	Russell
W^{186}	σ_γ	18.8-512.5	PRIVATE COMM.(64)	Russell
W^{180}	σ_γ(spectra)	15.9-75	PR,132,1640(63)	Bollinger
W^{183}	σ_γ(spectra)	7.6-65	PR,132,1640(63)	Bollinger
W^{183}	σ_γ(spectra)	7.6-103	ZET,45,875(63)	Ignatiev
W^{183}	σ_t	7.62	CR,255,1913(62)	Le Pipec
W^{182}	σ_t	27.05-157.5	JPR,21,426(60)	Corge
W	σ_γ	114-5880	CR,249,413(59)	Corge
W^{182}	σ_t	114	NP,12,552(59)	Firk
W^{183}	σ_t	27.11-192	NP,12,552(59)	Firk
W^{184}	σ_t	101.5-185	NP,12,552(59)	Firk
W^{186}	σ_t	171	NP,12,552(59)	Firk
W^{183}	σ_γ(spectra)	7.6-66	PRL,2,505(59)	Hughes
W^{183}	σ_γ(spectra)	7.62-65.7	CR,248,2330(59)	Huynh
W^{182}	$\sigma_t\bar{\sigma}_s\sigma_\gamma$	4.14-114	NP,12,563(59)	Waters
W^{183}	$\sigma_t\bar{\sigma}_s\sigma_\gamma$	7.62-100.8	NP,12,563(59)	Waters
W^{186}	$\sigma_t\bar{\sigma}_s\sigma_\gamma$	18.8	NP,12,563(59)	Waters
W^{183}	σ_t	7.62-46.6	BAP,3,19(58)+	Chrien
W^{182}	σ_t	4.14-384	BAP,1,187(56)+	Schwartz
W^{183}	σ_t	27.1-287	BAP,1,187(56)+	Schwartz
W^{184}	σ_t	185-316	BAP,1,187(56)+	Schwartz
W^{186}	σ_t	18.8-412	BAP,1,187(56)+	Schwartz
W^{182}	σ_t	4.15-21.5	PR,84,869(51)	Selove
W^{183}	σ_t	7.8-49	PR,84,869(51)	Selove
W^{186}	σ_t	19.5-225	PR,84,869(51)	Selove
W	σ_t	4.0-18.0	PR,71,165(47)	Havens

$_{75}$Re

THERMAL CROSS SECTIONS

σ_γ = 88±4 b
$\bar{\sigma}_s$ = 11.3±0.5 b
a_{coh} = 9.2 fm

RESONANCE PROPERTIES

I_γ = 830±50 b
R' = 8.7±0.3 fm
S_0 = 2.7±0.2
S_1 < 0.3

$^{185}_{75}$Re

THERMAL CROSS SECTIONS

σ_γ = 112±3 b

RESONANCE PROPERTIES

I_γ = 1730±70 b
<D> = 3.3±0.3 eV
S_0 = 2.3±0.7
S_1 < 0.3

RESONANCE PARAMETERS

I^π = 5/2$^+$ %Abn = 37.5 S_n = 6179.0±1.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-6.75				6.16 ±0.77
2.156±0.004	3.3 ±0.3	3	54.9± 0.9	2.25 ±0.20
5.92 ±0.02	0.22±0.01	2	69 ±10	0.091±0.003
7.24 ±0.04	1.39±0.03	3	55 ± 3	0.52 ±0.01
11.88 ±0.03	0.80±0.05		61 ±12	0.23 ±0.02
12.87 ±0.04	0.79±0.04		68 ± 8	0.22 ±0.01
14.65 ±0.05	0.73±0.04		56 ±13	0.19 ±0.01
21.3 ±0.1	5.2 ±0.3		51 ± 4	1.12 ±0.06
21.9 ±0.1	0.44±0.02			0.094±0.004
26.6 ±0.1	0.62±0.05			0.12 ±0.01
27.2 ±0.1	0.56±0.02			0.107±0.003
29.5 ±0.2	0.50±0.08			0.092±0.95
32.6 ±0.2	32 ±2		51 ±10	5.6 ±0.4
36.6 ±0.1	0.90±0.04			0.15 ±0.07
41.6 ±0.1	11.4 ±0.6			1.77 ±0.09
45.4 ±0.2	0.62±0.03			0.092±0.005
47.8 ±0.2	0.85±0.08			0.12 ±0.01
50.4 ±0.2	15.7 ±0.7		51 ± 3	2.21 ±0.10
51.5 ±0.3	28.0 ±1.4		51 ± 4	3.90 ±0.19
55.1 ±0.2	7.4 ±0.6		54 ± 9	1.0 ±0.1
58.5 ±0.2	20 ±2			2.6 ±0.3
63.0 ±0.2	4.0 ±0.5			0.50 ±0.06

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
66.7 ±0.2	1.1 ±0.1			0.13 ±0.01
70.7 ±0.2	9.8 ±0.2			1.16 ±0.03
74.7 ±0.4	10.0 ±3.0			1.16 ±0.35
81.0 ±0.3	8.8 ±1.0			0.98 ±0.11
87.1 ±0.3	14 ±2			1.5 ±0.2
89.6 ±0.3	1.3 ±0.2			0.14 ±0.02
93.4 ±0.4				
95.6 ±0.5	5 ±1			0.51 ±0.10
98.6 ±0.4	8.5 ±0.6			0.86 ±0.06
100.8				
100.9 ±0.5	3.6 ±1.0			0.36 ±0.10
101.0 ±0.4	6.2 ±0.6			0.62 ±0.06
106.9				
113.7				
128.6				
133.5				
134.4				
138.8				
144.5				
148.1				
152.0				
154.8				
159.6				
164.6				
169.8				
185.6				
188.2				
201.4				
207.6				
214.7				
222.0				
230.1				
238.5				
240.2				
243.3				
249.4				
264.4				
267.6				
274.6				
282.0				
288.2				
291.0				
295.6				
298.0				
301.9				
302.8				
307.3				
312.9				
345.6				
351.9				
352.8				
356.9				

$^{185}_{75}$Re

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
359.7				
362.6				
364.5				
371.4				
380.2				
394.7				
396.2				
400.6				
402.9				
405.1				
408.9				
411.2				
419.9				
432.2				
444.1				
448.9				
452.0				
462.5				
465.2				
473.3				
478.6				
486.0				
492.0				
498.6				
502.8				

$^{187}_{75}$Re

THERMAL CROSS SECTIONS

σ_γ = 74±4 b
σ_γ = 73±4 b [18.7 min ^{188}Re^m]
σ_γ = 1.6±0.3 b [16.7 hr ^{188}Re^g]

RESONANCE PROPERTIES

I_γ = 300±20 b
<D> = 3.8±0.4 eV
S_0 = 1.9±0.5
S_1 < 0.3

RESONANCE PARAMETERS

I^π = 5/2$^+$ %Abn = 62.5 S_n = 5873.4±1.3 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
-2.1				2.00 ±0.21
4.416±0.008	0.371± 0.004	3	51 ± 4	0.18 ±0.02
11.14 ±0.03	2.10 ± 0.04	2	61 ± 3	0.63 ±0.01
16.07 ±0.05	0.660± 0.014		59 ± 9	0.165 ±0.003

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
17.56 ±0.06	2.07 ± 0.04			0.49 ±0.10
18.54 ±0.06	0.74 ± 0.06		60 ±10	0.17 ±0.01
24.9 ±0.1	0.131± 0.010			0.0263±0.002
32.0 ±0.1	9.6 ± 0.4		74 ± 7	1.7 ±0.07
34.0 ±0.1	1.02 ± 0.04		51 ±14	0.175 ±0.007
39.5 ±0.1	11.9 ± 0.8			1.90 ±0.12
46.9 ±0.2	0.10 ± 0.01			0.015 ±0.002
47.5 ±0.2	4.5 ± 0.5			0.65 ±0.07
53.5 ±0.3	6.0 ± 0.2		57 ± 6	0.82 ±0.03
59.0 ±0.2	2.2 ± 0.3			0.27 ±0.04
61.1 ±0.2	23 ± 2		61 ± 6	2.9 ±0.3
63.7 ±0.3	2.1 ± 0.2			0.26 ±0.03
69.5 ±0.2	26.7 ± 0.8		60 ± 6	3.20 ±0.10
73.8 ±0.3	70 ± 4		49 ± 4	8.1 ±0.5
75.0 ±0.3	28 ± 3		63 ±15	3.2 ±0.3
78.0 ±0.3	1.8 ± 0.2			0.20 ±0.02
79.0 ±0.3	2.8 ± 0.2		79 ±50	0.31 ±0.02
85.1 ±0.3	9.4 ± 0.4		65 ±12	1.02 ±0.04
87.6 ±0.3	4.0 ± 1.0			0.43 ±0.11
91.6 ±0.3	2.0 ± 0.2			0.21 ±0.02
95.9 ±0.5	72 ±10			7.4 ±1.0
99.3 ±0.5	1.6 ± 0.3			0.16 ±0.03
106.2 ±0.5				
106.6				
109.3 ±0.5				
114.5				
116.2				
121.7				
127.2				
129.6				
131.7				
136.7				
141.3				
143.8				
147.3				
151.1				
156.1				
160.9				
172.5				
178.8				
181.0				
184.5				
204.6				
212.7				
224.1				
237.1				
244.0				
251.3				
265.5				
258.5				
268.0				
292.3				

$^{187}_{75}$Re

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
308.8				
323.4				
325.6				
331.7				
334.5				
343.8				
365.5				
375.1				
382.3				
387.9				
402.1				
413.6				
419.5				
426.0				
428.0				
439.8				
448.5				
460.2				
490.5				
493.5				

$^{188}_{75}$Re

[17 hr]

THERMAL CROSS SECTIONS

σ_γ < 2 b (150 day ^{187}Re)

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Re	diffraction	ACA,A28,357(72)-	Bacon
Re	σ_a	PRIVATE COMM.(70)	Kolotyi
Re,$Re^{185,187}$	σ_γ	JNE,22,191(68)	Friesenhahn
$Re^{185,187}$	activation	66WASH,1,171(66)	Karam
Re^{187}	isom. ratio	KFI,14,85(66)	Kardon
$Re^{185,187}$	activation	ANS,9,248(65)	Sher
Re^{187}	isom. ratio	TID-22165(65)	Simons
$Re^{185,187}$	σ_γ	AE,19,250(65)	Vertebnyi
Re^{187}	isom. ratio	64PARIS,2,703(64)	Gulyas
Re^{187}	isom. ratio	PR/B,136,18(64)	Takahashi
$Re^{185,187}$	activation	NSE,8,378(60)	Lyon
Re^{188}	activation	JIN,3,157(56)•	Smith
Re	isom. ratio	ZN/A,217(53)	Flammersfeld
$Re^{185,187}$	activation	AD-402668(53)	Karam
Re	σ_γ	PR,92,702(53)	Melkonian
$Re^{185,187}$	absorption	PR,88,412(52)	Pomerance
Re	local osci.	PR,83,641(51)	Pomerance
$Re^{185,187}$	activation	PR,72,888(47)	Seren
Re	σ_γ	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Re	σ_γ	3-300	NST,9,261(72)	Ideno
Re^{185}	$\sigma_\gamma\sigma_\gamma$			
	σ_γ(spectra)	2.2-503	JNE,22,191(68)•	Friesenhahn
Re^{187}	$\sigma_\gamma\sigma_\gamma$			
	σ_γ(spectra)	4.4-494	JNE,22,191(68)•	Friesenhahn
Re^{185}	σ_γ	2.2	NP/A,97,657(67)	Poortmans
Re^{185}	polarization	2.2-12.9	PR,155,1330(67)	Stolovy
Re^{187}	polarization	4.4-11.2	PR,155,1330(67)	Stolovy
Re^{185}	σ_γ	2.2-21.5	AE,19,250(65)	Vertebnyi
Re^{187}	σ_γ	4.4-18.5	AE,19,250(65)	Vertebnyi
Re	σ_γ	2.2-108.0	AE,19,250(65)	Vertebnyi
Re	σ_γ	2.2-123	PRIVATE COMM.(59)	Chrien
Re^{187}	σ_γ	11.2-115	PRIVATE COMM.(59)	Chrien
Re	σ_γ	2.2-12.8	PR,100,1338(55)	Igo
Re	σ_γ	6.1-38.2	PR,92,702(53)	Melkonian

$_{76}$Os

THERMAL CROSS SECTIONS

σ_γ = 15.3±0.7 b
a_{coh} = 10.7 fm

RESONANCE PROPERTIES

I_γ = 210±10 b
R' = 8.4±0.4 fm
S_0 = 2.2±0.5

$^{184}_{76}$Os

THERMAL CROSS SECTIONS

σ_γ = 3000±150 b
σ_a < 10 mb

$^{186}_{76}$Os

THERMAL CROSS SECTIONS

σ_a < 0.1 mb

$^{187}_{76}$Os

THERMAL CROSS SECTIONS

σ_γ = 336±17 b
σ_a < 0.1 mb
σ_t = 344±12 b

RESONANCE PROPERTIES

I_γ^c = 890±100 b

RESONANCE PARAMETERS

I^π = 1/2⁻ ZAbn = 1.6 S_n = 7989.0±1.2 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	$2g\Gamma_n^0$ (meV)
9.43±0.1		1	
12.7 ±0.1	13 ± 2	1	3.7±0.7
19.9		1	
40.5 ±0.2	67 ±10	1	11 ±2
43.2		1	
47.6		0	
49.8		0	
108.7		1	
138.2		1	
176.8		1	
214.5		1	

$^{188}_{76}$Os

THERMAL CROSS SECTIONS

σ_γ^c = 4.3±1.0 b
σ_a < 0.03 mb
a_{coh} = 7.8 fm

RESONANCE PROPERTIES

I_γ^c = 135±35 b

RESONANCE PARAMETERS

I^π = 0⁺ ZAbn = 13.3 S_n = 5923.3±2.6 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
38.7±0.5	105 ±18	47.8± 2.3	90 ±20	7.5±0.4
78.9±0.5		360 ±26		40.6±3.0

$^{189}_{76}Os$

THERMAL CROSS SECTIONS

σ_γ^c = 23±4 b
σ_γ = 0.26±0.03 mb [10 min $^{190}Os^m$]
σ_a < 0.01 mb
a_{coh} = 11.0 fm

RESONANCE PROPERTIES

I_γ^c = 750±50 b

RESONANCE PARAMETERS

I^π = 3/2⁻ %Abn = 16.1 S_n = 7793.5±1.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
6.71±0.01	3.1± 0.3	1	85 ± 5	1.21±0.12
8.96±0.01	10.4± 0.6	2	103 ±10	3.48±0.20
10.30±0.05	3.8± 0.4	1	97 ±10	1.15±0.12
16.7 ±0.1	9 ± 1	2		2.1 ±0.2
22.1 ±0.1	9.6± 1.0	1		2.1 ±0.2
27.4 ±0.1	6.8± 0.7	2		1.36±0.14
28.3 ±0.1	14.9± 1.1	2		2.8 ±0.2
30.8 ±0.4		2		
43.5	60 ±15	[2]		9.1 ±2.3
50.5 ±0.2	88 ±20	2		12 ±3
55.0 ±0.5	67 ±19	2		9.0 ±2.6
60.7 ±0.2	273 ±60	2		35 ±8
63.8		1		
65.5	48 ±11	2		6.2 ±1.2
66.0		2		
75.0	72 ±24	2		8.4 ±3.0
87.9		1		
93.2		1		
128.0		1		

$^{190}_{76}Os$

THERMAL CROSS SECTIONS

σ_γ = 13.0±0.3 b
σ_γ = 3.9±0.8 b [15 day $^{191}Os^g$]
σ_γ = 9.1±0.5 b [15 hr $^{191}Os^m$]
σ_a < 0.02 mb
a_{coh} = 11.4 fm

RESONANCE PROPERTIES

I_γ^c = 29±2 b

$^{192}_{76}Os$

THERMAL CROSS SECTIONS

σ_γ = 2.0±0.1 b [31 hr $^{193}Os^{9}$]
σ_γ = 0.014 b [16.8]
σ_a < 0.01 mb
a_{coh} = 11.9 fm

RESONANCE PROPERTIES

I_γ = 5.4±1.0 b

$^{193}_{76}Os$ [30.2 hr]

THERMAL CROSS SECTIONS

σ_γ = 1540 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Os^{192}	isom. ratio	NP/A,125,305(69)	Bisgard
Os^{187}	σ_t	UFZ,14,1968(69)	Vertebnyi
Os^{190}	activation	RCA,9,61(68)-	Gijbels
$Os^{184,192}$	activation	RCA,9,61(68)	Kim
$Os^{184,186-190}$	σ_a	YF,1,252(65)	Andreev
Os^{189}	activation	NYO-10175(64)	Arino
$Os^{189,190}$	activation	NP,41,372(63)	Mangal
Os,$Os^{188-190,192}$	diffraction	ANL-6797,393(63)	Mueller
$Os^{189,190}$	activation	NP,20,183(60)	Hans
Os	diffraction	JAP,30,(9),1323(59)	Sidhu
Os^{184}		CJP,36,1409(58)	Nablo
Os	diffraction	PR,105,216(57)	Heaton
$Os^{184,193}$	activation	PR,84,240(51)	Lindner
Os	local osci.	PR,83,641(51)	Pomerance
$Os^{190,192}$	activation	PR,72,888(47)	Seren
Os	σ_t	PR,71,174(47)	Wu
Os	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Os	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Os^{187}	σ_γ(spectra)	9.5-215	BAP,18,96(73)	Namenson
Os^{189}	σ_γ(spectra)	6.7-128	BAP,17,487(72)	Namenson
Os^{187}	σ_γ(spectra)	9.5-47.7	JINR-P3-6092(71)	Karzhavina
Os^{189}	σ_γ(spectra)	6.7-60.8	JINR-P3-6092(71)	Karzhavina
Os^{189}	σ_γ(spectra)	6.7	69STUDSVIK,105(69)	Kane
Os^{187}	σ_t	9.5-65	UFZ,14,1968(69)	Vertebnyi
Os^{188}	σ_t	39.2-83.4	UFZ,14,1968(69)	Vertebnyi
Os^{189}	σ_t	6.7-28	UFZ,14,1968(69)	Vertebnyi
Os		50.4-317	PRIVATE COMM.(65)	Ignatiev
Os^{187}	σ_t	6.7	PR,127,461(62)	Jackson
Os^{187}	σ_γ(spectra)	9.5-47.5	PR,124,1142(61)	Jackson
Os^{189}	σ_γ(spectra)	6.7-61.0	PR,124,1142(61)	Jackson
Os	σ_t	6.7-109.7	PRIVATE COMM.(58)	Chrien
Os	σ_t	6.7-89.9	AE,1,(5),55(56)	Radkevich
Os	σ_t	6.7-84	PR,71,174(47)	Wu

$_{77}$Ir

THERMAL CROSS SECTIONS

σ_γ = 426±4 b
$\bar{\sigma}_s$ = 14±2 b
σ_t = 440±4 b
a_{coh} = 10.6±0.2 fm

RESONANCE PROPERTIES

I_γ = 2250±200 b
S_0 = 2.1±0.2

$^{191}_{77}$Ir

THERMAL CROSS SECTIONS

σ_γ = 924±53 b
σ_γ = 0.38±0.17 b [75 yr ^{192}Ir^{m2}]
σ_γ = 300±30 b [1.4 min ^{192}Ir^{m1}]
σ_γ = 624±60 b [74 day ^{192}Ir^{g}]

RESONANCE PROPERTIES

I_γ = 3750±200 b
<D> = 3.3±0.3 eV
S_0 = 2.2±0.2

RESONANCE PARAMETERS

I^π = 3/2$^+$ %Abn = 37.4 S_n = 6198.7±2.0 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level				
0.6551±0.0014	0.541±0.005	2	72.2± 1.0	0.668±0.006
5.36 ±0.04	6.0 ±0.1	2	93 ±10	2.59 ±0.06
6.13 ±0.04	0.53 ±0.05		72 ±23	0.216±0.010
9.27 ±0.08	4.4 ±0.4	2		1.47 ±0.13
9.90 ±0.10	0.59 ±0.11			0.19 ±0.04
10.4 ±0.1	0.33 ±0.03			0.102±0.010
19.2 ±0.1	2.6 ±0.5			0.59 ±0.11
20.2 ±0.1	1.8 ±0.2			0.40 ±0.05
25.2 ±0.1	14.0 ±2.5			2.76 ±0.50
29.9 ±0.1	16.8 ±0.9	1		2.30 ±0.12
31.6 ±0.1	5.5 ±1.5			0.98 ±0.25
36.6 ±0.2	3.5 ±0.8			0.58 ±0.14
40.4 ±0.2	5.9 ±0.9			0.92 ±0.14
41.5 ±0.1	2.0 ±0.4			0.31 ±0.06
44.6 ±0.1	1.2 ±0.3			0.18 ±0.04
45.7 ±0.1	2.3 ±0.5			0.34 ±0.08
51.0 ±0.2	49.1 ±3.1	1	87 ±20	6.86 ±0.44
52.8 ±0.1	8.2 ±1.6			1.13 ±0.02
56.8 ±0.1	2.6 ±0.7			0.35 ±0.09
62.8 ±0.3	5.0 ±1.3			0.63 ±0.16

$^{191}_{77}Ir$

E_0 (eV)		$2g\Gamma_n$ (meV)		J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	
64.9	±0.1	7.2	±1.8			0.89	±0.22
65.7	±0.1	11.4	±2.5			1.41	±0.31
68.0	±0.1	11.6	±2.7			1.41	±0.33
76.6	±0.1	7.4	±1.8			0.85	±0.21
78.8	±0.1	20.0	±4.0			2.25	±0.45
80.6	±0.1	11.2	±2.2			1.25	±0.25
81.9	±0.2	3.0	±0.7			0.33	±0.08
87.4	±0.1	12.0	±3.2			1.28	±0.34
97.6	±0.1	22.0	±6.0			2.23	±0.61
99.9	±0.1	11.6	±2.8			1.16	±0.28
103.6	±0.1	24.0	±5.4			2.36	±0.53
104.8	±0.2	22.0	±5.6			2.15	±0.55
106.4	±0.2	2.2	±0.6			0.21	±0.58
114.3	±0.2	8.6	±2.2			0.80	±0.02
116.7	±0.2	7.8	±2.0			0.72	±0.19
127.0	±0.3	5.4	±1.9			4.8	±0.17
128.1	±0.2	7.6	±2.0			0.67	±0.18
129.9	±0.2	15.0	±3.4			1.32	±0.30
134.2	±0.2	20.0	±5.0			1.73	±0.43
137.6	±0.2	11.6	±3.2			0.99	±0.27
142.9	±0.4	16.0	±7.2			1.34	±0.60
147.7	±0.2	>80				>6.6	
151.8	±0.4	8.0	±4.0			0.65	±0.32
156.2	±0.4	>80				6.4	
161.5	±0.2	>80				6.3	

$^{192}_{77}Ir$

[74.3 day]

THERMAL CROSS SECTIONS

σ_γ = 1100±400 b

THERMAL CROSS SECTIONS

σ_γ = 112.5±7.5 b
σ_γ = 110±15 b [19 hr ^{194}Ir^g]
σ_γ = 5.8±2.0 b [32 ms ^{194}Ir^m]

RESONANCE PROPERTIES

I_γ = 1350±150 b
<D> = 7.7±0.8 eV
S_0 = 2.0±0.2

RESONANCE PARAMETERS

I^π = 3/2$^+$ %Abn = 62.6 S_n = 6066.1±1.5 keV

E_0 (eV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level				
1.303±0.003	0.913±0.017	2	86.6± 1.0	0.8000±0.020
9.07 ±0.08	3.1 ±0.3			1.02 ±0.10
24.51 ±0.05	4.3 ±0.4			0.87 ±0.08
25.04 ±0.05	4.2 ±0.4			0.84 ±0.08
26.0 ±0.1	1.7 ±0.3			0.34 ±0.06
41.6 ±0.1	2.8 ±0.4			0.43 ±0.06
43.3 ±0.2	50 ±6		102 ±38	7.70 ±0.98
52.6 ±0.2	5.3 ±0.5			0.73 ±0.07
53.9 ±0.2	14.3 ±1.8			1.95 ±0.25
69.3 ±0.2	84 ±5			10.1 ±0.6
71.6 ±0.1	2.2 ±0.3			0.26 ±0.04
77.8 ±0.1	42 ±4			4.7 ±0.5
80.8 ±0.2	2.7 ±0.9			0.30 ±0.10
89.1 ±0.3	5.0 ±1.0			0.53 ±0.11
98.3 ±0.2	6.4 ±1.3			0.65 ±0.13
109.9 ±0.4	24 ±2			2.3 ±0.2
116.2 ±0.1	8.9 ±1.4			0.83 ±0.12
123.7 ±0.2	1.6 ±0.5			0.14 ±0.05
127.6 ±0.2	1.6 ±0.5			0.14 ±0.04
143.5 ±0.2	13.1 ±3.8			1.09 ±0.32
149.9 ±0.4	18.0 ±4.0			1.47 ±0.33
152.0 ±0.5	20.4 ±4.2			1.66 ±0.34
163.5 ±0.5	27.3 ±6.9			2.14 ±0.54
174.3 ±0.5	16.0 ±4.4			1.21 ±0.33
178.9 ±0.3	20 ±4			1.50 ±0.30
185.7 ±0.3	>80			>5.9
201.5 ±0.6	3.9 ±1.0			0.27 ±0.07
206.0 ±0.7	12.0 ±2.2			0.84 ±0.15
213.4 ±0.4	12.8 ±2.6			0.88 ±0.18
216.9 ±0.4	9.2 ±1.8			0.63 ±0.12
222.0 ±0.7	9.8 ±1.8			0.66 ±0.12
223.4 ±0.4	40.0 ±8.0			2.68 ±0.54
229.0 ±0.4	40.0 ±8.0			2.64 ±0.53
267.0 ±1.0	4.0 ±1.8			0.25 ±0.11
272.0 ±0.5	>8.0			>4.9
279.0 ±0.5	>80			>4.8
288.0 ±0.6	>80			>4.7
299.0 ±0.6	16.0 ±3.2			0.93 ±0.19
309.0 ±0.6	>80			>4.6

$^{193}_{77}Ir$

[12 day]

THERMAL CROSS SECTIONS

σ_γ > 0.035 b [171 day $^{194}Ir^{m2}$]

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ir^{191}	activation	NUK,12,197(69)	Koehler
Ir^{193}	activation	NP/A,115,213(68)	Meiser
Ir^{193}	activation	ZK,150,81(68)	Meiser
Ir^{191}	activation	JIN,30,349(68)	Sims
Ir^{193}	activation	PRL,21,237(68)	Sunyar
Ir^{191}	activation	PRIVATE COMM.(67)	Schneider
Ir	σ_t	66PARIS,1,61(66)	Brunner
$Ir^{191,193}$	activation	NYO-10175(64)	Arino
Ir	diffraction	PR,131,1518(63)	Felcher
Ir^{191}	activation	NP,41,604(63)	Harbottle
$Ir^{191,193}$	isom. ratio	PR,129,769(63)	Keisch
Ir	diffraction	ANL-6797,393(63)	Mueller
$Ir^{191,193}$	σ_t	BAP,4,271(59)+	Bolotin
Ir^{191}	isom. ratio	PRL,3,47(59)	Goldhaber
Ir^{192}	activation	PRIVATE COMM.(58)	Schuman
Ir^{192}	activation	PR,105,974(57)	Boehm
Ir	pile osci.	PR,83,641(51)	Pomerance
Ir	pile osci.	PR,80,342(50)	Harris
Ir	σ_t	PR,71,65(47)	Rainwater
$Ir^{191,193}$	activation	PR,72,888(47)	Seren

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Ir^{191}	σ_γ	19.2-225	JINR-P3-6545(72)	Lason
Ir^{193}	σ_γ	24.5-391	JINR-P3-6545(72)	Lason
Ir	σ_t	0.65-1.30	EIR-123,61(67)	Brunner
Ir^{191}	$\bar{\sigma}_s$	0.65-9.1	NP/A,97,657(67)	Poortmans
Ir^{193}	$\bar{\sigma}_s$	1.3-9.1	NP/A,97,657(67)	Poortmans
Ir	polarization	0.65-9.1	PR,155,1330(67)	Stolovy
Ir	$\bar{\sigma}_s$	5.4-51.3	CJP,44,399(66)	Bhat
Ir	σ_t	0.65-1.3	66PARIS,1,61(66)	Brunner
Ir	σ_t	19.2-416	PRIVATE COMM.(65)	Ignatiev
Ir, Ir^{191}	σ_t	5.4-51.3	NP,42,676(63)	Bolotin
Ir, Ir^{193}	σ_t	43.4	NP,42,676(63)	Bolotin
Ir, Ir^{191}	σ_t	0.65-104	BAP,4,271(59)+	Bolotin
Ir, Ir^{193}	σ_t	1.3-223	BAP,4,271(59)+	Bolotin
Ir, Ir^{193}	$\sigma_\gamma \bar{\sigma}_s$	9-77	NP,5,294(58)	Bovey
Ir, Ir^{191}	σ_t	5-9.1	PRIVATE COMM.(58)	Chrien
Ir	σ_t	5.3-93.5	AE,1,(5),55(56)	Radkevich
Ir	σ_t	0.65-5.4	PR,100,1414(55)	Landon
Ir	σ_t	0.65-25	PR,71,65(47)	Rainwater
Ir	σ_t	0.6-1.3	PR,72,109(47)	Sawyer

$_{78}$Pt

THERMAL CROSS SECTIONS

σ_γ = 10.0±0.2 b
σ_s = 11.2±1.0 b
a_{coh} = 9.5±0.3 fm

RESONANCE PROPERTIES

I_γ = 140±6 b
S_0 = 1.7±0.3

UNASSIGNED RESONANCES

E_0 (eV)	Γ (meV)	$ag\Gamma_n$ (meV)	Γ_γ (meV)	$ag\Gamma_n^0$ (meV)
98.14		.03		
*177.1	210 ±40	0.90 ±0.08		0.07
180.2		0.051±0.02		0.003[a]
*202.2	80 ±20	1.01 ±0.08		0.07
237.6		0.17 ±0.04		
266.9		0.077±0.03		0.047
288.4		0.20 ±0.06		0.011
289.5		0.14 ±0.03		0.008
292.2				
319.6		6.9 ±0.7		0.38
340.5				
342.2		1.5 ±0.1		0.06
344.6		1.1 ±0.1		
358.9		1.9 ±0.4		0.1
*405.1		1.1 ±0.1		0.55
*406.1		1.3 ±0.1		0.66
414.4				
433.5				
*439.2		0.40 ±0.08		0.02
458.5		0.6 ±0.1		0.03
466.3				
472.6		1.1 ±0.1		
509.8		0.47 ±0.08		
*560.1		4.1 ±0.4		0.17
616.3		1.4 ±0.2		0.06
646.8		0.6 ±0.1		0.025
655.9				
*661.9	170 ±30	2.4 ±0.3	150 ±30	0.1
695.5				
716.4		2.3 ±0.2		0.86
*744.6	130 ±30	3.6 ±0.3		1.3
814.5		29 ±3		
*820.2				

* Even-even isotope
[a] Not 192
[b] 196 or 198

$^{190}_{78}$Pt

THERMAL CROSS SECTIONS

σ_γ = 150±150 b
σ_s < 8 mb

$^{192}_{78}Pt$

THERMAL CROSS SECTIONS

σ_γ < 14 b
σ_γ = 2.2±0.8 b (4.4 day $^{193}Pt^m$)
σ_a < 0.2 mb

RESONANCE PROPERTIES

I_γ^c = 83±10 b
R' = 8.7±0.5 fm

RESONANCE PARAMETERS

I^π = 0⁺ ΣAbn = 0.78 S_n = 6247±3 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
46.55±0.05	105 ±10	47 ± 2	58 ±10	6.9±0.3
53.74±0.05	70 ±15	17 ± 1	53 ±15	2.3±0.1
129.7 ±0.1	260 ±30	225 ±12	35 ±32	20 ±1
144.9 ±0.1	210 ±35	170 ±10	40 ±35	14 ±1
388.7 ±0.3	370 ±25	308 ±27	62 ±25	15.6±1.4

$^{194}_{78}Pt$

THERMAL CROSS SECTIONS

σ_γ = 1.2±0.9 b
σ_γ = 0.090±0.013 b (4.1 hr $^{195}Pt^m$)
σ_a < 0.005 mb

RESONANCE PROPERTIES

I_γ^c = 4±2 b
R' = 8.7±0.5 fm

RESONANCE PARAMETERS

I^π = 0⁺ ΣAbn = 32.9 S_n = 6124±14 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	J	Γ_γ (meV)	Γ_n^0 (meV)
377.0±0.3	275 ± 15	216 ± 9	1/2	59 ±17	11.1±0.4
492.3±0.4	210 ± 35	131 ± 9	1/2	79 ±35	5.9±0.4
603.3±0.4	1250 ± 45	1100 ± 45	1/2		45.0±1.8
698.3±0.4	1100 ±100	1040 ±100	1/2		39.3±3.9

$^{195}_{78}Pt$

THERMAL CROSS SECTIONS

σ_γ = 27±2 b
σ_a < 0.005 mb

RESONANCE PROPERTIES

I_γ^c = 355±50 b
R' = 8.7±0.5 fm
<D> = 18±3 eV
S_0 = 1.9±0.4

RESONANCE PARAMETERS

I^π = 1/2⁻ %Abn = 33.8 S_n = 7920.9±1.0 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level					
11.9±0.1	127 ± 8	15.2± 0.6	1	107 ± 8	4.4 ±0.2
19.6±0.1	107 ± 8	10.4± 0.5	1	100 ± 8	2.3 ±0.1
67.1±0.2	280 ±30	85 ± 5	0	110 ±30	10.4 ±0.6
67.7±0.2	181 ±20	61.5± 2.0	1	140 ±20	7.5 ±0.8
111.8±0.2	144 ±15	25.5± 3.0	1	127 ±15	2.4 ±0.3
119.3±0.2		13 ± 2	0	69 ±15	1.2 ±0.2
120.5±0.2	235 ±20	150 ±15	1	135 ±15	13.7 ±1.4
139.9±0.2	170 ±13	90 ± 5	1	110 ±13	7.6 ±0.4
150.4±0.2	270 ±20	268 ±16	1	90 ±23	21.8 ±1.3
154.7±0.2	575 ±30	220 ±15	0	135 ±30	17.8 ±1.2
188.5±0.2	140 ±10	31.5± 3	1	120 ±10	2.25±0.15
204.8±0.2		30 ± 2	0	100 ±10	2.1 ±0.2
222.2±0.2		56 ± 2	1	130 ±13	3.8 ±0.2
256.9±0.2	160 ±15	82.5± 7.5	1	105 ±15	5.1 ±0.5
261.7±0.2	210 ±15	72 ± 4	0	65 ±15	4.4 ±0.2
280.0±0.2	110 ±25	18 ± 1	1	98 ±25	1.08±0.11
285.6±0.2	175 ±15	104 ± 4	1	105 ±15	6.2 ±0.2
302.3±0.2	145 ±20	84 ± 5	1	89 ±20	4.8 ±0.3
309.6±0.3	260 ±25	92 ± 4	0	76 ±25	5.2 ±0.3
353.2±0.3		6.6± 0.6			0.36±0.3
382.8±0.3	140 ±20	60 ± 6	1	100 ±20	3.0 ±0.3
410.1±0.3	195 ±10	146 ± 6	1	98 ±10	7.2 ±0.3
453.2±0.3	1040 ±50	479 ±20	0		22 ±1
484.8±0.3	203 ±15	142 ± 6	1	108 ±15	6.4 ±0.3
490.0±0.3	270 ±40	222 ±14	1	122 ±40	11.0 ±0.7
517.2±0.3	140 ±30	34 ± 2	0	72 ±30	1.5 ±0.1
529.3±0.4	390 ±30	312 ±18	1	182 ±32	13.6 ±0.8
548.8±0.4	254 ±25	158 ±10	1	144 ±26	6.7 ±0.4
558.7±0.4	215 ±30	110 ± 9	1	142 ±31	4.6 ±0.4
632.6±0.4		9.5± 1.2			0.38±0.05
659.8±0.4		77 ± 6	1	168 ±27	3.0 ±0.2
680.0±0.4	160 ±25	62 ± 5	1	118 ±25	2.4 ±0.2
*706.0±0.4	570 ±50	231 ±18	0	105 ±50	8.7 ±0.7
709.3±0.5	450 ±40	406 ±24	1	180 ±43	15.2 ±0.9
718.3±0.5	210 ±25	69 ± 6	[0]		2.6 ±0.2
763.5±0.5	280 ±30	180 ±12	1	160 ±30	6.5 ±0.4

$^{195}_{78}Pt$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
779.9±0.5	375 ±30	254 ±15	1	206 ±34	9.1 ±0.5
*785.7±0.5	140 ±30	25 ± 2			0.89±0.08
794.2±0.5		154 ±12	(1)		5.5 ±0.4
810.9±0.5					
825.2±0.5	750 ±80	930 ±60	(1)		32.3 ±2.1

* Isotopic assignment uncertain

$^{196}_{78}Pt$

THERMAL CROSS SECTIONS

σ_γ = 0.74±0.08 b
σ_γ = 0.050±0.010 b (1.5 hr $^{197}Pt^m$)

RESONANCE PROPERTIES

I_γ = 8±2 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 25.3 S_n = 5849±3 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	J	Γ_γ (meV)	Γ_n^0 (meV)
*303.±0.2	210 ±30	98 ±5		112 ±30	5.8 ±0.3
565.±0.4	234 ±25	102 ±6	1/2	132 ±25	4.32±0.26

* Isotopic assignment uncertain

$^{198}_{78}Pt$

THERMAL CROSS SECTIONS

σ_γ = 3.7±0.2 b
σ_γ = 0.027±0.003 b (14 sec $^{199}Pt^m$)

RESONANCE PROPERTIES

I_γ = 56±6 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 7.2 S_n = 5602±3 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	J	Γ_γ (meV)	Γ_n^0 (meV)
95.8±0.05	570 ±20	423 ±15	1/2	147 ±25	43.2±1.5

$^{199}_{78}Pt$ (30.8 min)

THERMAL CROSS SECTIONS

σ_γ = 15±10 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
$Pt^{196,198}$	activation	JNE,25,129(71)	Ryves
$Pt^{196,198}$	activation	NYO-10175(64)	Arino
Pt^{198}	activation	AWEC/TM-191(63)	Connolly
$Pt^{192,194,196}$	activation	NP,41,372(63)	Mangal
$Pt^{192,194,196}$	activation	PR,128,761(62)	Sehgal
Pt^{196}	activation	NSE,8,378(60)	Lyon
Pt	pile osci.	JNE,12,32(60)	Tattersall
Pt^{199}	activation	PR-CM-8A(56)	Merritt
$Pt^{190,192,194,195}$	pile osci.	ORNL-1879,50(55)	Pomerance
$Pt^{196,198}$	pile osci.	ORNL-1879,50(55)	Pomerance
Pt^{192}	activation	PRIVATE COMM.(53)	Haldar
Pt	pile osci.	PR,83,641(51)	Pomerance
Pt	diffraction	PR,81,527(51)	Shull
Pt	pile osci.	PPS/A,63,1175(50)	Colmer
Pt	pile osci.	PR,80,342(50)	Harris
Pt	σ_t	PR,71,165(47)	Havens
$Pt^{196,198}$	activation	PR,72,808(47)	Seren
Pt	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Pt	σ_c	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Pt	$\sigma_t\sigma_\gamma$(spectra)	11.9-825	NP/A,131,305(69)	DeBarros
Pt	$\sigma_t\sigma_\gamma$	11.9-680	NP/A,132,129(69)	Julien
Pt	$\sigma_t\sigma_\gamma$(spectra)	11.9-825	BAP,11,337(66)•	Julien
Pt	σ_γ(spectra)	11.9-189	PR,132,1640(63)	Bollinger
Pt	$\sigma_t\bar{\sigma}_s$			
	σ_γ(spectra)	11.9-68	ZET,45,875(63)	Ignatiev
Pt^{195}	σ_γ(spectra)	11.9-296	PR,127,1680(62)	Chrien
Pt	σ_t	11.9-308	PL,3,67(62)	Julien
Pt	σ_t	111-308	CR,254,4287(62)	Julien
Pt	σ_γ(spectra)	7-22	PRL,6,695(61)	Cote
Pt	σ_γ		PR,124,1142(61)	Jackson
Pt^{195}	σ_t	113-304	JPR,21,426(60)	Corge
Pt	σ_γ(spectra)	11.9-19.6	ZET,38,1446(60)	Galanina
Pt	$\bar{\sigma}_s$	11.9-96	PR,120,2090(60)	Waters
Pt	σ_γ(spectra)	47-568	NP,14,212(59)•	Bird
Pt^{195}	σ_γ(spectra)	11.9-68	PRL,3,376(59)	Bollinger
Pt^{195}	σ_γ(spectra)	11.9-300	BAP,4,472(59)•	Brussel
Pt^{195}	σ_γ(spectra)	11.9-68	BAP,4,34(59)	Brussel
Pt^{195}	σ_γ(spectra)	69-1470	CR,249,413(59)	Corge
Pt	σ_γ(spectra)	11.9-19.6	NP,14,693(59)	Draper
Pt	σ_t	139-150	PRIVATE COMM.(59)	Owen
Pt	σ_t	66.9-155	ANL-6072(59)	Thomas
Pt	σ_t	11.9-151	PRIVATE COMM.(58)	Zimmerman
Pt	σ_t	11.9-19.6	PR,108,353(57)	Stolovy
Pt	σ_t	0.3-30	PR,71,165(47)	Havens

THERMAL CROSS SECTIONS

σ_T = 98.8±0.3 b
a_{coh} = 7.6±0.1 fm

RESONANCE PROPERTIES

I_T = 1550±40 b
R^T = 9.6±0.2 fm
<D> = 16.2±0.3 eV
S_0 = 2.1±0.2

RESONANCE PARAMETERS

I^π = 3/2⁺ %Nat = 100 S_n = 6512.7±0.8 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level					
4.906±0.010	139 ± 3	19.0 ± 0.3	2	124 ± 3	8.63 ±0.15
46.45 ±0.08		0.11± 0.02	(1)		0.016±0.003
58.1 ±0.1		3.30± 0.14	1	112 ±15	0.44 ±0.02
60.3 ±0.1	198 ± 25	85 ± 5	2	130 ±20	11.0 ±0.6
78.4 ±0.2		12.5 ± 0.6	1	130 ±20	1.38 ± .08
107.0 ±0.2	128 ± 15	9.7 ± 0.4	2	120 ±15	0.94 ±0.04
122.3 ±0.2		1.0 ± 0.2			0.09 ±0.02
144.2 ±0.3	129 ± 20	6.7 ± 0.3	1	120 ±20	0.56 ±0.02
151.3 ±0.3	180 ± 15	27.5 ± 0.3	2	120 ±20	2.25 ±0.09
162.9 ±0.3	180 ± 15	37.5 ± 2.3	1	130 ±15	2.94 ±0.18
164.9 ±0.3	115 ± 15	11.6 ± 0.6	2	106 ±15	0.90 ±0.06
190.3 ±0.4	174 ± 20	33 ± 3	1	130 ±20	2.4 ±0.2
209.3 ±0.4		0.72± 0.07			0.050±0.005
240.5 ±0.5	172 ± 15	90 ± 5	2	100 ±15	5.8 ±0.3
255.7 ±0.5		0.5 ± 0.1			0.037±0.006
262.4 ±0.5	253 ± 16	100 ± 4	1	120 ±12	6.13 ±0.23
273.6 ±0.5	110 ± 20	5.2 ± 0.2		105 ±20	0.32 ±0.01
293.0 ±0.6	511 ± 50	456 ± 44	2	146 ±38	26.6 ±2.6
329.5 ±0.7	180 ± 15	57.2 ± 2.8	2	134 ±13	3.14 ±0.16
331.0 ±0.7	200 ± 17	46.8 ± 2.4	1	138 ±17	2.56 ±0.12
355.0 ±0.7	168 ± 15	49.0 ± 2.4	2	125 ±15	2.60 ±0.12
370.7 ±0.7	190 ± 20	105 ± 8	2	106 ±20	5.4 ±0.4
375.1 ±0.8	140 ± 14	10.4 ± 1.0		130 ±18	0.54 ±0.06
381.5 ±0.8	166 ± 20	76.4 ± 6.0	2	105 ±20	3.92 ±0.40
400.0 ±0.8		25 ± 4		140 ±40	1.25 ±0.20
440.0 ±0.9	420 ± 35	216 ± 16	1	139 ±20	10.2 ±0.7
450.9 ±0.9	172 ± 20	77.5 ± 7.5	2	110 ±15	3.65 ±0.36
477.0 ±1.0	450 ± 40	400 ± 28	2	130 ±20	18.4 ±1.2
490.0 ±1.0	190 ± 20	43 ± 4	1	130 ±21	2.04 ±0.02
494.0 ±1.0	160 ± 17	34 ± 3	2	136 ±17	1.54 ±0.12
534.1 ±0.3	162 ± 15	34 ± 4	2	130 ±15	1.90 ±0.17
548.6 ±0.3	180 ± 20	40 ± 4	1	127 ±20	1.71 ±0.17
579.1 ±0.3	520 ± 40	462 ± 26	2	150 ±45	19.3 ±1.2
580.9 ±0.3	260 ± 25	110.6 ± 7.0	1	115 ±27	4.58 ±0.32
587.0 ±0.4	160 ± 30	26.0 ± 2.6		134 ±36	1.08 ±0.10
602.8 ±0.4	369 ± 20	280 ± 14	2	145 ±15	11.4 ±0.6

$^{197}_{79}Au$

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
617.3 ±0.4	234 ± 25	93 ± 8	2	160 ±25	3.74 ±0.32
624.8 ±0.4	170 ± 30	37 ± 3	1	121 ±45	1.48 ±0.12
628.4 ±0.4	160 ± 30	28.0 ± 2.4	2	138 ±30	1.10 ±0.08
638.7 ±0.4	630 ± 40	600 ± 30	2	150 ±45	23.8 ±1.2
658.7 ±0.4		4.8 ± 0.8			0.18 ±0.04
685.9 ±0.4		10.0 ± 1.4			0.38 ±0.04
695.8 ±0.4	830 ± 80	500 ± 40	1	165 ±90	18.9 ±3.0
699.0 ±0.4	880 ± 80	920 ± 60		144 ±90	34.8 ±4.0
715.6 ±0.4	285 ± 35	144 ± 12	2	170 ±40	5.4 ±0.4
738.4 ±0.4		10.0 ± 1.4			0.36 ±0.04
759.9 ±0.4	580 ± 50	320 ± 22	1	154 ±60	11.6 ±0.8
773.8 ±0.5	600 ± 50	356 ± 26	1	126 ±60	5.3 ±1.4
784.3 ±0.5	280 ± 30	150 ± 12		160 ±30	5.4 ±0.7
796.0 ±0.5	325 ± 30	222 ± 18	2	150 ±30	7.88 ±0.60
813.5 ±0.5		16.6 ± 2.0			0.58 ±0.06
819.5 ±0.5	380 ± 40	288 ± 22	2	150 ±45	10.12 ±0.80
825.0 ±0.5	700 ± 55	666 ± 40	2	165 ±65	23.2 ±1.6
864.5 ±0.5	170 ± 50	23 ± 3			0.78 ±0.10
879.7 ±0.5	170 ± 40	44 ± 4		125 ±50	1.48 ±0.12
932.4 ±0.5	560 ± 45	514 ± 34	2	150 ±55	16.8 ±1.2
961.3 ±0.5	260 ± 35	82 ± 6	1	150 ±35	2.64 ±0.20
984.2 ±0.5	480 ± 50	414 ± 30	2	150 ±45	13.2 ±1.0
988.6 ±0.5	290 ± 60	151 ± 14	2	170 ±60	4.88 ±0.60
995.5 ±0.5	650 ± 60	620 ± 40	2	150 ±65	19.8 ±1.2
1022.4 ±0.6		1.0			0.031
1039.6 ±0.6		33 ± 4	[1]		1.04 ±0.13
1043.0 ±0.6	610 ± 60	364 ± 30	1		11.3 ±0.9
1063.9 ±0.6		8.0 ± 1.0			0.24 ±0.03
1077.7 ±0.6		270 ± 24	[1]		8.2 ±0.7
1092.5 ±0.6	520 ± 50	470 ± 36	2		14.3 ±1.1
1120.4 ±0.6		16.6 ± 2.0			0.50 ±0.06
1128.6 ±0.6		46 ± 6	[2]		1.36 ±0.18
1135.4 ±0.6	490 ± 50	424 ± 40	2		12.6 ±1.2
1177.5 ±0.6		10.0 ± 1.2	[2]		0.30 ±0.04
1183.0 ±0.6	430 ± 50	362 ± 34	2		10.6 ±1.0
1207.0 ±0.6	500 ± 50	450 ± 40	2		12.8 ±1.1
1218.5 ±0.6		40 ± 6	[2]		1.14 ±0.17
1223.3 ±0.6	700 ± 80	420 ± 40	1		12.0 ±1.14
1245.4 ±0.6		100 ± 12	1		2.8 ±0.3
1281.7 ±0.6	600 ± 50	344 ± 34	1		9.6 ±1.0
1288.0 ±0.6		18.8 ± 2.4	[2]		0.92 ±0.12
1310.7 ±0.6		316 ± 30	2		8.5 ±0.8
1328.8 ±0.6	840 ± 70	528 ± 40	1		14.5 ±1.1
1335.8 ±0.6		156 ± 16	[2]		2.4 ±0.2
1354.3 ±0.6	720 ± 60	444 ± 36			11.9 ±1.0
1359.5 ±0.6		33 ± 4	[2]		0.52 ±0.06
1367.7 ±0.6		200 ± 20	[1]		5.4 ±0.5
1395.8 ±0.6		40 ± 4	[2]		1.08 ±0.11
1426.2 ±0.6		196 ± 28	1		5.3 ±0.8
1428.8 ±0.6		532 ± 70	2		13.8 ±1.8
1450.5 ±0.6	410 ± 50	346 ± 32	2		8.80 ±0.81
1469.2 ±0.6		46 ± 6	[2]		1.10 ±0.14

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
1474.3 ±0.6		120 ± 14	[1]		3.1 ±0.4
1490.4 ±0.6	1160 ±120	1294 ±100	2		33.4 ±2.6
1501.5 ±0.7		22.8 ± 3.0	[1]		0.60 ±0.06
1530.0 ±0.7		37.4 ± 4.4	[1]		0.96 ±0.11
1552.3 ±0.7	300 ± 50	188 ± 12	2		5.20 ±0.33
1569.6 ±0.7		8.8 ± 2.0			0.26
1578.4 ±0.7	640 ± 60	360 ± 24	1		9.0 ±0.6
1593.3 ±0.7		74 ± 6	2		1.86 ±0.15
1614.4 ±0.7	280 ± 40	208 ± 20	2		5.2 ±0.5
1641.5 ±0.7		90 ± 8			2.3 ±0.2
1646.4 ±0.7		120 ± 12			2.9 ±0.3
1660.5 ±0.7		4.6 ± 0.8			0.12 ±0.02
1693.2 ±0.7		168 ± 20	[2]		4.06 ±0.48
1706.2 ±0.7		338 ± 32	[2]		8.2 ±0.8
1721.2 ±0.7		46 ± 6	[2]		1.1 ±0.1
1734.4 ±0.7		394 ± 40	[2]		9.4 ±0.9
1754.5 ±0.7		400 ± 40	2		9.4 ±0.9
1756.3 ±0.7		426 ± 60	1		9.9 ±1.4
1811.4 ±0.7		72 ± 8	[1]		1.7 ±0.2
1821.1 ±0.7		18 ± 3			0.44 ±0.07
1832.0 ±0.7		66 ± 8	[1]		1.54 ±0.18
1856.3 ±0.7	1550 ±200	1040 ± 80	1		24.6 ±1.9
1860.0 ±0.7		108 ± 14	2		2.5 ±0.3
1883.6 ±0.7		170 ± 20	1		3.9 ±0.5
1893.3 ±0.7		4.6 ± 0.8			0.10 ±0.02
1913.6 ±0.7	2600 ±250	1840 ±120	1		42.0 ±2.7
1939.7 ±0.7	650 ±100	390 ± 40	1		8.88 ±0.91
1960.9 ±0.7	900 ±120	918 ± 80	2		20.8 ±1.8
2021.1 ±0.7		140 ± 22			3.10 ±0.48
2028.4 ±0.7		200 ± 24	[1]		4.44 ±0.53
2032.8 ±0.7		320 ± 40	[1]		7.08 ±0.89
2035.5 ±0.7		300 ± 30	[1]		6.66 ±0.67
2059.2 ±0.7		190 ± 24			4.2 ±0.5
2075.0 ±0.7	1200 ±150	1352 ±100	2		29.6 ±2.2
2082.5 ±0.7		592 ± 60	[2]		13.0 ±1.3
2089.1 ±0.7		354 ± 44	[1]		7.76 ±0.96
2112.7 ±0.7		90 ± 12			1.96 ±0.26
2131.3 ±0.7	1500 ±170	1036 ±120	1		22.4 ±2.6
2147.8 ±0.7		614 ± 80	[2]		13.3 ±1.7

$^{198}_{79}$Au

[2.695 day]

THERMAL CROSS SECTIONS

σ_γ = 25800±1200 b

$^{199}_{79}$Au

[3.14 day]

THERMAL CROSS SECTIONS

σ_γ = 30±15 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Au^{197}	σ_t	ZP,250,166(72)	Steyerl
Au^{197}	σ_t	71KNOX,2,673(71)	Eiland
Au^{197}	σ_t	PL/B,29,33(69)	Steyerl
Au^{197}	σ_γ	JNE,22,191(68)	Friesenhahn
Au^{197}	σ_t	NIM,33,229(65)	Antonini
Au^{197}	σ_t	PR/B,133,925(64)	Als-Nielsen
Au^{197}	local osci.	KE,6,336(63)	Huttel
Au^{198}	σ_t	ANS,6,43(63)	Simpson
Au^{197}	σ_t	PR,126,29(62)	Brugger
Au^{197}	σ_t	NUK,8,165(62)	Teutsch
Au^{197}	pile osci.	61BUCHAR,623(61)	Bouzyk
Au^{197}	pulsed n	NSE,9,132(61)	Meadows
Au^{197}	diffraction	ARN,11,303(61)	Wilkinson
Au^{197}	σ_t	NSE,8,453(60)	Gould
Au^{197}	pile osci.	JNE,12,32(60)	Tattersall
Au^{199}		PRIVATE COMM.(56)	Smith
Au^{198}	activation	CJP,33,457(55)	Bell
Au^{197}	σ_t	JNE,1,57(54)	Egelstaff
Au^{197}	pile osci.	JNE,1,144(54)	Green
Au^{197}	σ_t	PR,92,716(53)	Carter
Au^{198}	activation	PR,83,1097(51)	Sherk
Au^{197}	diffraction	PR,81,527(51)	Shull
Au^{197}	σ_t	PR,72,585(47)	Brill
Au^{197}	σ_t	PR,72,729(47)	MacDaniel
Au^{197}	activation	PR,72,888(47)	Seren
Au^{197}	σ_t	PR,49,453(36)	Mitchell
Au^{197}	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Au^{197}	$\bar{\sigma}_s$	534-996	71KNOX,2,868(71)	Hoffman
Au^{197}	σ_t	1000-2100	NP/A,131,450(69)	Alves
Au^{197}	σ_γ(spectra)	thermal	NP/A,130,353(69)	Samour
Au^{197}	σ_t	4.9	CEA-N-1230(69)	Tellier
Au^{197}	σ_γ(spectra)	0.025-107	PR,173,1170(68)	Wasson
Au^{197}	$\sigma_t\sigma_\gamma$	46.5-995.4	NP,76,391(66)	Julien
Au^{197}	$\bar{\sigma}_s$	60.25-240.3	CR/B,262,507(66)	Trochon
Au^{197}	$\sigma_\gamma\bar{\sigma}_s$	46.45-547.0	65ANTWERP,65(65)	Asghar
Au^{197}	σ_t	78.34	CR,255,1913(62)	Le Pipec
Au^{197}	$\sigma_t\sigma_\gamma$(SI)	46.7-2470	PR,120,2214(60)	Desjardins
Au^{197}	σ_t	61.0-266	BAP,3,177(58)	Slaughter
Au^{197}	$\sigma_t\bar{\sigma}_s$	4.9	PR,104,1425(56)	Wood
Au^{197}	σ_t	46.5	PRIVATE COMM.(56)	Zimmerman
Au^{197}	σ_t	4.91	PR,93,1030(54)	Landon
Au^{197}	σ_t	4.94-194	PR,95,476(54)	Seidl
Au^{197}	$\sigma_t\bar{\sigma}_s$	4.87	PR,83,746(51)	Tittman
Au^{197}	$\bar{\sigma}_s$	4.8	PR,79,11(50)	Harris
Au^{197}	σ_t	4.8	PR,71,165(47)	Havens

$_{80}$Hg

THERMAL CROSS SECTIONS

σ_γ = 375±5 b
a_{coh} = 12.69±0.02 fm

RESONANCE PROPERTIES

I_γ = 73±10 b
R' = 9.8±0.7 fm
S_0 = 1.3±0.3

UNASSIGNED RESONANCES

E_0 (eV)	Γ (meV)	$2ag\Gamma_n$ (meV)	$2ag\Gamma_n^0$ (meV)
270.7	2300 ± 900	8.8± 1.4	0.53±0.08
513	1550 ±2010	8.6± 1.0	0.38±0.04
650		16 ±12	0.63±0.47

$^{196}_{80}$Hg

THERMAL CROSS SECTIONS

σ_γ = 120±13 b [24 hr ^{197}Hg^m]
σ_γ = 3080±200 b [65 hr ^{197}Hg^g]

RESONANCE PROPERTIES

I_γ = 58.9±2.4 b [65 hr ^{197}Hg^m]
I_γ = 413±15 b [24 hr ^{197}Hg^g]

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 0.15 S_n = 6981±23 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	J	Γ_γ (meV)	Γ_n^0 (meV)
Bound level					
*93.5	405 ±100	184 ±12	1/2	221 ±100	19.0±1.2

* Isotopic assignment uncertain

$^{198}_{80}Hg$

THERMAL CROSS SECTIONS

σ_γ = 0.018±0.004 b [43 min $^{199}Hg^m$]
σ_γ^c = 1.9 b

RESONANCE PROPERTIES

I_γ^c = 70±30 b
R' = 9.8±0.7 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 10.1 S_n = 6648.8±2.8 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	J	Γ_γ (meV)	Γ_n^0 (meV)
23.06±0.02	127 ±15	6.7± 0.2	1/2	120 ±10	1.40±0.04
89.81±0.06	178 ±20	28 ± 1	1/2	150 ±20	2.96±0.11
302.5±0.2	940 ±80	778 ±60	1/2	165 ±90	44.8 ±3.3
344.0±0.2	222 ±35	57 ± 5	1/2	165 ±40	3.0 ±0.3
417.4±0.3	300 ±50	152 ±10	1/2	150 ±50	7.8 ±1.3

$^{199}_{80}Hg$

THERMAL CROSS SECTIONS

σ_γ = 2000±1000 b

RESONANCE PROPERTIES

I_γ^c = 153±30 b
R' = 9.8±0.7 fm

RESONANCE PARAMETERS

$I^\pi = 1/2^-$ %Abn = 16.9 S_n = 8028.8±0.5 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
Bound level			0		
33.50±0.03	341 ± 10	69.0± 1.5	1	295 ± 10	12.0±0.3
129.7 ±0.1	434 ± 25	204 ± 20	0	230 ± 30	17.9±1.8
175.1 ±0.1	1245 ± 80	1395 ± 60	1	315 ± 80	105.7±4.6
263.9 ±0.2	320 ± 50	48 ± 4	1	290 ± 50	3.0±0.3
314.5 ±0.2	1370 ± 80	1240 ± 60	1	340 ±100	70.5±3.4
491.5 ±0.3	2820 ±120	1300 ± 40	0	220 ±300	52.5±1.8
686 ±0.5	1450 ±150	600 ± 60	0	250 ±180	
808 ±3	848 ±271	872 ±186	1		10.2±2.2
880 ±3	3350 ±182	4418 ±162	1	405 ±172	149.0±5.4

$^{200}_{80}Hg$

THERMAL CROSS SECTIONS

σ_γ < 60 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 23.1 S_n = 6225.4±2.3 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	J	Γ_γ (meV)	Γ_n^0 (meV)
1325	9500 ± 1500	9000 ± 1500	1/2	(500)	250 ± 40
2710	12500 ± 2000	12000 ± 2000	1/2	(500)	230 ± 40
5060	18500 ± 2000	18000 ± 2000	1/2	(500)	250 ± 30
7800	59000 ±16000	59000 ±16000	1/2	500	660 ±180

$^{201}_{80}Hg$

THERMAL CROSS SECTIONS

σ_γ < 60 b

RESONANCE PROPERTIES

R' = 9.8±0.7 fm

RESONANCE PARAMETERS

$I^\pi = 3/2^-$ %Abn = 13.2 S_n = 7755.6±1.4 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	J	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)
43.0±0.1	289 ± 15	4.38± 0.15	2	285 ± 15	0.66±0.03
70.9±0.1	472 ± 30	9.0 ± 0.4	1	460 ± 30	1.07±0.05
210.3±0.2	805 ± 40	315 ±20	1	385 ±100	21.7 ±1.4
312.7±0.2	730 ± 60	508 ±40	2	320 ± 65	29.2 ±2.3
445.0±0.3	1450 ±100	690 ±25	1	530 ±100	32.8 ±1.2
564.0±0.5	1450 ±100	1440 ±45	2	300 ±100	60.8 ±1.9
685.0±0.7	1580 ±150	880 ±75	1	410 ±170	33.4 ±2.9

$^{202}_{80}Hg$

THERMAL CROSS SECTIONS

σ_γ = 4.9±0.1 b

RESONANCE PROPERTIES

I_γ = 4.9±0.2 b

RESONANCE PARAMETERS

I^π = 0⁺ %Abr. = 29.7 S_n = 5992.1±3.7 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	J	Γ_γ (meV)	Γ_n^0 (meV)
1710	6000 ±2000	5500 ±2000	1/2	(500)	130 ±50
4105	18500 ±6000	18000 ±6000	1/2	(500)	280 ±90

$^{204}_{80}Hg$

THERMAL CROSS SECTIONS

σ_γ = 0.43±0.10 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Hg	n reflection	PR,174,313(68)	Bartolini
Hg^{202}	activation	JIN,30,349(68)	Sims
Hg^{196}	activation	NSE,31,545(68)	Tilbury
$Hg^{196,202}$	activation	RCA,8,165(67)	Kim
Hg	n reflection	PRIVATE COMM.(65)	Koester
Hg	n refractometer	ZP,182,328(65)	Koester
Hg^{196}	activation	NYO-10175(64)	Arino
Hg^{196}	activation	NP,41,372(63)	Mangal
$Hg^{196,202}$	activation	PR,128,761(62)	Sehgal
Hg	pulsed n	NSE,9,132(61)	Meadows
Hg^{196}	activation	PR,120,1313(60)	Vandenbosch
$Hg^{196,198}$	activation	NP,12,261(59)	Sehgal
Hg	local osci.	JPR,13,171(52)	Allloud
Hg	pile osci.	CR,232,2089(51)	Grimeland
Hg	$\bar{\sigma}_s$ mirror reflections	PR,82,560(51)	Hibdon
Hg	n reflection	PR,82,560(51)	Hibdon
$Hg^{202,204}$	activation	PR,82,276(51)	Lyon
Hg	local osci.	PR,83,641(51)	Pomerance
Hg	pile osci.	PR,80,342(50)	Harris
$Hg^{199-201}$	mass spectrometry	PR,71,561(47)	Inghram
Hg^{204}	activation	PR,72,888(47)	Seren
Hg	σ_t	PR,49,453(36)	Mitchell
Hg	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Hg^{201}	σ_γ(spectra)	43-564	AERE-PR/NP-17,22(70)	Thomas
Hg^{198}	σ_t	23.1-417	NP/A,132,129(69)	Julien
Hg^{199}	σ_t	33-686	NP/A,132,129(69)	Julien
Hg^{201}	σ_t	43-685	NP/A,132,129(69)	Julien
Hg^{198}	$\sigma_t\sigma_\gamma$	23.06-417.4	CEA-R-2810(65)	Huynh
Hg^{199}	$\sigma_t\sigma_\gamma$	33.5-686	CEA-R-2810(65)	Huynh
Hg^{201}	$\sigma_t\sigma_\gamma$	43.0-685	CEA-R-2810(65)	Huynh
Hg	σ_γ(spectra)	thermal	NP,50,209(64)	Bartholomew
Hg^{201}	$\sigma_t\sigma_\gamma$	43-70.9	PRIVATE COMM.(63)	Bianchi
Hg^{199}	σ_γ(spectra)	34-260	PR,132,1640(63)	Bollinger
Hg^{198}	σ_t	23.3-91.1	NP,42,676(63)	Bolotin
Hg^{199}	σ_t	33.5-131	NP,42,676(63)	Bolotin
Hg^{201}	σ_t	43.3-71.8	NP,42,676(63)	Bolotin
Hg^{201}	$\sigma_t\sigma_\gamma$	210.1	PL,3,67(62)	Julien
Hg^{199}	σ_γ(spectra)	0.025-175	ANL-6146,1(60)	Bollinger
Hg	σ_t			
	σ_γ(spectra)	270.7-650	NP,21,66(60)	Carpenter
Hg^{196}	$\sigma_t\sigma_\gamma$(spectra)	93.5	NP,21,66(60)	Carpenter
Hg^{198}	$\sigma_t\sigma_\gamma$(spectra)	23.0-417	NP,21,66(60)	Carpenter
Hg^{199}	$\sigma_t\sigma_\gamma$(spectra)	33.5-880	NP,21,66(60)	Carpenter
Hg^{200}	$\sigma_t\sigma_\gamma$(spectra)	1325-7800	NP,21,66(60)	Carpenter
Hg^{201}	$\sigma_t\sigma_\gamma$(spectra)	43.0-685	NP,21,66(60)	Carpenter
Hg^{202}	$\sigma_t\sigma_\gamma$(spectra)	1710-4105	NP,21,66(60)	Carpenter
Hg^{198}	$\sigma_t\sigma_\gamma$(spectra)	90.0	NP,13,525(59)	Bird
Hg^{199}	$\sigma_t\sigma_\gamma$(spectra)	33.5-175	NP,13,525(59)	Bird
Hg^{201}	$\sigma_t\sigma_\gamma$(spectra)	43.0-209	NP,13,525(59)	Bird
Hg^{199}	σ_γ(spectra)	33-264	BAP,4,34(59)+	Brussel
Hg^{201}	σ_γ(spectra)	43-441	BAP,4,34(59)+	Brussel
Hg^{199}	σ_γ(spectra)	33-264	BAP,4,472(59)	Brussel
Hg^{201}	σ_γ(spectra)	43-441	BAP,4,472(59)	Brussel
Hg^{199}	σ_γ(spectra)	0.025-177	PR,107,1333(57)	Landon
Hg^{198}	σ_t	23-300	PRIVATE COMM.(57)	Zimmerman
Hg^{199}	σ_t	33.3-491	PRIVATE COMM.(57)	Zimmerman
Hg^{201}	σ_t	43-558	PRIVATE COMM.(57)	Zimmerman
Hg^{198}	σ_t	23.3	PR,101,1328(56)	Levin
Hg^{199}	σ_t	34.0	PR,101,1328(56)	Levin
Hg^{198}	σ_t	23-311	PR,102,228(56)	Palmer
Hg^{199}	σ_t	34-177	PR,102,228(56)	Palmer
Hg^{201}	σ_t	43-206	PR,102,228(56)	Palmer
Hg	σ_t	23-191	PPS/A,65,992(52)	Hodgson
Hg^{199}	$\bar{\sigma}_s$	thermal	PR,82,560(51)	Hibdon
Hg^{199}	σ_t	thermal	PR,70,154(46)	Havens
Hg	$\bar{\sigma}_s$	thermal	PR,60,688(41)	Kimura

$_{81}$Tl

THERMAL CROSS SECTIONS

σ_γ = 3.4±0.5 b
$\bar{\sigma}_s$ = 9.7±0.4 b
σ_t = 13.1±0.7 b
a_{coh} = 8.89±0.02 fm

RESONANCE PROPERTIES

I_γ = 12±1 b
R' = 9.6±0.3 fm

$^{203}_{81}$Tl

THERMAL CROSS SECTIONS

σ_γ = 11.0±0.5 b

RESONANCE PROPERTIES

I_γ = 39.5±2.0 b

RESONANCE PARAMETERS

I^π = 1/2$^+$ %Abn = 29.5 S_n = 6655.8±1.5 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
.03793± .00005	.000041±4.00-6		1	0.27±0.07	
0.2388 ± .0015	6.75 ±0.60	1	0	0.64±0.07	0.438±0.039
1.2 ±0.1					
5.0 ±0.2		0	0		
6.4					
8.9					
10.9					
13					
26					
29					

THERMAL CROSS SECTIONS

σ_γ = 21.6±2.0 b

RESONANCE PROPERTIES

I_γ^c = 86±17 b

RESONANCE PARAMETERS

$I^\pi = 2^-$ S_n = 7541.4±3.8 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
0.1229	2.00	0.75±0.15	0.180
0.7962	9.80	(0.60)	1.23

$^{205}_{81}$Tl

THERMAL CROSS SECTIONS

σ_γ = 0.10±0.03 b

RESONANCE PROPERTIES

I_γ = 0.7±0.2 b
S_0 = 0.55±0.15

RESONANCE PARAMETERS

I^π = 1/2$^+$ %Abn = 70.5 S_n = 6503.9±1.5 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)
.04455±.00005	.000062±4.00-6	2	1	0.22±0.04	
1.445			1		
2.794	1.80 ±0.18	1	0	0.79±0.08	0.034±0.003
3.042	7.5 ±0.5	1	0	0.71±0.07	0.136±0.009
4.43					
4.44					
5.11			0		
6.68			1		
8.46			1		
10.25					
11.79			1		
12.36					
13.29					
14.54					
16.29					
16.45	21.2	(0)	0	1.0 ±0.2	1.69
16.83					
17.48					
18.72					
19.29			1		
20.80					
22.98					
23.66					
24.12					
24.79					
25.92					
26.88					
27.35					
27.95					
28.65					
29.76					
30.33					
31.20	72.4		0	1.0 ±0.3	0.41
32.92			1		

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Tl	Christiansen filters	ZN/A,27,901(72)	Koester
Tl^{205}	activation,ratio	AECL-3742,41(70)	Merritt
Tl^{203}	activation	JIN,32,2839(70)	Sims
$Tl^{203,204}$	mass spectrometry	ORNL-4306,2(68)	Druschel
Tl	diffraction	JAP,30,1323(59)	Sidhu
$Tl^{203,205}$	pile osci.	PR,88,412(52)	Pomerance
Tl	local osci.	PR,83,641(51)	Pomerance
Tl	pile osci.	PR,80,342(50)	Harris
Tl	σ_t	PR,75,975(49)	Winsberg
$Tl^{203,205}$	activation	PR,72,888(47)	Seren
Tl	σ_t	PR,71,174(47)	Wu
Tl^{203}	activation	PR,59,102(41)	O'Neal
Tl	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Tl	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Tl^{205}	σ_t	2.79-3.04	PRIVATE COMM.(73)	Harvey
Tl^{203}	σ_t	0.0379	PRIVATE COMM.(72)	Thomas
Tl^{205}	σ_t	0.446	PRIVATE COMM.(72)	Thomas
Tl^{205}	$\sigma_\gamma\sigma_\gamma$(spectra)	2.8-222	71ALBANY,263(71)+	Earle
Tl^{203}	σ_t	0.238	NSAC-31,70(70)	Watanabe
Tl^{204}	σ_t	0.122-0.796	68WASH,2,893(68)	Watanabe
Tl	σ_t	0.238	PRIVATE COMM.(65)	Ignatiev
Tl^{203}	σ_γ	0.238-1.3	ZET,47,795(64)	Konks
Tl^{205}	σ_γ	3.0	ZET,47,795(64)	Konks
Tl^{203}	σ_t	0.238-29	AP,14,346(61)	Newson
Tl^{205}	σ_t	3-55	AP,14,346(61)	Newson
Tl^{203}	σ_t	0.238	PR,108,353(57)	Stolovy
Tl^{203}	σ_t	0.238	PR,101,1328(56)	Levin

$_{82}$Pb

THERMAL CROSS SECTIONS

σ_γ = 0.170±0.002 b
σ_s = 11.4±0.2 b
σ_t = 11.6±0.2 b
a_{coh} = 9.42±0.01 fm

RESONANCE PROPERTIES

I_γ = 0.16±0.04 b
R' = 9.48±0.05 fm

$^{204}_{82}$Pb

THERMAL CROSS SECTIONS

σ_γ = 0.661±0.070 b

RESONANCE PROPERTIES

I_γ^c = 1.7±0.5 b
R' = 9.5±0.1 fm
S_0 = 0.65±0.20

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 1.4 S_n = 6734.2±1.5 keV

E_0 (keV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
1.33±0.05	0.030± 0.001					
1.68±0.05	3.9 ± 0.3	1/2	0	0.73±0.06	.095±0.007	
2.48±0.05	5.8 ± 0.5	1/2	0	0.47±0.06	0.12 ±0.01	
6.6 ±0.1	1.9 ± 1.2	1/2	0		.023±0.015	
8.35±0.05	50 ± 4	1/2	0	1.6 ±0.4	0.55 ±0.04	
9.64±0.05	15 ± 5	1/2	0	1.2 ±0.4	0.15 ±0.05	
12.9±0.05	50 ±10	1/2	0	0.6 ±0.4	0.44 ±0.09	
14.8±0.2	3.1 ± 1.0		1			0.4
19.5±0.3	4.0 ± 1.7		1			0.4
21.5	35 ± 5	1/2	0		0.24 ±0.03	
22.6	<10				<0.067	
23.5	60 ±10	1/2	0		0.39 ±0.07	
24.4	12 ± 5				0.077±0.032	
26.9	29 ± 7	1/2	0		0.18 ±0.04	
32.0	27 ± 7	1/2	0		0.15 ±0.04	
33.1	12 ± 5				0.066±0.03	
34.9	9 ± 6				0.048±0.032	
38.4	100 ±10	1/2	0		0.51 ±0.05	
42	10 ± 6				0.049±0.029	
45	5 ± 5				0.024±0.024	
48.1	24 ±10		[0]		0.11 ±0.05	
53.4	85 ±20	1/2	0		0.37 ±0.09	
59	10 ± 7		[0]		0.041±0.029	

THERMAL CROSS SECTIONS

σ_γ = 30.5±0.8 mb

RESONANCE PROPERTIES

I_γ^c = 0.2±0.1 b
R' = 9.5±0.1 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 24.1 S_n = 6740.9±2.3 keV

E_0 (keV)	Γ (eV)	$g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
3.36±0.01		5 ± 2			0.64±0.13	0.086±0.035	
14.25±0.01		24 ± 5			*0.20±0.04	0.20 ±0.04	
16.47±0.01	20 ± 4	20 ± 4	1/2	1	0.70±0.08		2.5
19.80±0.02		41 ± 8			*0.32±0.06	0.29 ±0.06	
21.94±0.04		33 ± 5		>0	*0.22±0.08		
25.48±0.05		74 ±10	3/2	1	0.55±0.10		4.9
36.40±0.08		78 ±12	3/2	1	0.5 ±0.1		3.2
42.2 ±0.1					*0.8 ±0.3		
47.6 ±0.1		96 ±14	3/2	1			2.7
58.4 ±0.1		<130			*0.8 ±0.2		
66.20±0.05		116 ±35	1/2	0	2.0 ±0.6	0.45 ±0.14	
71.0 ±0.1	155 ±45						
83.8 ±0.2		210 ±50	[3/2]	1			3.0
115.0 ±0.2	264						
118.2 ±0.2	270						
125.1 ±0.2	250						
126.2 ±0.3	200			1			
140.1 ±0.3	470						
151.0 ±0.5	450 ±70		[3/2]	1			
169.0 ±0.5	300						
199.0 ±0.4	340 ±80	340 ±80	1/2	1			1.7

* $g\Gamma_n\Gamma_\gamma/\Gamma$

$^{207}_{82}Pb$

THERMAL CROSS SECTIONS

σ_γ = 709±10 mb

RESONANCE PROPERTIES

I_γ^c = 0.4±0.2 b
R' = 9.5±0.1 fm
S_1 = 1.0±0.3

RESONANCE PARAMETERS

I^π = 1/2⁻ %Abn = 22.1 S_n = 7368.2±1.4 keV

E_0 (keV)	Γ (eV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$g\Gamma_n^1$ (eV)
3.070	2 ± 1	3.0± 1.5	1				
10.21	21 ± 2	53 ± 5	2	1			6.6
12.39	16 ± 5	40 ± 13	2	1			3.7
16.20	41 ± 4	103 ± 10	2	1	0.53±0.06		6.5
16.80	60 ± 10	150 ± 25	2	1			9.0
29.44	60 ± 20	90 ± 30	1	1	0.27±0.06		2.5
30.54	30 ± 10	75 ± 25	2	1			1.9
37.80	65 ± 20	98 ± 30	1	1	0.93±0.13		1.9
41.64	1250 ±150	1250 ±150	1	0	5.0 ±0.5	6.13±0.74	
44.35	390						
48.51	220 ± 50	330 ± 75	1	0		1.50±0.34	
62.93	100	250	2	1			2.4
67.10	220	330	1			1.27	
67.93	120	180	1	1			1.6
68.50	220	330	1			1.26	
83.18	130	325	2	1			2.2
90.35	760 ± 90	1140 ±135	1	1	1.9 ±0.2		7.0
93.15	730	1825	[2]			6.00	
98.75	570	1425	[2]			4.53	
102.25	570	855	1			2.67	
112.30	340	850	2	1			4.0
115.50	1230	1845	1	1	2.6 ±1.0		8.0
125.0	440	660	1	1			2.8
128.2	970	1455	1	1	2.3 ±1.0		5.9
130.6	230	345	1	1			1.4
149.8	1470						
162.1	720	1080	1				
179.4	460	690	1				
181.9	310	465	1	1			
187.0	570	855	1				
257.1	4050	6075	1	1			11.7

$^{208}_{82}Pb$

THERMAL CROSS SECTIONS

σ_γ = 0.487±0.030 mb

RESONANCE PROPERTIES

R' = 9.5±0.1 fm

RESONANCE PARAMETERS

$I^\pi = 0^+$ %Abn = 52.4 S_n = 3938±5 keV

E_0 (keV)	Γ (keV)	Γ_n (keV)	J	ℓ	Γ_γ (eV)	Γ_n^1 (eV)
80.0±0.5	1.000± 0.100		1/2	1	1.3±0.3	13.1 ±1.31
118 ±1	0.440± 0.090		1/2	1		3.65±0.75
352 ±2		6.45±1.3	1/2	1		21 ±4
515		100				141
525 ±2		7.1 ±1.5	3/2	1		13 ±3
720 ±3	4.6 ± 0.8					6.4 ±1.1
769.0±3.3	4.0 ± 1.0		3/2	1		
821.0±3.2	10.8 ± 1.0		5/2	2		
855.0±3.2	5.0 ± 1.0		3/2	2		
953.0±3.1	5.0 ± 1.0		3/2	2		
1111.±1.7	5.2 ± 1.0		3/2	1		
1154.±1.7	7.0 ± 1.0		3/2	1		
1204.±2.0	7.0 ± 1.0		1/2	1		
1239.±2.0	12.0 ± 1.5		3/2	1		
*1285.±2.0	6.0 ± 0.2		3/2	1		
1354.±2.1	4.0 ± 1.0		1/2	1		
1386.±2.0	6.0 ± 1.5		3/2	1		
1431.±2.6	1.0 ± 0.8		5/2	2		
1477.±2.9	5.0 ± 1.0		5/2	2		
1600.±3.0	6.0 ± 1.0		3/2	2		
1620.±3.0	10 ± 1		3/2	1		
1632.±3.0	2.6 ± 1.0		3/2	1		
1701.±2.5	6.0 ± 1.0		5/2	3		
1735 ±2.5	60 ±15		1/2	0		
1749.±2.5	10.6 ± 1.0		7/2	3		
1761.±2.5	4.4 ± 1.0		7/2	3		
1797.±2.8	3.0 ± 1.0		3/2			
1872.±3.0	13.0 ± 1.5		1/2			

* Possibly a Doublet

$^{210}_{82}Pb$ [22.3 yr]

THERMAL CROSS SECTIONS

σ_γ = 0.5±0.5 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Pb	σ_γ	NP/A,169,95(71)	Cranston
Pb	$\bar{\sigma}_s$	70HELSINKI,1,651(70)	Vertebnyi
Pb^{208}	activation	ORNL-4343,71(68)	Emery
Pb	$\bar{\sigma}_s$	UFZ,13,605(68)	Vertebnyi
Pb^{204}	σ_γ(spectra)	NP/A,94,351(67)	Jurney
Pb	reflection	67JUELICH,80(67)	Koester
Pb	σ_t total reflection	ZP,190,295(66)	Niklaus
Pb	σ_t	NP,61,381(65)	Rayburn
Pb^{208}	pile osci.	PRIVATE COMM.(63)	Carre
$Pb^{204,206,207}$	σ_γ(spectra)	ANL-6797,236(63)	Jurney
Pb	pile osci.	61BUCHAR,553(61)	Stefanescu
Pb	pile osci.	AERE-R/R-2516(59)	Jowitt
$Pb^{204,206,207}$	mass spectrometry	PR,111,590(58)	Wing
$Pb^{206,207}$	mass spectrometry	PPS/A,65,761(52)	Aitken
$Pb^{204,206-208}$	pile osci.	PR,88,412(52)	Pomerance
Pb	filtered beam	PRIVATE COMM.(52)	Weiss
Pb	local osci.	PR,83,641(51)	Pomerance
Pb	n diffraction	PR,81,527(51)	Shull
Pb	pile osci.	PPS/A,63,1175(50)	Colmer
Pb	pile osci.	PR,80,342(50)	Harris
Pb	σ_γ	PR,69,411(46)	Coltman
Pb	$\bar{\sigma}_s$	PR,60,155(41)	Whitaker
Pb	$\bar{\sigma}_s$	SCP,36,153(39)	Kimura
Pb	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Pb	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Pb^{206}	σ_γ	207-620	PRIVATE COMM.(72)	Allen
Pb^{207}	σ_t	40.8	BAP,17,18(72)	Phillips
Pb^{207}	σ_t	300-560	AP,69,451(72)	Seibel
Pb^{207}	σ_γ	3.0-699	71KNOX,764(71)	Allen
Pb^{207}	$\sigma(\gamma,n)$	205-543	PR/C,3,2475(71)	Baglan
Pb^{208}	$\sigma(\gamma,n)$	91-615	PRIVATE COMM.(70)	Nakajma
Pb^{204}	σ_γ	1.33-27.4	RPI-328-160,7(69)	Block
Pb^{206}	$\sigma(\gamma,n)$	1.6-50	PR,178,1827(69)	Bowman
Pb^{207}	$\sigma(\gamma,n)$	3.4-25	PR,178,1827(69)	Bowman
Pb^{208}	$\sigma(\gamma,n)$	3.0-41	PR,178,1827(69)	Bowman
Pb^{208}	activation	12-118	PR,181,1639(69)	Macklin
Pb^{206}	σ_γ(spectra)	16-72	PR,154,1136(67)	Biggerstaff
Pb^{207}	σ_γ(spectra)	12-41	PR,154,1136(67)	Biggerstaff
Pb	σ_γ	1-128	PRIVATE COMM.(67)	Block
Pb^{204}	σ_γ	1.33-18.8	PRIVATE COMM.(67)	Block
Pb^{206}	σ_γ	3.36-65.8	PRIVATE COMM.(67)	Block
Pb^{207}	σ_γ	3.02-128	PRIVATE COMM.(67)	Block
Pb^{208}	σ_t	277-1156	CEA-R-3279(67)	Cabe
Pb^{204}	σ_t	6.5-59	PR,153,1356(67)	Gibbons
Pb^{208}	$\bar{\sigma}_s$	723-1761	PR,147,870(66)	Fowler
Pb^{206}	σ_t	205-514	PL,17,286(65)	Farrell
Pb^{206}	$\sigma_t\sigma_\gamma$	12.2-75	PR/B,136,695(64)	Macklin
Pb^{207}	$\sigma_t\sigma_\gamma$	12.1-41.2	PR/B,136,695(64)	Macklin
Pb	$\sigma_t\sigma_\gamma$	12.3-24.4	BAP,8,513(63)-	Block
Pb^{204}	$\sigma_t\sigma_\gamma$	1.68-12.9	BAP,8,513(63)-	Block
Pb^{206}	$\sigma_t\sigma_\gamma$	3.35-25.4	BAP,8,513(63)-	Block
Pb^{207}	$\sigma_t\sigma_\gamma$	3.06-16.8	BAP,8,513(63)-	Block
Pb^{208}	σ_t	723-1872	PR,127,2192(62)	Fowler
Pb	σ_t	116-147	AP,14,387(61)	Bilpuch
Pb^{206}	σ_t	85-197	AP,14,387(61)	Bilpuch
Pb^{207}	σ_t	19.6-141	AP,14,387(61)	Bilpuch
Pb^{208}	σ_t	80-118	AP,14,387(61)	Bilpuch
Pb^{208}	σ_t	352-718	PR,121,1150(61)	Wilenzick
Pb^{208}	σ_t	352	PR,79,935(50)	Peterson

$^{209}_{83}Bi$

THERMAL CROSS SECTIONS

σ_γ = 33±4 mb
σ_γ = 14±3 mb [$^{210}Bi^m$]
σ_γ = 19±2 mb [3.5X10^6 yr $^{210}Bi^g$]
a_{coh} = 8.625±0.004 fm

RESONANCE PROPERTIES

I_γ^c = 0.19±0.03 b
R' = 9.47±0.05 fm
S_0 = 0.65±0.28
S_1 = 0.25±0.08

RESONANCE PARAMETERS

I^π = 9/2$^-$ %Abn = 100 S_n = 4597.8±3.9 keV

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$2g\Gamma_n^1$ (eV)
0.800±0.002	4.9 ± 0.3	5	0	0.045±0.005	0.173±0.011	
2.310±0.004	16.2 ± 0.4	4	0		3.38 ±0.07	
4.432±0.005	0.216± 0.020		1			0.230
5.102±0.005	6.16 ± 0.30	5	0		0.087±0.004	
6.253	0.112± 0.028		1			0.076
6.488	0.74 ± 0.12		1			0.466
8.970	0.52 ± 0.16		1			0.200
9.100	0.40 ± 0.12		1			0.142
9.660	0.10 ± 0.04		1			0.034
9.710	0.74 ± 0.14		1			0.260
12.14 ±0.04	240 ±10	4	0		2.18 ±0.09	
15.51 ±0.04	108 ± 8	4	0		0.868±0.064	
17.34 ±0.05	2.2 ± 0.4		1			0.324
20.94 ±0.05	7.6 ± 1.2		1			0.848
25.18 ±0.06	28.0 ± 2.4		1			2.42
27.00 ±0.06	22.0 ± 1.6	4	0		0.134±0.010	
28.61 ±0.06	0.8 ± 0.4		[0]			
28.86 ±0.06	2.2 ± 0.6		1			0.142
29.06 ±0.07	4.6 ± 1.0		1			0.312
29.37 ±0.07	3.6 ± 1.0		1			0.260
32.56 ±0.07	2.4 ± 1.2					
32.73 ±0.07	1.4 ± 0.8					
33.28 ±0.08	250 ±20	4	0		1.37 ±0.11	
34.50 ±0.09	2.2 ± 0.8		1			0.124
37.06 ±0.10	17.4 ± 1.8		1			0.872
38.94 ±0.10	2.6 ± 1.0		[1]			
42.27 ±0.12	20 ± 2		1			0.848
45.32 ±0.13	173 ±12	5	0		0.812±0.056	
46.41 ±0.13	10.0 ± 2.0		1			0.366
49.60 ±0.14	9.4 ± 1.0	[4]	0		0.042±0.005	
50.76 ±0.15	10.0 ± 1.2		1			0.324
52.45 ±0.17	25.2 ± 3.0		0		0.110±0.011	
53.38 ±0.17	8.0 ± 4.0					
53.51 ±0.17	41.4 ± 4.0		0		0.18 ±0.02	
53.93 ±0.17	16.4 ± 4.0		1			0.488

E_0 (keV)	$2g\Gamma_n$ (eV)	J	ℓ	Γ_γ (eV)	$2g\Gamma_n^0$ (eV)	$2g\Gamma_n^1$ (eV)
55.15 ±0.18	4.8 ± 2.0		1			0.136
58.00 ±0.19	12.0 ± 2.4		1			0.328
60.26 ±0.20	4.8 ± 2.0		1			0.152
61.33 ±0.21	88.2 ± 8.0	[5]	0		0.356±0.036	
62.67 ±0.21	8.2 ± 2.4		1			0.196
63.40 ±0.22	5.6 ± 1.8		1			0.134
66.83 ±0.24	15.0 ± 4.0		1			0.335
68.84 ±0.25	552 ±40	5	0		2.10 ±0.15	
70.32 ±0.26	21.0 ± 4.0		1			0.443
81.80 ±0.32	100 ±20		0		0.35 ±0.07	
85.40 ±0.35	130 ±25		0		0.45 ±0.09	
86.50 ±0.35						
95.50 ±0.41	410 ±50		0		1.33 ±0.16	
102.7 ±0.46	720 ±70		0		2.25 ±0.22	
107.40±0.49						
108.8 ±0.5						
112.90±0.53	260 ±30		0		0.77 ±0.09	
118.30±0.57	165 ±25		0		0.48 ±0.07	
129.00±0.64						
133.50±0.67						
136.20±0.70	330 ±35		0		0.90 ±0.10	

$^{210}_{83}$Bi

[3.5×10^6 yr]

THERMAL CROSS SECTIONS

σ_γ = 54±5 mb

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Bi^{209}	n reflection	ZP,227,152(69)	Nuecker
Bi^{209}	$\bar{\sigma}_s$	NUK,12,4(68)	Scherm
Bi^{209}	σ_t (1.44 ev)	NP,61,381(65)	Rayburn
Bi^{209}	σ_t filtered beam	ZP,186,23(65)	Triftshaeuser
Bi^{209}	$\bar{\sigma}_s$	ZN/A,19,406(64)	Scherm
Bi^{209}	$\bar{\sigma}_s$	ZN/A,19,354(63)	Scherm
Bi^{210}	activation	ORNL-3320,2(62)	Halperin
Bi^{209}	n refractometer	ZAP,14,738(62)	Maier-Leibnitz
Bi^{209}	pile osci.	JNE/A,12,32(60)	Tattersall
Bi^{209}	pile osci.	JNE,6,41(57)	Horsley
Bi^{209}	σ_t	AERE-N/R-1131(53)	Egelstaff
Bi^{209}	σ_t	AERE-N/R-1147(53)	Egelstaff
Bi^{209}	n diffraction	PRIVATE COMM.(53)	Hughes
Bi^{209}	$\sigma_t \bar{\sigma}_s$	PR,92,1206(53)	Hughes
Bi^{209}	mirror reflection	PR,90,497(53)	Hughes
Bi^{209}	pile osci.	PPS/A,66,700(53)	Littler
Bi^{209}	σ_t	PRIVATE COMM.(52)	Harvey
Bi^{209}	$\bar{\sigma}_s$ activation,reactivity	PR,83,234(51)	Palevsky
Bi^{209}	diffraction	PR,81,527(51)	Shull
Bi^{209}	pile osci.	PPS/A,63,1175(50)	Colmer
Bi^{209}	pile osci.	PR,80,342(50)	Harris
Bi^{209}	$\bar{\sigma}_s$	PR,83,379(51)	Weiss
Bi^{209}	σ_t	PR,75,1098(49)	Krueger
Bi^{209}	activation	PR,72,888(47)	Seren
Bi^{209}	activation	PR,59,102(41)	O'Neal
Bi^{209}	$\bar{\sigma}_s$	PRS/A,162,127(37)	Goldhaber
Bi^{209}	$\bar{\sigma}_s$	PR,50,133(36)	Mitchell
Bi^{209}	σ_t	PR,48,265(35)	Dunning

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (keV)	Reference	Author
Bi^{209}	σ_t	4.4-70	NP/A,123,561(69)	Morgenstern
Bi^{209}	σ_t	0.804-151	CR-1860(64)-	Garg
Bi^{209}	σ_t	0.784-15.5	NP,44,431(63)	Firk
Bi^{209}	σ_t	12.0-134	AP,8,250(59)	Nichols
Bi^{209}	σ_t	2.3-33	PR,109,926(58)	Good
Bi^{209}	σ_t	0.784-12	NP,7,613(58)	Lynn
Bi^{209}	σ_t	0.8-2.3	AE,5,69(58)	Vladimirskii
Bi^{209}	σ_t	1-70	PR,102,1574(56)	Gibbons
Bi^{209}	σ_t	0.810-2.37	PR,100,126(55)	Bollinger
Bi^{209}	σ_t	12	ANL-5498,52(55)	Hibdon

THERMAL CROSS SECTIONS

σ_γ < 30 mb [0.52 sec $^{211}Po^g$]
σ_γ < 0.5 mb [25 sec $^{211}Po^m$]
σ_t < 2 mb

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Po^{210}	σ_α	YF,1,252(65)	Andreev
Po^{210}	activation	NSE,15,217(63)	Halperin
Po^{210}	activation	60VIENNA,239(60)	Stoughton

$^{220}_{86}Rn$

[55.6 sec]

THERMAL CROSS SECTIONS

σ_γ < 0.2 b

$^{222}_{86}Rn$

[3.824 day]

THERMAL CROSS SECTIONS

σ_γ = 0.72±0.07 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Rn^{222}	activation	PR,90,1121(53)	Baerg
Rn^{220}	activation	PRIVATE COMM.(54)	Hanna

$^{223}_{88}$Ra

[11.43 day]

THERMAL CROSS SECTIONS

σ_γ = 130±20 b
σ_f = 0.7±0.3 b

$^{224}_{88}$Ra

[3.64 day]

THERMAL CROSS SECTIONS

σ_γ = 12.0±0.5 b

$^{226}_{88}$Ra

[1600 yr]

THERMAL CROSS SECTIONS

σ_γ = 11.5±1.5 b
σ_f < 0.1 mb

RESONANCE PROPERTIES

I_γ^c = 222±15 b
R' = 10.0±0.6 fm
<D> = 48.8±10.4 eV
S_0 = $0.38^{+0.42}_{-0.18}$

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 4565±21 keV

E_0 (eV)	Γ (meV)	Γ_n (meV)	Γ_γ (meV)	Γ_n^0 (meV)
0.539±0.004	28 ±1	0.021± 0.001	28 ±1	0.029±0.002
39.6 ±0.4		0.40 ± 0.04		0.062±0.008
55.7 ±0.6		6.5 ± 0.4	21.7±3.5	0.87 ±0.05
88.4 ±1.2		18.3 ± 1.0	25.2±5.0	1.94 ±0.11
238 ±5		129 ±20		8.36 ±1.31
262 ±6		12.7 ± 2.9		0.78 ±0.18
293 ±7		77.0 ±25.0		4.50 ±1.50

$^{228}_{88}$Ra

[5.75 yr]

THERMAL CROSS SECTIONS

σ_γ = 36±5 b
σ_f < 2 b

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ra^{226}	σ_t	72BUD,100(72)	Ceulemans
Ra^{226}	σ_t	YF,14,22(71)	Kalebin
Ra^{223}	σ_f	JIN,29,267(67)	Jain
Ra^{223}	activation	JIN,1,253(55)	Harbottle
$Ra^{224,225}$	activation	PR-CE-20(53)+	Baerg
Ra^{226}	activation	PR,91,1219(53)	Butler
Ra^{228}	activation	PR,85,49(52)	Depocas
Ra^{226}	activation	ACS,72,768(50)	Hagemann
Ra^{226}	activation	TRANSU.EL.,14B(49)	
		PAPER(19.4)	Ames
$Ra^{223,228}$	σ_f	TRANSU.EL.,14B(49)	
		PAPER(19.5)	Peterson

RESONANCE PARAMETERS

Isotope	Measurement	Energy Range (eV)	Reference	Author
Ra^{226}	σ_t	0.539	72BUD,100(72)	Ceulemans
Ra^{226}	σ_t	0.539-293	YF,14,22(71)	Kalebin
Ra^{226}	σ_t	0.539	AE,1,(4),67(56)	Pevzner

THERMAL CROSS SECTIONS

σ_γ = 515±35 b
σ_f < 2 mb

THERMAL CROSS SECTIONS

Isotope	Measurement	Reference	Author
Ac^{227}	σ_f	PRIVATE COMM.(72)	DelMarmol
Ac^{227}	activation	CJC,37,1094(59)	Cabell
Ac^{227}	pile osci.	PR,102,1140(56)	Kirby
Ac^{227}	activation	ANL-5263(54)	Sjoblom
Ac^{227}	σ_f	ANL-4039(47)	Peterson
Ac^{227}	pile osci.	ORNL-1415,15(52)	Pomerance
Ac^{227}	activation	MLM-744(52)	Timma

$^{227}_{90}Th$ [18.72 day]

THERMAL CROSS SECTIONS

σ_f = 200±20 b

$^{228}_{90}Th$ [1.913 yr]

THERMAL CROSS SECTIONS

σ_γ = 123±15 b
σ_f < 0.3 b

RESONANCE PROPERTIES

I_γ^c > 1013 b

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 5237±10 keV

E_0 (eV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
1.896±.002	.785±.055	36 ± 2	.57±.04
7.55 ±.02	1.21 ±.14	70 ±30	.44±.05

Note - Energy region below 1.8eV have not been investigated for resonances.
Single-level Breit-Wigner parameters.

$^{229}_{90}Th$

[7340 yr]

THERMAL CROSS SECTIONS

σ_γ^c = 54±6 b
σ_f = 30.5±3.0 b
σ_a^c = 84.5±6.7 b
ν = 2.14±0.04

RESONANCE PROPERTIES

I_γ^c = 1000±175 b
I_f^c = 464±70 b
<D> = 2.0±0.5 eV
S_0 = 0.62±0.16

RESONANCE PARAMETERS

I^π = 5/2+ S_n = 6789.9±3.7 keV

E_0 (eV)	Γ (meV)	$2g\Gamma_n$ (meV)	Γ_γ (meV)	$2g\Gamma_n^0$ (meV)	Γ_f (meV)
.609± .003	47 ± 4	.132± .005	43 ± 4	.169± .006	4.4
1.26 ± .01	41 ±16	.160± .008		.142± .007	29.0
1.44 ± .02		.024± .008		.020±0.007	
1.72 ± .01	40 ±25	.075± .005	23 ±25	.057± .005	16.5
1.96 ± .03	62 ±25	.186± .008	37 ±25	.133± .006	25.1
3.18 ± .03		.100± .025		.056± .014	*52 ± 6
4.16 ± .05	140 ±40	1.36 ± .10		.67 ± .05	155
4.75 ± .05		.037± .028		.017± .013	
5.58 ± .05		.58 ± .04		.25 ± .02	*30 ± 6
5.95 ± .05					*20 ± 5
6.95 ± .07		.76 ± .06		.29 ± .02	*39 ± 7
8.27 ± .08		.16 ± .08		.06 ± .03	*10 ± 4
9.15 ± .09		.36 ± .16		.12 ± .05	*50 ± 9
9.6 ±0.1					*35 ± 8
10.4 ± .1					*35 ± 8
10.8 ± .1					*18 ± 6
12.6 ±0.1		1.39 ± .35		.39 ± .10	*48 ±10
13.3 ± .1					*19 ± 7
14.6 ± .1		.32 ± .11		.084± .028	*41 ±10
15.4 ±0.2		2.5 ±0.3		.64 ± .07	*83 ±15
16.8					*57 ±13
23.3					*55 ±14
25.9					*56 ±15
29.7		3.14 ± .85		.58 ±0.22	*152 ±26
35.0					*81 ±20
39.3					*166 ±30
43.2					*149 ±30
46.5					*114 ±27
48.5					*98 ±25
51.0					*41 ±16

* $\sigma_0\Gamma_f$ (b-eV)

Note - Single-level Breit-Wigner parameters.

$^{230}_{90}Th$

[7.7×10^4 yr]

THERMAL CROSS SECTIONS

σ_γ = 23.2±0.6 b
σ_f < 1.2 mb

RESONANCE PROPERTIES

I_γ = 1010±30 b
R' = 10.9±0.7 fm
<D> = 10±2 eV
S_0 = 1.3±0.3

RESONANCE PARAMETERS

$I^\pi = 0^+$ S_n = 5129±4 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	Γ_γ (meV)	$g\Gamma_n^0$ (meV)
1.427± .005	25.3±1.5	.358± .006	24.9±1.5	.300±.005
17.27 ± .04		13.1 ± .6	22.3±3.2	3.15 ±.14
23.84 ± .07		11.1 ± .6	26.6±4.0	2.27 ±.12
32.2 ±0.1		3.3 ± .1	29.9±5.2	.58 ±.02
39.8 ± .1		8.5 ± .3	29.1±3.4	1.35 ±.05
48.1 ±0.2		10.0 ± 0.4	29.0±4.9	1.44 ±.06
64.5 ±0.2		3.1 ± .3	(24)	.39 ±.04
75.6 ±0.2		2.7 ± 0.4	(24)	.31 ±.05
83.3 ±0.2		24.8 ± 2.1	(24)	2.72 ±.23
103.0 ±0.3		5.2 ± 0.6	(24)	.51 ±.06
116.1 ±0.3		40.3 ± 4.0	(24)	3.74 ±.37
133.8 ± .5		7.5 ± 3.3	(24)	.65 ±.29
139.0 ± .6		2.4 ± 1.2	(24)	.20 ±.10
148.2 ±0.6		5.6 ± 2.7	(24)	.46 ±.22
171.4 ±0.8		25.3 ± 4.5	(24)	1.94 ±.34
184.2 ±0.9		23.3 ± 4.5	(24)	1.71 ±.33
195 ±1		45.3 ± 5.5	(24)	3.24 ±.39
209 ±1		75.3 ±11.0	(24)	5.21 ±.76
226 ±1		22.8 ± 5.0	(24)	1.52 ±.33
241 ±1		5.5 ± 2.0	(24)	.35 ±.13
248 ±1		55.3 ± 6.0	(24)	3.51 ±.38
294 ±2		95.3 ±11.0	(24)	5.56 ±.64

Note - A peak at neutron energy of 720 keV is observed in the fission cross section of Th-230.

$^{232}_{90}Th$ [1.4×10^{10} yr]

THERMAL CROSS SECTIONS

σ_γ = 7.40±0.08 b
σ_f = 0.039±0.004 mb
$\bar{\sigma}_a$ = 12.67±0.08 b
σ_t = 20.07±0.11 b
ν_{sp} = 2.12±0.10
a_{coh} = 10.08±0.04 fm

RESONANCE PROPERTIES

I_γ = 85±3 b
R' = 9.65±0.08 fm
<D> = 7.0±1.0 eV
S_0 = 0.84±0.08
S_1 = 1.6±0.2

RESONANCE PARAMETERS

$I^\pi = 0^+$ | %Abn = 100 | S_n = 4786.5±2.0 keV

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
-4.4			1/2	0	(21.2)	.81	
8.35± .01	29.0± 8.7	.00023± .00002		1	29.0±8.7		2.9
13.11± .02		.0002 ± .00003		1			1.3
21.78± .02	24.9± 2.0	1.90 ± .04	1/2	0	23 ±2	.407 ± .009	
23.43± .02	28.4± 2.0	3.36 ± .08	1/2	0	25 ±2	.694 ± .017	
36.95± .04		.0010 ± .0002		1			1.3
38.18± .04		.00062± .00012		1			.80
40.92± .04		.00059± .00015		1			.68
47.00± .04		.0017 ± .0002		1			1.6
49.85± .05		.00046± .00020		1			.39
55.20± .05		.0011 ± .0006		1			.81
58.80± .05		.0084 ± .0021		1			5.6
59.49± .05	27.2± 1.2	4.04 ± .10	1/2	0	23.2±1.2	.524 ± .013	
64.58± .06		.0005 ± .0005		1			.29
69.07± .06	65.9± 2.2	44.0 ± 2.0		0	21.9±1.0	5.29 ± .24	
90.09± .08		.007 ± .003	1/2	[1]			1.5
98.06± .08		.0043 ± .0008		[1]			1.7
103.66± .08		.0052 ± 0.0010		[1]			1.5
111.98± .10		.004 ± .003		[1]			1.0
112.95± .08	33.1± 1.0	13.0 ± 0.5	1/2	0	20.1± .9	1.22 ± .05	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
117.75± .08		.0020 ± .0012		1			.47
120.77± .10	44.0± 1.8	23.0 ± 1.5	1/2	0	21 ±1	2.09 ± .14	
128.21± .10		.055 ± .015		[1]			11.4
129.10± .13	22.2± 2.0	3.4 ± 0.2	1/2	0	18.8±2.0	.30 ± .02	
145.72±0.15		.095 ± .017		1			16.3
148.07± .15		.014 ± .004		[1]			2.4
154.24± .16		.21 ± .05	1/2	0		.017 ± .004	
167.03± .17		.016 ± .010		[1]			2.2
170.3 ±0.2	82.4± 2.2	60 ± 2	1/2	0	22.4±0.9	4.60 ± .15	
178.7 ±0.2		.035 ± .010		[1]			4.4
192.6 ±0.2	36.1± 2.2	18.1 ± 0.9	1/2	0	18 ±2	1.30 ± .06	
196.2 ±0.2		.076 ± .014	1/2	0		.0054± .0010	
197.5 ±0.2		.17 ± .05		[1]			18.5
199.3 ±0.2	29.2± 2.1	10.7 ± 0.7	1/2	0	18.5±2.0	.758 ± .050	
202.5 ±0.3		.028 ± .007		[1]			2.9
210.9 ±0.2		.020 ± .007		[1]			2.0
219.4 ±0.3		.051 ± .026					
221.2 ±0.2	50.9± 1.8	30.2 ± 1.0	1/2	0	20.7±1.5	2.03 ± .07	
242.3 ± .2		.040 ± .008		[1]			3.2
249.8 ± .2		.015 ± .005		[1]			1.2
251.5 ±0.2	53.5± 2.0	32.0 ± 1.3	1/2	0	21.5±1.5	2.02 ± .08	
258.3 ± .2		.010		[1]			.73
263.0 ±0.2	41.9± 1.7	23.3 ± 0.9	1/2	0	18.6±1.4	1.44 ± .06	
285.7 ±0.2	50.7± 2.0	29.9 ± 1.6	1/2	0	20.8±1.2	1.77 ± .10	
290.2 ±0.2		.070 ± .010		[1]			4.3
299.6 ±0.2		.052 ± .010					
302.3 ± .2		.012 ± .03		[1]			6.9
305.4 ±0.2	46 ± 3	26 ± 2	1/2	0	20 ±2	1.49 ± .11	
309.3 ±0.2		.053 ± .019		[1]			2.9
321.5 ±0.3		.060 ± .020		[1]			3.1
328.9 ± .3	97.4± 4.1	74.4 ± 4.0	1/2	0	23.0±1.0	4.10 ± .22	
335.05± .3		.035		[1]			1.3
338.3 ± .3		0.053 ± .018		[1]			2.6
341.8 ±0.3	57.0± 2.2	37.0 ± 1.9	1/2	0	20.0±1.0	2.00 ± .10	
361.5 ±0.3		.088 ± 0.020		[1]			3.9
365.1 ±0.3	48.0± 2.5	27.0 ± 1.5	1/2	0	21 ±2	1.41 ± .79	
369.4 ±0.3	47.0± 2.5	25.0 ± 1.5	1/2	0	22 ±2	1.30 ± .08	
380.4 ±0.3		0.12 ± .02		[1]			4.9
391.5 ±0.3		.17 ± .03	[1/2]	[0]		.0089± .0015	
400.9 ±0.4		10.8 ± 0.7	1/2	0	25 ±6	.539 ± .035	
402.6 ±0.4		.090 ± .030		[1]			3.4

$^{232}_{90}Th$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
411.6 ± .4		.23 ± .05		[1]			8.3
420.9 ±0.4		.43 ± .09	1/2	0		.0210± .0044	
454.2 ± .4		1.1 ± 0.2	1/2	0		.052 ± .009	
458.9 ±0.4		.063 ± .022		[1]			1.9
462.4 ±0.4	84.5± 4.3	63 ± 4	1/2	0	21.5±1.5	2.93 ± .19	
466.3 ±0.4		.10 ± .04		[1]			3.0
470.6 ±0.4		.048 ± .031		[1]			1.4
476.3 ± .4		.18 ± .06					
488.6 ±0.3	79.1± 4.2	59.9 ± 4.0	1/2	0	19.2±1.2	2.71 ± .18	
500.0 ±0.3		.05 ± .05		[1]			1.4
510.3 ±0.3		4.2 ± 0.8	1/2	0		.186 ± .035	
528.5 ±0.3	33.5± 3.4	13.5 ± 1.5	1/2	0	20 ±3	.587 ± .065	
533.3 ±0.3		.27 ± .05		[1]			6.6
535.5 ± .3		0.35 ± .07		[1]			8.5
540.1 ±0.3		.93 ± .09		[1]			22.3
569.9 ±0.3	47.8± 2.2	28.7 ± 1.6	1/2	0	19.1±1.6	1.20 ± .07	
573.5 ±0.3		.65 ± .14					
578.0 ±0.3		1.9 ± 0.4	[1/2]	[0]		.079 ± .017	
594.0 ±0.3		0.11 ± .05		[1]			2.3
598.2 ±0.3	29.0± 2.3	10.0 ± 1.0	1/2	0	19 ±2	.409 ± .004	
617.8 ±0.3		4.3 ± 0.5	1/2	0		.17 ± .02	
625.0 ±0.3		.053 ± .037		[1]			1.0
644.1 ±0.4		.20 ± .10		[1]			3.7
656.5 ± .4	69.0± 3.7	50.0 ± 3.1	1/2	0	19 ±2	1.95 ± .12	
665.2 ±0.4	43.0± 2.5	25.0 ± 1.6	1/2	0	18 ±2	.969 ± .062	
675.2 ± .4	227 ±10	208 ± 8	1/2	0	19.0±1.6	8.01 ± .31	
687.3 ± .4	71.3± 5.2	50 ± 5	1/2	0	21.3±1.5	1.91 ± .19	
698.9 ±0.4		.15 ± .15					
700.9 ± .4	33 ± 5	14 ± 2	1/2	0	19 ±4	.529 ± .076	
704.5 ± .4		.20 ± .08					
712.8 ± .4	43.9± 4.2	24.9 ± 3.0	1/2	0	19 ±3	.933 ± .112	
724.1 ± .4		.12 ± .04					
740.9 ± .4	211.4±15.0	190 ±15	1/2	0	21.4±1.4	6.98 ± .55	
758.5 ±0.4		.070 ± .045		[1]			1.0
764.7 ± .4		.83 ± .16	[1/2]	[0]		0.030 ± .006	
771.7 ± .4		0.12 ± .08		[1]			1.7
774.4 ±0.4		.05 ± .05		[1]			.7
778.6 ±0.5	36.4± 2.7	11.0 ± 0.8	1/2	0	25.4±2.6	.394 ± .029	
792.7 ±0.5		.083 ± .074		[1]			1.1
804.1 ±0.5	205 ±10	185 ±10	1/2	0	20.0±1.2	6.52 ± .35	
812.8 ± .5		.14 ± .06		[1]			1.8

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
816.9 ±0.5		.14 ± .07		[1]			1.8
820.9 ± .5		1.0 ± 0.2	[1/2]	[0]		.035 ± .007	
828.9 ±0.5		.24 ± .08		[1]			3.0
836.6 ± .5		1.45 ± .21	[1/2]	[0]		.0501± .0073	
842.2 ± .5	46.6± 2.9	27.6 ± 2.1	1/2	0	19 ±2	.951 ± .072	
850.5 ± .5		1.13 ± .21	[1/2]	[0]		.0387± .0072	
866.2 ± .5	35.9± 8.3	12.9 ± 1.2	1/2	0	23 ±3	.438 ± .041	
869.3 ± .5		.56 ± .18		[1]			6.6
884.7 ±0.5		.35 ± .08		[1]			4.0
889.9 ± .3		37.9 ± 2.3	1/2	0	21 ±2	1.27 ± .08	
906.1 ± .3		1.8 ± .3					
919.3 ± .3		.45 ± .10		[1]			4.9
926.5 ± .3		.50 ± .09					
934.2 ± .3		0.30 ± .09		[1]			3.2
943.2 ± .3	68.0± 3.3	45.0 ± 2.6	1/2	0	23 ±2	1.47 ± .09	
956.0 ±0.3		.18 ± .18		[1]			1.8
962.6 ±0.3		5.8 ± .6		0		.19 ± .02	
974.3 ±0.3		.26 ± .18				.0083± .0058	
982.7 ± .3	52.9± 3.7	32.0 ± 3.1		0	20.9±2.0	1.02 ± .10	
990.5 ± .3	93.7± 7.5	72 ± 7		0	21.7±2.5	2.29 ± .22	
995.5 ±0.3		.41 ± .19		[1]			3.9
1001.2 ±0.3		.25 ± .11		[1]			2.8
1010.4 ± .4	135.1±10.2	115 ±10	1/2	0	20.1±2.1	3.62 ± .31	
1021.4 ± .4		.40 ± .07		[1]			3.7
1029.4 ±0.4		.21 ± .07		[1]			1.9
1039.1 ± .4		13.8 ± 1.6	1/2	0		.428 ± .050	
1043.7 ± .4		.63 ± .08		[1]			5.7
1064.5 ± .4		4.6 ± .7	1/2	0		.14 ± .02	
1077.2 ± .4		11.1 ± 2.0	1/2	0		.338 ± .061	
1093.3 ± .4		1.8 ± 0.3					
1109.8 ± .4	39 ± 3	22.0 ± 0.6	1/2	0	17 ±3	.660 ± .018	
1114.7 ± .4		1.6 ± .3	[1/2]	[0]		.05 ± .01	
1115.9 ±0.4		1.0 ± 0.3		[1]			8.1
1120.2 ± .4		3.0 ± 0.6	1/2	0		.090 ± .018	
1128.0 ±0.4		.21 ± .08		[1]			1.7
1132.7 ± .4		0.38 ± .10		[1]			3.0
1138.8 ± .4	34.5± 3.2	15.5 ± 1.0	1/2	0	19 ±3	.459 ± .030	
1150.2 ±0.4	42.8± 2.6	20.8 ± 1.7	1/2	0	22 ±2	.613 ± .050	
1175.8 ± .4		.34 ± .09					
1194.4 ±0.4		8.0 ± 0.8	1/2	0		.23 ± .02	
1204.1 ± .4		1.9 ± 0.3					

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
1214.1 ± .4		.3 ± .3		[1]			2.1
1217.3 ± .4		0.60 ± .10		[1]			4.3
1223.8 ± .4		.42 ± .15		[1]			3.0
1227.8 ± .4	52.1± 3.5	31.1 ± 1.8	1/2	0	21 ±3	.888 ± .051	
1233.3 ± .4		0.86 ± .16		[1]			6.0
1243.1 ± .4	39.0± 3.7	19.0 ± 2.1	1/2	0	20 ±3	.539 ± .060	
1248.6 ± .4	135 ±10	117 ± 9	1/2	0	18 ±3	3.31 ± .45	
1260.8 ± .5		.86 ± .25		[1]			5.8
1261.7 ± .5		1.0 ± 0.2		[1]			6.8
1266.4 ± .5		.28 ± 0.28		[1]			1.9
1269.4 ± .5	39.5± 3.3	19.5 ± 1.4	1/2	0	20 ±3	.547 ± .039	
1287.8 ± .3		0.5 ± 0.2		[1]			3.3
1291.9 ± .3	128 ± 8	103 ± 8	1/2	0	25 ±2	2.87 ± .22	
1301.6 ± .3	71.4± 4.0	51.4 ± 3.5	1/2	0	20 ±2	1.43 ± .10	
1335.7 ± .3		3.2 ± 0.6					
1345.8 ± .3		1.1 ± 0.2		[1]			6.7
1354.9 ± .3	112.4± 9.4	89.4 ± 8.9	1/2	0	23 ±3	2.43 ± .24	
1359.8 ± .3		8.9 ± 1.4	1/2	0		.24 ± .04	
1372.5 ± .3		1.0 ± 0.4	[1/2]	[0]		.027 ± .011	
1377.9 ± .3	75.6± 5.6	52.6 ± 5.2	1/2	0	23 ±2	1.42 ± .14	
1387.7 ± .3		2.2 ± 0.4	[1/2]	[0]		.059 ± .011	
1397.9 ± .3	156.2±10.2	137 ±10	1/2	0	19.2±2.0	3.66 ± .27	
1417.9 ± .3		.54 ± .16					
1426.4 ± .3	126 ± 9	105 ± 9	1/2	0	21.0±2.4	2.78 ± .24	
1433.8 ± .3	53.8± 5.2	34.8 ± 4.2	1/2	0	19 ±3	.92 ± .11	
1441.3 ± .3		1.2 ± 0.3		[1]			6.6
1461.3 ± .3		1.2 ± .3	[1/2]	[0]		.031 ± .008	
1478.2 ± .3		1.9 ± .4	[1/2]	[0]		.05 ± .01	
1502.2 ± .6		.67 ± .20		[1]			3.5
1508.6 ± .3		5.0 ± 1.3					
1518.6 ± .3	206.9±18.1	185 ±18	1/2	0	21.9±2.1	4.75 ± .46	
1524.4 ± .3	221.7±13.2	200 ±13	1/2	0	21.7±2.5	5.12 ± .33	
1555.6 ± .3		6.7 ± .8	[1/2]	[0]		.17 ± .02	
1581.3 ± .4	41.1± 4.4	21.1 ± 1.6	1/2	0	20 ±4	.531 ± .040	
1589.5 ± .4	354 ±25	330 ±25	1/2	0	23.6±2.0	8.28 ± .63	
1602.6 ± .4	74.5± 5.0	50.5 ± 4.6	1/2	0	24 ±2	1.26 ± .11	
1610.7 ± .4		.95 ± .15		[1]			4.5
1623.5 ± .3		.5 ± .2				.012 ± .005	
1630.9 ± .4	549 ±30	530 ±30	1/2		19.2±3.6	13.1 ± .7	
1640.5 ± .4	66.7± 5.3	42.7 ± 4.9	1/2	0	24 ±2	1.05 ± .12	
1661.5 ± .4	146.7±10.4	122 ±10	1/2	0	24.7±2.9	2.99 ± .25	

$^{232}_{90}Th$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
1677.7 ± .4		24.7 ± 2.1	1/2	0		.603 ± .051	
1689.7 ± .4		1.2 ± 0.3		[1]			5.2
1696.9 ± .4		1.7 ± 0.4	[1/2]	[0]		.041 ± .010	
1705.0 ± .4		2.9 ± 0.4	[1/2]	[0]		.070 ± .010	
1719.7 ± .4	52.5± 4.2	35.5 ± 3.0	1/2	0	17 ±3	.856 ± .072	
1725.0 ± .4		1.3 ± 0.2		[1]			
1729.5 ± .4		1.6 ± 0.4		[1]			6.7
1740.2 ± .4		6.0 ± .8	[1/2]	[0]		.145 ± .019	
1746.5 ± .4	52.5± 4.0	31.1 ± 2.9	1/2	0	21.4±2.8	.744 ± .069	
1753.7 ± .4		.7 ± .7		[1]			2.9
1762.6 ± .4	136 ± 9	110 ± 8	1/2	0	26 ±3	2.62 ± .19	
1785.4 ± .4		2.1 ± .6	[1/2]	[0]		.050 ± .014	
1793.3 ± .4		.48 ± .34		[1]			1.9
1803.3 ± .4	108.3± 7.4	88.3 ± 6.8	1/2	0	20 ±3	2.08 ± .16	
1811.9 ± .4	66.1± 6.7	45.1 ± 6.0	1/2	0	21 ±3	1.06 ± .14	
1824.0 ± .4	105.3± 7.4	96.3 ± 6.8	1/2	0	19 ±3	2.02 ± .16	
1834.1 ± .4		1.2 ± 0.3		[1]			4.6
1848.4 ± .4		4.3 ± 0.9	[1/2]	[0]		.10 ± .02	
1854.4 ± .4	66.3± 7.5	41.3 ± 6.9	1/2	0	25 ±3	.956 ± .160	
1861.9 ± .4	60 ± 5	38 ± 4	1/2	0	22 ±3	.88 ± .09	
1888.5 ± .4		.91 ± .28		[1]			3.4
1896.9 ± .4		2 ± 1		[1]			7.3
1900.2 ± .4		120 ±10	1/2	0		2.75 ± .23	
1928.5 ± .4		8.2 ± 1.6	[1/2]	[0]		.187 ± .036	
1930.8 ± .4		12.3 ± 2.6	1/2	0		.280 ± .059	
1940.0 ± .4		.32 ± .32	[1/2]	[1]			1.1
1950.5 ± .4	124.0±15.5	100 ±15	1/2	0	24 ±4	2.26 ± .34	
1971.4 ± .4	258 ±20	235 ±20	1/2	0	23 ±4	5.29 ± .45	
1987.8 ± .4	60.8± 5.7	42.8 ± 4.9	1/2	0	18 ±3	.96 ± .11	
2005.0 ± .4	44.8± 5.1	22.8 ± 3.1	1/2	0	22 ±4	.51 ± .07	
2015.4 ± .4		.77 ± .39		[1]			2.6
2035.1 ± .5		1.0 ± 1.0		[1]			3.3
2051.9 ± .5		19.[illegible] ± 3.2	1/2	0		.42 ± .07	
2061.9 ± .5	77 ± 9	60 ± 8	1/2	0	17 ±3	1.32 ± .18	
2074.0 ± .5		6.8 ± 1.8	[1/2]	[0]		.15 ± .04	
2079.0 ± .5		9.1 ± 1.8	[1/2]	[0]		.20 ± .04	
2097.3 ± .5		.92 ± .46	[1/2]	[0]		.02 ± .01	
2116.9 ± .5		75.0 ± 6.0	1/2	0	20 ±3	1.63 ± .13	
2147.6 ± .5	104.9± 8.1	90.9 ± 7.0	1/2	0	14 ±4	1.96 ± .15	
2158.1 ± .5		2.0 ± 1.0		[1]			6.1
2162.6 ± .5		87.0 ± 7.0	1/2	0	26 ±4	1.87 ± .15	

$^{232}_{90}Th$

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
2170.4 ± .5		2.7 ± 0.7		[1]			8.1
2177.9 ± .5		77.2 ± 6.1	1/2	0	17 ±3	1.65 ± .13	
2197.2 ± .5		49.9 ± 5.2	1/2	0		1.06 ± .11	
2207.3 ± .5		2.2 ± 0.4		[1]			6.4
2216.2 ± .5		24.0 ± 1.9	1/2	0		.510 ± .040	
2222.0 ± .5	115.3±10.3	88.3 ± 9.0	1/2	0	27 ±5	1.87 ± .19	
2233.7 ± .5		1.6 ± .5	[1/2]	[0]		.034 ± .011	
2270.9 ± .5		28.2 ± 2.7	1/2	0		.592 ± .057	
2276.3 ± .6		45.8 ± 4.7	1/2	0	24 ±3	.960 ± .010	
2286.5 ± .6		267 ±20	1/2	0	19 ±5	5.58 ± .42	
2306.9 ± .5		3.0 ± 0.9		[1]			8.2
2321.1 ± .6		4.1 ± 1.0	[1/2]	[0]		.085 ±0.021	
2329.7 ± .6		2.0 ± 0.6		[1]			5.4
2336.0 ± .6	135 ±14	115 ±13	1/2	0	20 ±4	2.38 ± .27	
2344.4 ± .6		5.5 ± 1.5	[1/2]	[0]		.114 ± .031	
2352.5 ± .6		15.0 ± 2.9	1/2	0		.31 ± .06	
2353.7 ± .6		14.1 ± 2.9	1/2	0		.29 ± .06	
2375.2 ± .6		118 ±13	1/2	0		2.42 ± .27	
2382.8 ± .6		2.5 ± 1.0	[1/2]	[0]		.051 ± .020	
2391.2 ± .6		3.4 ± 1.0	[1/2]	[0]		.07 ± .02	
2418.5 ± .6		89.8 ± 8.9	1/2	0		1.83 ± .18	
2427.4 ± .6		2.7 ± .8		[1]			6.9
2434.8 ± .6		2.5 ± 0.5		1			
2440.1 ± .6		10.5 ± 1.5	[1/2]	[0]		.213 ± .030	6.3
2456.1 ± .6		170 ±15	1/2	0		3.43 ± .30	
2462.5 ± .6		3.8 ± .9		1			9.4
2474.6 ± .6		2.0 ± 1.0	[1/2]	[0]		.04 ± .02	
2491.8 ± .6		7.2 ± 1.5	[1/2]	[0]		.144 ± .030	
2509.3 ± .6		336 ±25	1/2	0		6.71 ± .50	
2527.2 ± .6		46.8 ± 6.0	1/2	0		.93 ± .12	
2557.1 ± .7		3.5 ± 1.0	[1/2]	[0]		.07 ± .02	
2563.1 ± .7		313 ±20	1/2	0		6.18 ± .40	
2569.6 ± .7		64 ± 8	1/2	0		1.26 ± .16	
2603.7 ± .7		2.0 ± 0.6		[1]			4.5
2612.5 ± .7		92.3 ± 7.3	1/2	0		1.81 ± .14	
2624.3 ± .7		7.2 ± 2.1	[1/2]	[0]		.14 ± .04	
2635.1 ± .7		168 ±13	1/2	0		3.27 ± .25	
2655.2 ± .7		4.6 ± 2.1	[1/2]	[0]		.09 ± .04	
2663.4 ± .7		200 ±20	1/2	0		3.88 ± .39	
2677.1 ± .7		11.9 ± 2.1	1/2	0		.23 ± .04	
2688.4 ± .7		200 ±20	1/2	0		3.86 ± .39	

E_0 (eV)	Γ (meV)	$g\Gamma_n$ (meV)	J	ℓ	Γ_γ (meV)	$g\Gamma_n^0$ (meV)	$g\Gamma_n^1$ (meV)
2713.0 ± .7		96 ±12	1/2	0		1.84 ± .23	
2722.7 ± .7		11.5 ± 2.1	1/2	0		.22 ± .04	
2733.4 ± .7		377 ±30	1/2	0		7.21 ± .57	
2748.3 ± .7		14.9 ± 2.5	1/2	0		.284 ± .048	
2773.6 ± .8		76 ±10	1/2	0		1.44 ± .19	
2793.0 ± .8		160 ±20	1/2	0		3.03 ± .38	
2803.0 ± .8		4.8 ± 1.2		[1]			9.8
2815.6 ± .8		28 ± 4	1/2	0		.53 ± .08	
2832.9 ± .8		40 ± 5	1/2	0		.75 ± .09	
2839.1 ± .8		1.1 ± 0.8	1/2	0		.027 ± .020	
2843.6 ± .8		1.0 ± 0.4		[1]			2.0
2852.4 ± .8		210 ±30	1/2	0		3.93 ± .56	
2861.6 ± .8		7.7 ± 2.6		[1]			15.1
2870.4 ± .8		1.5 ± 0.4		[1]			3.0
2884.0 ± .8		4.8 ± 1.6	1/2	0		.089 ± .030	
2895.9 ± .8		2.2 ± .5	1/2	0		.04 ± .01	
2915.2 ± .8		3.2 ± 1.1	1/2	0		.06 ± .02	
2932.0 ± .8		1.6 ± 0.5		[1]			3.1
2948.6 ± .8		98.7 ± 9.8	1/2	0		1.82 ± .18	
2956.6 ± .8		47 ± 4	1/2	0		.86 ± .07	
2966.3 ± .8		14.2 ± 2.4	1/2	0		.261 ± .044	
2979.6 ± .8		9.3 ± 1.5	1/2	0		.17 ± .03	
2988.3 ± .9		35 ± 6	1/2	0		.64 ± .11	
3006.7 ± .9		1.65 ± .55	1/2	0		.03 ± .01	
3017.3 ± .9		28 ± 3	1/2	0		.51 ± .05	
3027.3 ± .9		230 ±25	1/2	0		4.18 ± .45	
3039.7 ± .9		59 ± 5	1/2	0		1.07 ± .09	
3050.2 ± .9		5 ± 3	1/2	0		.09 ± .05	
3061.4 ± .9		29 ± 3	1/2	0		.52 ± .05	
3082.8 ± .9		55 ± 6	1/2	0		.99 ± .11	
3103.6 ± .9		1.7 ± .6	1/2	0		.03 ± .01	
3109.2 ± .9		22 ± 3	1/2	0		.39 ± .05	
3120.7 ± .9		7.3 ± 2.2	1/2	0		.13 ± .04	
3148.5 ± .9		185 ±20	1/2	0		3.30 ± .36	
3153.4 ± .9		200 ±20	1/2	0		3.56 ± .36	
3163.0 ± .9		21 ± 4	1/2	0		.37 ± .07	
3188.6 ± .9		75 ± 7	1/2	0		1.33 ± .12	
3194.5 ± .9		4 ± 3	1/2	0		.07 ± .05	
3207.4 ± .9		95 ±10	1/2	0		1.68 ± .18	
3229.4 ±1.0		17 ± 3	1/2	0		.30 ± .05	
3242.5 ±1.0		14 ± 3	1/2	0		.25 ± .05	