https://doi.org/10.61092/iaea.1p48-p6c6

INDC(NDS)-0816
Distr. EN

IAEA
International Atomic Energy Agency

INDC International Nuclear Data Committee

TABLE OF RECOMMENDED NUCLEAR MAGNETIC DIPOLE MOMENTS: PART II, SHORT-LIVED STATES

N.J. Stone

Oxford Physics, Clarendon Laboratory, Parks Road, Oxford U.K. OX1 3PU and Department of Physics and Astronomy, University of Tennessee, Knoxville, USA, TN 37996-1200

September 2020

IAEA Nuclear Data Section
Vienna International Centre, P.O. Box 100, 1400 Vienna, Austria

Selected INDC documents may be downloaded in electronic form
from https://nds.iaea.org/publications
or sent as an e-mail attachment.
Requests for hardcopy or e-mail transmittal should be directed to
NDS.Contact-Point@iaea.org
or to:
Nuclear Data Section
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 Vienna
Austria

Printed by the IAEA in Austria

September 2020

INDC(NDS)-0816
Distr. EN

TABLE OF RECOMMENDED NUCLEAR MAGNETIC DIPOLE MOMENTS: PART II, SHORT-LIVED STATES

N.J. Stone

Oxford Physics, Clarendon Laboratory, Parks Road, Oxford U.K. OX1 3PU and Department of Physics and Astronomy, University of Tennessee, Knoxville, USA, TN 37996-1200

ABSTRACT

This Table gives recommended values of static magnetic dipole moments of excited states of atomic nuclei throughout the periodic table having lifetimes < ~ 1 ms. To aid identification of the states, their excitation energy (in keV), half-life, spin and parity are given. The literature search covers the period to June 2020.

Research sponsored by the IAEA Nuclear Data Section, International Atomic Energy Agency.

September 2020

Contents

INTRODUCTION

This Table contains a listing of recommended values of the magnetic dipole moments of nuclear states having lifetimes less than ~ 1 ms. It complements and has the same general format as the prior Table published in 2019, hereafter referred to as LLT, which covered the dipole moments of all longer lived states [1]. The two Tables differ fundamentally from the various compilations of nuclear magnetic dipole moments which have been published in the past forty years [1–3] which derived from the older exhaustive listing of Fuller [4]. The more recent compilations merely added new results, in the form they had been published, without amendment or correction and with no indication as to an adopted 'best' value. The new Tables contain, for each nuclear state, a single recommended value for the magnetic moment of that state covered by a single reference to the relevant measurement. Adjustments to the published results have been made in a systematic fashion, as detailed in the introduction to each Table, to allow for our limited knowledge of necessary corrections. For those who wish to see data on all measurements, Ref. [3] and the NNDC website tabulation of Mertzimekis [5] are available.

It is the objective that these two Tables, together with the earlier published Table of Recommended Electric Quadrupole Moments [6], should form an accessible source detailing our present knowledge of these important nuclear multipole parameters which are of utility and interest both in the study of nuclear physics and in many wider fields.

This Table includes all states with lifetimes shorter than ~ 1 ms on which measurements have been reported by the Brookhaven nuclear science reference (NSR) service, with last update June, 2020. Sections of the introductory material given in LLT are repeated here for convenience of users and are supplemented by additional material specific to the study of the magnetic moments short-lived nuclear states.

The measurement of a nuclear magnetic dipole moment

In principle the measurement of a nuclear magnetic dipole is a simple matter of applying a known magnetic field to the nucleus and measuring the resulting Zeeman-like splitting of the energy levels characterised by the nuclear spin *I* and its projection *M*. Such a measurement is possible if it is carried out on a fully ionized nucleus in vacuum. In practice very generally a medium intervenes between the source of an externally generated field and the nucleus and this intervention modifies the strength of the field acting upon the nucleus. Beside the larger and more obvious para-magnetism and collective (ferro-, ferri-, antiferro-) magnetism, this medium effect in 'non-magnetic' materials is commonly known as diamagnetism.

In collective magnetic materials the interaction gives rise to the hyperfine magnetic field which, in the majority of such systems, dominates the applied field. In paramagnetic systems there can be strong enhancement of the applied field and appropriate correction for para-magnetism is of considerable importance, particularly for PAC measurements in unfilled d- and f-subshell elements. The state of para-magnetic corrections is discussed briefly below. Basic diamagnetism refers to screening of the applied field by electrons on the same atom of ion, whereas the additional influence of the chemical environment of the atom or ion is known as the chemical shift. In metals the weak para-magnetism of the conduction electrons gives rise to the additional Knight shift. The accuracy of extraction of the 'bare' nuclear moment from measurements in which external, known, magnetic fields are the major source of the splitting is limited by our knowledge of these corrections however well the splitting itself can be measured. Examples of techniques which deliver absolute nuclear moments only after diamagnetic correction are NMR and β-NMR in gases, liquids and non-magnetic solids and certain atomic beam methods. Perturbed angular correlation in an external field is such a method applicable to short-lived nuclear states.

In other major techniques measurement is made of the hyperfine structure produced by interaction of unpaired electrons of an atom or ion with the nuclear magnetic dipole and electric quadrupole moments through the familiar A and B parameters. Ratios of these parameters measured on different nuclear states and isotopes give ratios of their moments, subject to further correction discussed below, but not the moments themselves. In calibration, the ratio to the interaction strength of a 'reference' isotope or state for which the 'corrected moment' has been determined by a direct method as outlined in the previous paragraph, is needed. Thus the corrections described therein affect all results. Examples of such indirect methods are optical and laser spectroscopy and low field atomic beam studies.

The above outline of methods based on internal interactions ignores a second significant problem specific to determination of the nuclear magnetic dipole moment – the hyperfine anomaly. Whilst external applied fields are uniform over the nuclear volume, the strongest indirect interaction, the so-called contact interaction due to s-electron polarization at the nucleus, is proportional to the local s-electron density which, although falling exponentially from the origin for a point nuclear charge, for real nuclei varies over the nuclear volume to a degree dependent upon the nuclear charge density distribution. The nuclear magnetic moment is composed of parts dependent upon the distribution of spin and orbital angular momentum which in turn couple to the local electron density (the spin part) and the average density within the orbital motion (the orbital part). When the products of the two moment contributions and varying field are considered it is clear that the total interaction is not simply proportional to the total (spin + orbital) moment. In effect this means that hyperfine A parameter ratios do not equate to moment ratios but differ by a factor which depends upon the detailed structure of the two nuclear states involved. This factor is known as the hyperfine anomaly (HFA). Since, in general, the magnetic hyperfine interaction in any system may have both s-electron and non-s-electron contributions, the HFA, in principle, will differ for the same nuclear state in different systems. Examples of this difference exist between atomic hyperfine interactions and those found in dilute ferromagnetic alloys [6].

Measurements on short-lived nuclear states.

The majority of measurements on long-lived states utilize some form of resonance spectroscopy either in an applied field or in a specific electron environment. In moving to states having lifetimes less than 1 ms and down to the lowest present limit of ~ 100 fs new methods are required. Of these only the Mossbauer effect achieves direct resolution of the energy splitting produced by the interaction of a magnetic field with the magnetic dipole moment. NMR becomes impractical owing to the large RF power required to influence the populations of short-lived magnetic sub-states appreciably.

Most methods, for example perturbed angular correlation in its associated integral and time-dependent forms, depend upon the observation of the spatial precession of an anisotropic decay distribution from a partially aligned nuclear spin system. Precession is produced by the interaction of the magnetic dipole moment with an external or internal magnetic field. In the case of angular correlation the alignment is achieved statistically by detection of a preceding decay, which feeds the state under study, at a specific angle to the subsequent emission from that state, whereas in angular distribution measurements the necessary alignment results from the excitation process of the studied state as, for example, occurs in the Coulomb excitation process. Since the precession frequency is given by the product of the nuclear gyromagnetic ratio and the field at the nucleus, observation of appreciable precession angles in states of ever decreasing lifetime requires ever increasing fields. Large externally generated fields (to ~ 10 T), supplemented by the hyperfine fields found in ordered magnetic materials (~ 10 – 100 T), suffice for state lifetimes down to the ns range. These fields are well understood and can be accurately determined, subject to the corrections outlined above.

For states of lifetime less than ~ 1 ns the problem becomes more difficult. Although hyperfine interactions in highly stripped atoms can provide larger fields the provision of a system in which a single electronic hyperfine interaction predominates is difficult and the description of a system in which there are multiple electronic states present with differing interactions is complex. Recently the development of modern multi-electron codes such as Grasp2K [7] give hope for advances in this direction. Techniques which seek to utilise such fields are Recoil-in-Gas (RIG) and Recoil-in-Vacuum (RIV).

A different approach has produced the Transient Field technique. This method has been widely used for states in the 100 fs – many ps lifetime range. Aligned reaction products, with nuclei in excited states, frequently following Coulomb excitation, pass into a ferromagnetic metal. In earlier work the recoiling ions were allowed to stop in the ferromagnetic layer, but this presented complications involving the energy deposition and indeed melting of the solid lattice and the subsequent experience of a static hyperfine interaction if the nuclear state lived long enough. Since the 1980's thin foils of iron or gadolinium have been used, the ions passing through the layer and either stopping in a non-magnetic backing layer or, for more recent, radioactive beam, work, emerging into vacuum and leaving the detection region. It is found that fields in the 1000 T range exist at the nuclei of such transient ions, being produced by pick-up of polarized electrons in the ferromagnetic metal. More detailed discussion of the method and of some related open questions is given below.

In preparing the Tables the diamagnetic, Knight shift and HFA corrections have been thoroughly reviewed. The practice adopted for each is described in more detail in the following sections.

Diamagnetism and the Chemical Shift

This correction is relatively small, a few percent or less, but has features which make its calculation complex. It involves the reaction of multi-electron states to applied fields and thus differs in detail for free atoms, ions and all chemical compounds of a given element. Its application is necessary to extract the bare nuclear dipole moment from experiments and is of particular importance when the experimental measurement is of high precision. The correction increases from tens of ppm in light elements to over 2% in the heaviest elements. It is important that the correction be applied with uniformity and to recognize that it is not precisely known.

Previous Tables have listed the diamagnetic corrections $1/(1 - \sigma)$ which were applied, either by the original authors or by the Table compilers. The early compilation of Fuller [4] adopted corrections by Dickinson (D) [8] dating from 1950, with an assumed uncertainty of 5%. The Raghavan Table [1] gave a listing of corrections by Lin, Johnson and Feiock (LJF) [9] dating from 1972. The corrections were applied as if they were exact, that is with no allowance for uncertainty in their value. The two corrections differ by a factor which increases with atomic number such that σ(LJF)/σ(D) is ~ 1.1 for iron, 1.4 for gadolinium and 1.7 for lead. The LJF correction reaches 0.1% for sulphur, 0.5% for ruthenium, 1% for gadolinium and 2% for francium. Applying the correction as if it were exact led to listings which suggested great precision in the resulting nuclear moment, however this precision was not well established. The Raghavan procedure was followed by the present author in earlier Tables [2,3].

Developments in computation have led to a great improvement in multi-electron system calculations over the intervening years. Increased application of nuclear magnetic resonance in sciences beyond physics has produced strong pressure for reliable calculations of diamagnetic and chemical shifts. Table 1 shows comparison (for those 29 elements for which recent results are available) between the best calculations of σ in very dilute systems with the results of LJF. It is seen that there is a reasonably consistent deviation from the LJF corrections and that, for the considerable number of measurements for which the correction is relevant as compared to experimental errors, an adjustment downwards from the LJF σ values by a factor ~ 0.75 is established. The computed σ values have been applied for these 29 elements. For the other elements a correction with σ = 0.75(10)σ(LJF), shown in Table 1, has been applied. Chemical shifts and variation in the factor 0.75 have been allowed for by introducing uncertainty in σ of 10%.

These changes result in many minor adjustments both in the adopted moment value and in the assigned error. Many moments previously listed as amongst the best known are now given with increased error reflecting the uncertainty in the diamagnetic correction. In the short-lived states the accuracy of moment determination sufficient to make diamagnetic correction adjustment necessary occurs mainly for the heavier nuclei where there are many excellent measurements using the TDPAD method. The Table of diamagnetic corrections applied here for Z to 100 is given in Appendix 2.

The Knight shift

Where experiments have been made on nuclei in metals correction of the applied field for conduction electron para-magnetism is required whenever the accuracy of the data is sufficiently high. This situation occurs in many earlier measurements using the beta-NMR technique although lately the difficulty of this correction has been realized and experiments made in insulators. Enhancing the problem of making the correction accurately is the fact that the nuclei under study are frequently trace impurities in their host environment, which makes calculation complex. There is usually no reference moment available to allow the shift to be determined by experiment. The several examples in the Table which require Knight shift correction are again in the heaviest elements and for these the original author’s measurements and estimates have been accepted.

Paramagnetic Corrections.

In elements with partially filled d and f electron sub-shells para-magnetism is common and the effect is to enhance applied fields acting on their nuclei by factors as large as twofold. The numerical value of these factors depends on the valence state of the ion in the compound involved and is not readily calculated even in regular compounds let alone where the ions constitute a low-level impurity after recoil from a nuclear reaction. Unlike the situation for diamagnetic corrections described above, estimates of the paramagnetic correction have not received attention or benefit from recent advances in computation. In many cases use has been made of calculations by Lindgren from the 1960's, which have a roughly estimated error of 10% [10]. No attempt has been made to adjust these corrections, but the unsatisfactory situation leaves such results, and their uncertainties, in considerable doubt.

The Hyperfine Anomaly

The HFA relates to the different ways in which spin and orbital components of nuclear magnetic moments interact with polarized s-electrons. A further complication is that the field acting at the nucleus may comprise an s-electron contribution, which is subject to the anomaly, and a non-s-electron contribution that, if relativistic affects are neglected, is not. Thus the magnitude of the anomaly depends upon both the distribution of magnetization within the nucleus and its electronic environment, including different electron configurations in a given ion. Although computation of these effects has made considerable strides in recent decades, after due consultation it was realised that the time is not yet ripe to attempt a generally applicable correction for the anomaly.

The HFA is generally of order 10^{-3} – 10^{-4}, however, in cases where the nuclear moment is the small resultant of opposing spin and orbital components, it can approach, or even exceed, 10%. Such cases are known in $d_{3/2}$ states in Ir and Au isotopes. HFA's tend to increase in larger nuclei. Authors analyzing recent experiments in heavier elements Tl, Bi and Fr have made serious attempts to estimate and correct their results for the HFA. The results of these attempts have been adopted in the recommended moments. A valuable compilation of experimental values of the HFA published prior to 2013 by Persson is available and references therein give access to relevant discussions [11].

Calibration of Transient Field measurements.

The Transient Field (TF) technique utilises large magnetic interactions experienced by nuclei of ions moving through ferromagnetic metals. To date no satisfactory theory enabling calculation of these fields has been found. Although trends in moments have been well established by measurements on series of nuclear states through ratios of the observed precessions, their absolute values depend either on the inclusion in the experiment of a state having an already established moment or upon a calibration of the field. Such calibrations have been established related to the velocity and atomic number of the transient element. This is not the place to go into details of the available calibrations but several have been proposed based on the analysis of measurements on the limited number of suitable reference nuclear states with known moments distributed throughout the periodic table. Attempts were made to fit the observations with an empirical, smoothly varying function having different adjustable parameters. Each experimental group has chosen which function to adopt, the most used being the so-called Rutgers Calibration of 1980 [12] which involves three fitted parameters :-

$$B(v, Z) = (96.7 \pm 1.6)\left(\frac{v}{v_0}\right)^{0.45 \pm 0.18} Z^{1.1 \pm 0.2} \mu_B N_p$$

where v is the ion velocity in terms of the Bohr velocity v_o , Z is the ion atomic number and $\mu_B N_p$ Is the magnetization of the ferromagnetic foil. In some analyses this expression is used neglecting the uncertainty in the parameters and using the resulting fields without error.

Other functions have been adopted by the Chalk River and Bonn TF groups and used by them and others in their analyses.

The Rutgers fitted function has been investigated using the same, and updated, input data. These investigations have shown that the three fitting parameters are highly correlated and that the adopted best-fit function deviates from the calibration points by, on average, ~ 12% [12,13]. In recent years most experimenters have changed their preferred foils from iron to gadolinium. The Rutgers group find that, although the calibration was published based solely on data taken with Fe foils, the same parameter values can be used in both materials, whilst other groups report observed rotations ~ 20% larger in Gd than the Rutgers expression predicts. Variations in foil preparation, degree of magnetization and operating temperature can influence such differences.

These remarks have focused on the Rutgers parameterization, but similar problems exist with the others although usually some allowance for error in the calibration is made. There is no basis to prefer one calibration over another and the choice of which to adopt affects resulting moments at least at the 10 – 15% level. Thus, for TF results where there is no reference state measurement included in the experiment, uncertainty due to calibration needs to be included and is frequently larger than the reported statistical errors. The upshot of this unsatisfactory situation is that, in this Table, where no local reference is included and no allowance given for calibration uncertainty, an additional uncertainty of +/-10% has been added to the published result in the vicinity of the fitted points of the calibration and +/-15% if well away from these input points.

It is stressed once more that these considerable error adjustments are only made to the absolute values of moments obtained from experiments that rely solely on the adopted calibration. Trends obtained from relative measurements over a series made in the same experiment are unaffected. Where there is a reliable reference moment within the experiment the error in that moment has been included by the authors and for these no change has been made.

Limited publication

The great majority of entries in the Tables has been fully published in the regular journals cited. There are, however, a very few which, whilst not published in a manner allowing assessment and potential adjustment, have been included in earlier compilations and stand as the only available measurements for the states concerned. These are denoted by the letter L, indicating limited publication, and are included, without recommendation, for the convenience of the reader.

POLICIES

Signs

Signs are given when the sign can be determined from experimental data. Where the sign is not given by the measurement, no sign is given in the Table, although it can sometimes be inferred either from systematics or from the magnitude of the result.

Results and Uncertainties

Excepting as described above re certain TF results, experimental values and their associated errors are as given by the authors subject to a policy of limiting significant figures. Numerical errors with digits above 15 have in most cases been rounded to 2 and others have been rounded to give no more significant figures than the rounded error would allow. Thus, a published value 0.953(65) has been adjusted to 0.95(7) and 0.25(16) to 0.3(2).

Additional information

To assist in identification of the nuclear state involved, the Table includes the energy (in keV), half-life, and spin/parity of the state. The method used in the experiment is given, although for all details the original publication should be consulted. All lifetimes have been checked against current ENSDEF data sets and, where necessary (as in IPAC for example) moment values have been adjusted to reflect any lifetime change as compared with that taken in the original analysis.
References are given in the Table in the Nuclear Science References (NSR) keyword format and in an abbreviated journal form. Listings of abbreviations used to identify methods and journals are given in appendices following the Table.

ACKNOWLEDGEMENTS

This Table owes much to the compilations of Gladys Fuller and Pramila Raghavan, although, as specified above, many detailed corrections have been made to individual entries. Fulsome thanks are due to members of the Advisory Group, including Mark Bissell, Jonas Persson, Karol Jackowski and Pekka Pyykko, brought together by the IAEA at a meeting in Vienna in 2016. Invaluable assistance has been received from Andrew Stuchbery of the Australian National University with particular regard to the treatment of uncertainties in TF measurements.

These Tables could not have been produced without extensive assistance at various stages from staff of the National Nuclear Data Centre, Brookhaven National Laboratory, in particular Boris Pritychenko and Joann B. Totans. At the IAEA in Vienna the project has been under the watchful eye of Vivian Dimitriou and her predecessors of the Nuclear Data Section and their help and support is gratefully acknowledged. Additional references have been produced from Vienna by Lidija Vrapcenjak.

Finally thanks are due to the late Richard A. Meyer, who initiated the undertaking, and to Jirina Rikovska Stone for her unfailing assistance and encouragement.

REFERENCES

[1] P. Raghavan, At. Data Nucl. Data Tables **42** (1989) 189.
[2] N.J. Stone, At. Data Nucl. Data Tables **90** (2005) 75.
[3] N.J. Stone, INDC(NDS)-0658 (2014).
[4] G.H. Fuller, J Phys Chem Ref Data **5** (1976) 835.
[5] T.J. Mertzimekis, Nucl. Inst. Meth. in Phys. Res. A **807,** 55 (2016)
[6] G.J. Perlow et al., Phys Rev Letters **23** (1969) 680.
[7] P. Jonsson et al., Comp. Phys. Comm. **184** (2013) 21972203.
[8] W.C.Dickinson, Phys.Rev. **80** (1950) 563.
[9] W.R. Johnson, D. Kolb, K.–N. Huang, At. Data Nucl. Data Tables **28** (1983) 333 and references therein.
[10] C. Gunther and I. Lindgren, Chapter IV, Perturbed Angular Correlations, eds Karlsson, Matthias and Siegbahn. North Holland (1964).
[11] J.R. Persson Atomic Data and Nuclear Data Tables **99** (2013) 62.
[12] N.K.B. Shu et al. Phys. Rev. C**21**, (1980) 1828.
[13] A. Bonsor and J. Edge, priv.comm. Oxford 2005
[14] A.E. Stuchbery, priv. comm. Canberra 2019

Appendix 1

TABLE OF RECOMMENDED MAGNETIC DIPOLE MOMENTS

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
5 B 10	718	0.707 ns	1+	+0.63(12)	IPAC	1972Av01	NP A182 359 (72)
6 C 13	3854	8.5 ps	5/2+	1.40(4)	RIV/D	1981Ru04	NP A359 442 (81)
6 C 14	6728	66 ps	3-	0.82(2)	RIV/D	1974Al07	PR C9 1748 (74)
6 C 15	740	2.61 ns	5/2+	1.76(3)	RIV/D	1980As01	JP G6 251 (80)
7 N 14	5106	4.3 ps	2-	1.32(8)	RIV/D	1978Mo27	JP G4 1593 (78)
7 N 15	5270	1.79 ps	5/2+	2.35(18)	RIV/D	1983Bi10	JP G9 1407 (83)
7 N 16	298	91.3 ps	3-	1.60(6)	RIV/D	1984Bi03	NP A413 503 (84)
	397	3.9 ps	1-	-2.11(15)	RIV/D	1975As02	JP G1 415 (75)
8 O 15	5241	2.25 ps	5/2+	+0.65(7)	RIV/D, IMPAC	1978Be73/1983Bi10	HFI 4 181 (78)/JP G9 1407 (83)
8 O 16	6130	18.4 ps	3-	+1.668(12)	RIV/D	1984As03	JP G10 1079 (84)
8 O 18	1982	1.94 ps	2+	-0.57(3)	RIV/D	1976As04	JP G2 477 (76)
	3555	17.2 ps	4+	2.6(4)	RIGV	1974Be63	NP A235 410 (74)
8 O 19	96	1.39 ns	3/2+	-0.72(9)	IPAC	1976Go09	NP A262 214 (76)
8 O 20	1674	7.3 ps	2+	0.70(3)	RIV/D	1980Ru01	NP A344 294 (80)
9 F 18	937	47 ps	3+	+1.6(2)	IMPAC	1981St21	JPJa 50 2804 (81)
	1121	162 ns	5+	+2.68(3)	TDPAD	1967Sc09	PL 24B 457 (67)
9 F 19	197	89.3 ns	5/2+	+3.605(8)	TDPAD	1969Bi18	NIM 67 169 (69)
	1346	2.86 ps	5/2-	0.67(11)	RIV/D	1983Bi03	JP G9 293 (83)
10 Ne 19	238	18.0 ns	5/2+	-0.740(8)	TDPAD	1969Bl02	NP A123 65 (69)
10 Ne 20	1634	0.73 ps	2+	+1.08(8)	RIV/D, IMPAC	1978Za13/1975Ho15	HFI 5 347 (78)/NP A248 291 (75)
	4247	64 fs	4+	+1.5(3)	TF	2003Le01	PL B551 249 (03)
10 Ne 21	351	7.1 ps	5/2+	0.49(4)	RIV/D	1978Ro10	JP G4 431 (78)
10 Ne 22	1275	3.6 ps	2+	+0.65(2)	RIV/D	1977Ho01	NP A275 237 (77)
	3357	225 fs	4+	+2.2(6)	TF	1984Ba10	PR C29 1163 (84)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
11 Na 21	332	7.1 ps	5/2+	3.6(3)	RIV/D	1977Be30	PR C16 679 (77)
11 Na 22	583	243 ns	1+	+0.535(10)	TDPAC	1966Su07	PR 151 910 (66)
	2211	14.9 ps	1-	0.36(7)	RIV/D	1976Be06	PR C13 895 (76)
12 Mg 24	1369	1.33 ps	2+	+1.08(3)	TD-RIV	2015Ku05	PRL 114 062501 (2015)
	4123	22 fs	4+	+1.7(12)	TF	1983Sp01	NP A403 421 (83)
	4238	41 fs	2+	+1.3(4)	TF	1983Sp01	NP A403 421 (83)
	6010	49 fs	4+	+2.1(16)	TF	1984Sp03	ZP A315 319 (84)
12 Mg 26	1809	476 fs	2+	+1.1(3)	TF	1981Sp04	PL 102B 6 (81)
13 Al 28	31	2.07 ns	2+	+4.0(4)	IPAC	1972He22	PR C6 878 (72)
14 Si 28	1779	0.48 ps	2+	+1.1(2)	IMPAC	1975Eb01	NP A244 1 (75)
14 Si 30	2235	0.22 ps	2+	+0.9(2)	IMPAC, R	1978Za13	HFI 5 347 (78)
15 P 31	1266	0.52 ps	3/2+	+0.30(8)	TF	1982Ho06	NP A379 22 (82)
	2234	0.27 ps	5/2+	+2.8(6)	TF	1982Ho06	NP A379 22 (82)
16 S 32	2230	0.17 ps	2+	+0.9(2)	TF	2006Sp01	PL B632 207 (2006)
	4459	0.12 ps	4+	+1.6(6)	TF	1988Si14	ZP A330 361 (88)
16 S 34	2128	0.32 ps	2+	+1.0(2)	IMPAC	1979Za01	NP A315 133 (79)
16 S 38	1292	3.4 ps	2+	+0.26(10)	TF	2006St21	PRL 96, 112503/PR C74 054307 (06)
16 S 40	904	14.6 ps	2+	-0.02(12)	TF	2006St21	PRL 96, 112503/PR C74 054307 (06)
16 S 43	320	415 ns	(7/2-)	1.110(14)	TDPAD	2009Ga05	PRL 102 092501 (09)
18 Ar 36	1970	0.32 ps	2+	+1.0(4)	TF	2006Sp01	PL B632 207 (2006)
18 Ar 37	1611	4.4 ns	7/2-	-1.33(5)	TDPAD	1971Ra22	PRL 27 603 (71)
18 Ar 38	2167	0.46 ps	2+	+0.48(24)	TF	2006Sp01	PL B632 207 (2006)
	3937	0.03 ps	2+	+2.2(22)	TF	2006Sp01	PL B632 207 (2006)
18 Ar 40	1461	1.12 ps	2+	-0.04(6)	TF	2008Sp04	PR C78 017304 (08)
19 K 37	1379	10.4 ns	7/2-	+5.3(4)	TDPAD	1971Ra22	PRL 27 603 (71)
19 K 38	3458	22.0 μs	(7)+	+3.836(14)	TDPAD	1974Io01	PL 48B 28 (74)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
19 K 39	2814	47 ps	7/2-	4.0(4)	RIGV	1981Le19	ZP A301 243 (81)
	3598	38 ps	9/2-	2.4(2)	RIGV	1981Le19	ZP A301 243 (81)
	8030	14 ps	19/2-	+3.1(3)	TF	1992Pa01	PR C45 166 (92)
19 K 40	30	4.25 ns	3-	-1.29(9)	TDPAD	1974Br12	PL 49B 261 (74)
	2543	1.09 ns	7+	+4.1(7)	IMPAD	1976Bo21	NP A264 151 (76)
19 K 41	1294	7.35 ns	7/2-	+4.42(5)	TDPAD	1969Bi07	PL 28B 651 (69)
	2528	151 ps	11/2+	4.5(10)	RIGV	1981Le19	ZP A301 243 (81)
	2774	51 ps	13/2+	3.0(5)	RIGV	1981Le19	ZP A301 243 (81)
	4983	71 ps	19/2-	7(3)	RIGV	1981Le19	ZP A301 243 (81)
19 K 43	738	200 ns	7/2-	+4.43(5)	TDPAD	1983Ra37	HFI 15 59 (83)
20 Ca 40	3737	47 ps	3-	+1.6(3)	IMPAC	1987Ma25	ZP A327 157 (87)
	4491	295 ps	5-	+2.6(5)	IPAD	1974He13	PR C10 919 (74)
20 Ca 41	3830	3.0 ns	15/2+	+2.18(15)	TDPAD	1975Yo05	PR C12 1358 (75)
20 Ca 42	1525	0.83 ps	2+	+0.08(12)	TF	2003Sc21	PL B571 29 (03)
	3189	5.3 ns	6+	-2.49(9)	TDPAD	1975Yo02	PRL 35 497 (75)
20 Ca 44	1157	2.7 ps	2+	+0.34(6)	TF	2003Sc21	PL B571 29 (03)
20 Ca 46	1346	3.6 ps	2+	-0.52(12)	TF	2005Ta02	PL B605 265 (05)
21 Sc 43	152	438 μs	3/2+	+0.348(6)	TDPAD	1977Mi10	PR C16 1605 (77)
	3124	472 ns	19/2-	+3.122(7)	TDPAD	1978Ha07	PL 73B 127 (78)
21 Sc 44	68	155 ns	1-	+0.342(6)	TDPAC	1967Ri06	PR 153 1209 (67)
	235	6.1 ns	2-	+0.68(10)	TDPAD	1975Br12	NuoCL 12 433 (75)
	350	3.1 ns	4+	+3.6(5)	IPAD	1975Ch37	ZP A275 51 (75)
21 Sc 47	767	272 ns	(3/2)+	0.35(5)	TDPAD	1968Fo02	PR 168 1228 (68)
22 Ti 43	3066	556 ns	(19/2-)	+7.22(1)	TDPAD	1978Ha07	PL 73B 127 (78)
22 Ti 44	1083	3.1 ps	2+	+1.0(3)	TF	2003Sc19	PL B567 153 (03)
22 Ti 45	39	11.3 ns	5/2-	-0.08(3)	TDPAD	1977St12	PR C15 1704 (77)
	329	1.10 ns	3/2+	+1.1(3)	IPAD, R	1977Bu10	CJP 55 779 (77)
22 Ti 46	889	5.32 ps	2+	+0.99(15)	TF	2000Er06	PR C62 024305 (00)
	2010	1.62 ps	4+	+2.3(7)	TF	2000Er06	PR C62 024305 (00)
22 Ti 47	159	210 ps	7/2-	-1.9(6)	IPAD	1977Bu10	CJP 55 779 (77)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
22 Ti 48	984	4.04 ps	2+	+0.78(12)	TF	2000Er06	PR C62 024305 (00)
	2296	0.76 ps	4+	+2.2(6)	TF	2000Er06	PR C62 024305 (00)
22 Ti 50	1554	1.06 ps	2+	+2.9(4)	TF	2000Sp08	PR C62 031301 (00)
	3198	0.42 ns	6+	+9.3(10)	IPAD	1976Bo25	NP A266 457 (76)
22 Ti 52	1050	3.6 ps	2+	+1.7(4)	TF	2006Sp02	PL B633 219 (06)
	2318	3.3 ps	4+	+1.8(6)	TF	2006Sp02	PL B633 219 (06)
23 V 46	801	1.02 ms	3+	+1.64(3)	TDPAD	1982Si15	ZP A309 71 (82)
23 V 48	308	7.1 ns	2+	+0.44(2)	TDPAC	1987Bi14	HFI 34 61 (87)
23 V 49	153	19.9 ns	3/2-	+2.37(12)	TDPAD	1972Vi06	PL 40B 638 (72)
23 V 51	320	184 ps	5/2-	+3.7(3)	CEAD	1968Ke09	NP A120 540 (68)
24 Cr 49	4366	1.67 ps	19/2-	8.4(12)	TF	1993Pa22	PR C48 1573 (93)
24 Cr 50	783	9.67 ps	2+	+1.24(18)	TF	2000Er06	PR C62 024305 (00)
	1881	2.2 ps	4+	+3.1(8)	TF	2000Er06	PR C62 024305 (00)
	3164	0.69 ps	6+	+4(1)	TF	1994Pa34	PR C50 2608 (94)
	4743	0.28 ps	8+	+4.8(12)	TF	1994Pa34	PR C50 2608 (94)
24 Cr 51	749	3.3 ns	3/2-	-0.86(12)	TDPAD	1974Ko10	IzF 38 155 (74)
24 Cr 52	1434	0.783 ps	2+	+2.4(4)	TF	2000Er06	PR C62 024305 (00)
24 Cr 54	835	8.0 ps	2+	+1.7(2)	TF	2001Wa36	PR C64 034320 (01)
25 Mn 53	378	117 ps	5/2-	+3.3(3)	IMPAC	1975Si08	NP A243 1 (75)
26 Fe 53	741	64 ns	3/2-	-0.386(15)	TDPAD	1989Ra17	ARHMI 64 (74)
26 Fe 54	1408	0.76 ps	2+	+1.70(13)	TF	2009Ea01	PR C79 024304 (09)
	2949	1.22 ns	6+	8.2(2)	TDPAD	1971He21	PRL 27 1587 (71)
	6527	364 ns	10+	+7.28(1)	TDPAD	1983Ra03	PR C27 602 (83)
26 Fe 55	931	8 ps	5/2-	+2.7(12)	TDPAD	1973Ke03	CJP 51 707 (73)
	1317	2 ps	7/2-	+2(2)	IPAD	1973Ke03	CJP 51 707 (73)
	1408	37.9 ps	7/2-	-2.4(5)	TDPAD	1973Ke03	CJP 51 707 (73)
26 Fe 56	847	6.1 ps	2+	1.02(11)	TF	2009Ea01	PR C79 024303 (09)
26 Fe 57	14	98 ns	3/2-	-0.15531(18)	ME	1965Pe15	PR 140 A875 (65)
	136	8.7 ns	5/2-	+0.935(10)	TDPAD	1979Fa07	PS 20 163 (79)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
26 Fe 58	811	6.5 ps	2+	+0.94(5)	TF, R	2009Ea02	PR C79 024304 (09)
26 Fe 61	862	238 ns	(9/2+)	-1.031(9)	TDPAD	2004Ma80	PRL 93 142503 (2004)
27 Co 57	1378	19 ps	3/2-	+3.0(6)	IPAD	1970Va10	ZP 233 477 (70)
27 Co 58	53	10.5 μs	4+	+4.184(8)	TDPAD	1970Be33	NP A151 193 (70)
	111	0.14 ns	3+	+2.2(4)	IPAD	1972Ha61	NP A194 249 (72)
27 Co 59	1292	551 ps	3/2-	+2.54(12)	IPAC	1974Ba08	PS 9 79 (74)
28 Ni 58	1454	0.65 ps	2+	+0.076(17)	TF	2001Ke02	PR C63 021302
28 Ni 59	339	68 ps	5/2-	+0.35(15)	IPAD	1974We05	CJP 52 1137 (74)
28 Ni 60	1332	0.74 ps	2+	+0.32(6)	TF	2001Ke02	PR C63 021302
28 Ni 61	67	5.34 ns	5/2-	+0.480(6)	ME	1971Go31	ZNat 26a 1931 (71)
28 Ni 62	1173	1.45 ps	2+	+0.33(5)	TF	2001Ke02	PR C63 021302
28 Ni 63	87	1.67 μs	5/2-	+0.752(3)	TDPAD	1970Bl06	PL 32B 41 (70)
	1292	3.3 ps	(9/2)+	-1.211(13)	TDPAD	L	PR B40 7633 (89)
28 Ni 64	1346	1.09 ps	2+	+0.37(6)	TF	2001Ke02	PR C63 021302 (01)
28 Ni 65	1017	25.6 ns	9/2+	-1.332(14)	TDPAD	2005Ge09	JPhys G31 S1439 (05)
28 Ni 67	1007	13 μs	(9/2+)	0.56(3)	TDPAD	2002Ge16	JP G28 2993 (02)
29 Cu 62	41	4.6 ns	2+	+1.10(10)	TDPAC	1993Lo10	HFI 77 103 (93)
	390	11 ns	4+	+2.67(16)	TDPAD	1973Bl07	ZP 263 169 (73)
29 Cu 63	4498	4.1 ns	17/2+	+1.56(10)	IPAD	1983Ka24	NP A406 533 (83)
29 Cu 64	1594	20.4 ns	6-	+1.06(3)	TDPAD	1972Bl16	NP A197 620 (72)
29 Cu 65	1115	0.28 ps	5/2-	+4.5(9)	IPAD	1979Da20	IzF 43 2148 (79)
29 Cu 66	1154	0.60 μs	6-	+1.038(3)	TDPAD	1972Bl16	NP A197 620 (72)
29 Cu 68	84	7.84 ns	2+	2.857(6)	TDPAC	2016Fe08	EPL 115 62002 (2016)
29 Cu 69	2742	0.36 μs	(13/2+)	1.61(6)	TDPAD	2016Ku11	PR C93 054313 (2016)
30 Zn 62	954	2.9 ps	2+	+0.7(2)	TF	2002Ke02	PR C65 034308 (02)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
30 Zn 64	992	1.94 ps	2+	+0.89(14)	TF	2005Le12	PR C71 034303 (2005)
	2307	0.78 ps	4+	+2.0(6)	TF	2005Le12	PR C71 034303 (2005)
	2999	0.15 ps	3+	+1.5(9)	TF	2005Le12	PR C71 034303 (2005)
	4635	94 ps	7-	1.6(3)	RIGV	1983Ba69	ZP A314 55 (83)
30 Zn 65	115	444 ps	3/2-	-0.8(2)	IPAD	1975We08	NP A241 332 (75)
	207	150 ps	3/2-	+0.7(3)	IPAD	1975We08	NP A241 332 (75)
	1066	0.57 ns	9/2+	1.1(2)	IPAD	1992Be51	CJP 53 2544 (75)
30 Zn 66	1039	1.68 ps	2+	+1.06(16)	TF	2006Le24	PR C73 064305 (10)
	2451	0.76 ps	4+	+2.2(8)	TF	2010Mo14	PR C82 014301 (2010)
	2826	0.18 ps	3-	+2.1(9)	TF	2006Le24	PR C73 064305 (10)
	4076	30 ps	6-	0.9(2)	RIGV	1983Ba69	ZP A314 55 (83)
	4252	133 ps	7-	1.0(2)	RIGV	1983Ba69	ZP A314 55 (83)
30 Zn 67	93	9.1 μs	1/2-	+0.587(11)	ME	1988Ik02	PR B38 6380 (88)
	185	1.04 ns	3/2-	+0.50(6)	IPAC	1969Bo41	APPo 36 1065 (69)
	604	333 ns	9/2+	-1.097(9)	TDPAD	1973Be56	NP A215 486 (73)
30 Zn 68	1077	1.61 ps	2+	+1.08(16)	TF	2010Mo14	PR C82 014301 (2010)
	1883	1.0 ps	2+	+1.1(2)	TF	2010Mo14	PR C82 014301 (2010)
	2417	0.73 ps	4+	+0.6(6)	TF	2010Mo14	PR C82 014301 (2010)
	2750	0.26 ps	3-	+1.2(16)	TF	2007Bo04	PR C75 021302(R) (07)
30 Zn 70	885	3.7 ps	2+	+0.76(12)	TF	2009Mu06	PR C79 054310 (09)
	1759	1.9 ps	2+	+0.8(4)	TF	2010Mo14	PR C82 014301 (2010)
	1786	1.9 ps	4+	+0.8(5)	TF	2010Mo14	PR C82 014301 (2010)
30 Zn 72	653	14 ps	2+	+0.9(3)	TF	2014Il02	PR C89 054316 (14)
31 Ga 66	66	23 ns	2+	1.01(2)	TDPAD	1976Le03	NP A258 103 (76)
	1464	57 ns	7-	+0.89(2)	TDPAD	1985Ra33	HFI 26 855 (85)
	3043	0.208 ns	9+	4.2(9)	IPAC	1987Ba45	HFI 36 171 (87)
31 Ga 67	359	49 ps	5/2-	1.4(7)	RIGV	1986Ba79	HFI 30 291 (86)
	3578	0.16 ns	15/2+	-1.7(5)	IPAD	1986Ba79	HFI 30 291 (86)
31 Ga 68	1230	62 ns	7-	+0.72(2)	TDPAD	1985Ra33	HFI 26 855 (85)
31 Ga 70	879	22.7 ns	4-	-0.26(10)	TDPAD	1976Ta09	PR C14 329 (76)
32 Ge 67	752	146 ns	9/2+	-0.849(12)	TDPAD	1991Le31	NIMPR B56/57 851 (91)
32 Ge 68	1016	2.1 ps	2+	+1.1(3)	TF	2005Le19	PR C71 044316 (2005)
	3883	132 ps	6-	0.53(11)	RIGV	1982Ba42	JP G8 1397 (82)
	4054	118 ps	7-	0.78(12)	RIGV	1982Ba42	JP G8 1397 (82)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
32 Ge 69	398	2.8 μs	9/2+	-1.001(3)	TDPAD	1970Ch05	PR C1 613 (70)
32 Ge 70	1039	1.30 ps	2+	+0.64(10)	TF	2019Mc05	PR C100 044317 (2019)
	1707	1.1 ps	2+	+1.0(4)	TF	2013Gu23	PR C88 014301 (2013)
32 Ge 71	175	79 ns	5/2-	+1.018(10)	TDPAD	1968Mo12	PL 27B 370 (68)
	198	20.4 ms	9/2+	-1.039(2)	NMR/AC	1970Be29	NP A150 282 (70)
32 Ge 72	834	3.35 ps	2+	+0.56(8)	TF	2019Mc05	PR C100 044317 (2019)
	1464	4.5 ps	2+	+0.5(3)	TF	2013Gu23	PR C88 014301 (2013)
	1728	1.55 ps	4+	+1.0(3)	TF	2013Gu23	PR C88 014301 (2013)
32 Ge 73	13	2.92 μs	5/2+	1.08(3)	TDPAC	1993Co17	HFI 80 1321 (93)
				-0.94(3)	TDPAC	1975Ha37	PL 58B 423 (75)
32 Ge 74	596	12.4 ps	2+	+0.56(8)	TF	2019Mc05	PR C100 044317 (2019)
	1204	5.4 ps	2+	+0.75(15)	TF	2013Gu23	PR C88 014301 (2013)
	1464	1.53 ps	4+	+1.3(4)	TF	2013Gu23	PR C88 014301 (2013)
32 Ge 76	563	18.2 ps	2+	+0.53(8)	TF	2019Mc05	PR C100 044317 (2019)
	1108	8.0 ps	2+	+0.64(10)	TF	2013Gu23	PR C88 014301 (2013)
	1410	1.8 ps	4+	+0.8(6)	TF	2013Gu23	PR C88 014301 (2013)
33 As 68	2158	36 ns	9(+)	2.1(2)	TDPAD	1986RaZU	BAPS 31 1210 (86)
33 As 69	1306	1.35 ns	9/2+	+4.7(6)	IPAD	1980Be32	ZP A296 181 (80)
33 As 70	888	4.5 ns	7-	0.75(5)	IPAD	1991Ba43	NP A535 425 (91)
33 As 71	1000	19.8 ns	9/2+	+5.13(9)	TDPAD	1971BEWR	ARHMI 58 (71)
33 As 72	214	85 ns	3+	+1.58(2)	TDPAD	1975Be32	NP A249 93 (75)
	561	87 ns	7-	-0.812(14)	TDPAD	1977Ra03	PR C15 1583 (77)
33 As 73	67	5.0 ns	5/2-	+1.63(10)	TDPAC	1963Bo26	PL 6 290 (63)
	428	5.7 μs	9/2+	+5.234(14)	TDPAD	1970Be23	PRL 25 102 (70)
33 As 74	259	26.8 ns	(4)+	+3.24(4)	TDPAD	1976Ga23	PR C14 1776 (76)
33 As 75	265	11.2 ps	3/2-	+1.0(2)	IPAC	1970Pi18	Pram 1 70 (73)
	280	273 ps	5/2-	+0.92(2)	TDPAC	1989Mo14	NP A500 277 (89)
33 As 76	44	1.84 μs	(1)+	+0.559(5)	TDPAD	1971BeWJ	Cf70Delft 564 (70)
33 As 77	264	304 ps	5/2-	+0.74(2)	TDPAC	1989Mo14	NP A500 277 (89)
	475	114 μs	9/2+	+5.525(9)	TDPAD	1971BeWR	ARHMI 53 (69)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	632	60 ps	5/2+	+2.5(4)	IPAC	1974Ch31	PR C10 774 (74)
34 Se 74	635	7.08 ps	2+	+0.74(11)	TF	2019Mc05	PR C100 044317 (2019)
	1269	4.0 ps	2+	1.0(2)	TF	1998Sp03	PR C57 2181 (98)
	1363	1.86 ps	4+	1.7(3)	TF	1998Sp03	PR C57 2181 (98)
34 Se 76	559	12.3 ps	2+	+0.70(11)	TF	2019Mc05	PR C100 044317 (2019)
	1216	3.4 ps	2+	0.61(11)	TF	1998Sp03	PR C57 2181 (98)
	1331	1.52 ps	4+	2.2(4)	TF	1998Sp03	PR C57 2181 (98)
34 Se 77	250	9.6 ns	5/2-	+1.12(3)	TDPAC	1984Za08	JP G10 1571 (84)
	439	23 ps	5/2-	+1.0(3)	IMPAC	1970RoZS	Cf69Heid 419 (69)
34 Se 78	614	9.8 ps	2+	+0.65(10)	TF	2019Mc05	PR C100 044317 (2019)
	1308	4.2 ps	2+	0.6(2)	TF	1998Sp03	PR C57 2181 (98)
	1503	1.04 ps	4+	1.3(4)	TF	1998Sp03	PR C57 2181 (98)
34 Se 80	666	8.5 ps	2+	+0.75(11)	TF	2019Mc05	PR C100 044317 (2019)
	1449	1.95 ps	2+	0.6(2)	TF	1998Sp03	PR C57 2181 (98)
	1701	0.66 ps	4+	2.3(9)	TF	1998Sp03	PR C57 2181 (98)
34 Se 82	655	3.1 ps	2+	+0.86(13)	TF	2019Mc05	PR C100 044317 (2019)
	1735	0.96 ps	4+	2.0(13)	TF	1998Sp03	PR C57 2181 (98)
35 Br 73	241	35 ns	3/2-, 5/2-	1.97(13) (I=3/2)	TDPAD	1987He27	PR C36 2409 (87)
				3.28(22) (I=5/2)			
35 Br 77	130	9.3 ns	5/2+	+3.30(3)	TDPAC	1991Gr15	ZP A340 349 (91)
35 Br 78	32	11.3 ns	(2)-	-1.12(4)	TDPAD	1973Pl07	NP A215 471 (73)
	181	119 μs	4(+)	+4.114(12)	NMR/AC	1974FoYO/1971Br31	Cf74Upp 258 (74)/ZP 244 375 (71)
35 Br 79	217	47 ps	5/2-	1.0(3)	TF	1994Sp05	NP A578 300 (94)
	523	1.91 ps	5/2-	2.8(8)	TF	1994Sp05	NP A578 300 (94)
	761	1.50 ps	7/2-	1.9(4)	TF	1994Sp05	NP A578 300 (94)
35 Br 80	37	7.4 ns	2-	-1.67(12)	TDPAD	1973Pl07	NP A215 471 (73)
35 Br 81	276	9.7 ps	5/2-	1.6(5)	TF	1996Ja09	NP A601 117 (96)
	536	35 ps	9/2+	5.70(5)	SOP/RDAD	1972Ch34	PL 35B 501 (71)
	767	0.55 ps	5/2-	1.0(4)	TF	1996Ja09	NP A601 117 (96)
	837	1.1 ps	7/2-	1.4(4)	TF	1996Ja09	NP A601 117 (96)
36 Kr 76	424	24.9 ps	2+	+0.7(2)	TF	2004Ku11	PL B591 213 (04)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
36 Kr 78	455	21.6 ps	2+	+0.86(14)	TF	2004Ku11	PL B591 213 (04)
	1119	2.5 ps	4+	+1.8(4)	TF	2001Me20	PR C64 024314 (01)
	1148	3.3 ps	2+	+1.3(7)	TF	2001Me20	PR C64 024314 (01)
36 Kr 79	147	78.7 ns	5/2-	+1.124(10)	TDPAD	1968Bl04	PL 26B 134 (68)
36 Kr 80	617	8.3 ps	2+	+0.75(15)	TF	2001Me20	PR C64 024314 (01)
	1256	7.6 ps	2+	+1.3(7)	TF	2001Me20	PR C64 024314 (01)
	1436	1.1 ps	4+	+1.8(7)	TF	2001Me20	PR C64 024314 (01)
36 Kr 82	777	4.5 ps	2+	+0.80(13)	TF	2001Me20	PR C64 024314 (01)
	1821	0.7 ps	4+	+1.2(8)	TF	2001Me20	PR C64 024314 (01)
36 Kr 83	9	157 ns	7/2+	-0.943(2)	ME	1969Ca06	PR 178 1728 (69)
36 Kr 84	882	4.1 ps	2+	+0.54(8)	TF	2001Me20	PR C64 024314 (01)
	3236	1.83 μs	8+	-1.97(2)	TDPAD	1982Za04	R.Rou 27 33 (82)
	5373	44 ns	12+	+2.04(12)	TDPAD	1985Ro22	PL 163B 323 (85)
36 Kr 86	1565	0.29 ps	2+	+2.2(4)	TF	2001Me20	PR C64 024314 (01)
	2250	3.1 ns	4+	+4.1(6)	TF	2014Ku10	PR C89 064305 (14)
37 Rb 80	494	1.63 μs	6+	+3.38(2)	TDPAD	1996Io01	ZP A355 347 (96)
37 Rb 82	192	12.3 ns	6+	+4.02(5)	TDPAD	1996Io01	ZP A355 347 (96)
	3029	0.40 ps	12-	(+)13(3)	TF	2010Yu03	Chin Phys B19 062701 (10)
	3501	0.41 ps	13-	(+)13(3)	TF	2010Yu03	Chin Phys B19 062701 (10)
	4049	0.24 ps	14-	(+)12(3)	TF	2010Yu03	Chin Phys B19 062701 (10)
	4717	<0.7 ps	15-	(+)12(3)	TF	2010Yu03	Chin Phys B19 062701 (10)
37 Rb 85	514	1.02 μs	9/2+	+6.043(5)	OP/RD	1991Ma21	PRL 66 1681 (91)
	2826	12.5 ns	(19/2)-	+1.3(4)	TDPAD	1990Ka26	HFI 59 101 (90)
38 Sr 82	573	8.9 ps	2+	+0.9(4)	TF	2014Ku10	PR C89 064305 (14)
	1328	1.0 ps	4+	+2.1(16)	TF	2014Ku10	PR C89 064305 (14)
	2229	0.37 ps	6+	+3.5(5)	TF	2010FA08	NP A834 107c (2010)
	2817	3.0 ps	5-	+2(2)	TF	1989Ku11	JP G15 1039 (89)
	3243	0.24 ps	8+	+5.6(8)	TF	1989Ku11	JP G15 1039 (89)
	3623	0.7 ps	8+	+5.6(8)	TF	1989Ku11	JP G15 1039 (89)
	4424	0.9 ps	10+	+11(5)	TF	1989Ku11	JP G15 1039 (89)
38 Sr 84	793	3.2 ps	2+	+0.96(14)	TF	2012Ku14	PR C85 044322 (12)
	3332	157 ps	8+	-1(2)	TF	1989Ku11	JP G15 1039 (89)
	3488	4.4 ps	(7-)	+4.2(14)	TF	1989Ku11	JP G15 1039 (89)
	3680	3.3 ps	8+	+7.2(8)	TF	1989Ku11	JP G15 1039 (89)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	4448	2.2 ps	10+	+2.0(10)	TF	1989Ku11	JP G15 1039 (89)
	4534	1.66 ps	10+	+8(2)	TF	1989Ku11	JP G15 1039 (89)
	4636	2.5 ps	(9-)	0(4)	TF	1989Ku11	JP G15 1039 (89)
38 Sr 86	1077	1.4 ps	2+	+0.57(9)	TF	2012Ku14	PR C85 044322 (12)
	1854	0.39 ps	2+	+0.8(3)	TF	2012Ku14	PR C85 044322 (12)
	2230	1.7 ps	4+	-3(2)	TF	2012Ku14	PR C85 044322 (12)
	2956	455 ns	8+	-1.93(2)	TDPAD	1978Ha52	HFI 4 196 (78)
38 Sr 88	1836	0.15 ps	2+	+2.4(4)	TF	2012Ku14	PR C85 044322 (12)
38 Sr 90	832	6.9 ps	2+	-0.2(2)	TF	2014Ku10	PR C89 064305 (14)
	1656	12.0 ps	4+	-0.1(7)	TF	2014Ku10	PR C89 064305 (14)
38 Sr 91	94	88.9 ns	(3/2)+	-0.35(2)	TDPAC	1993Wo07	PR C48 562 (93)
38 Sr 93	213	4.6 ns	(9/2)+	-0.34(2)	TDPAC	2004Sa69	HFI 159 251 (2004)
38 Sr 98	144	2.8 ns	2+	0.76(14)	IPAC	1989Wo05	PR C40 932 (89)
	433	80 ps	4+	-1.9(2)	CER	2016Cl01	PRL 116 022701 (2016)
	867	-	6+	-1.2(3)	CER	2016Cl01	PRL 116 022701 (2016)
	871	-	2+	+0.02(12)	CER	2016Cl01	PRL 116 022701 (2016)
	1432	3 ps	8+	-1.0(8)	CER	2016Cl01	PRL 116 022701 (2016)
39 Y 83	145	119 ps	7/2+	+2.1(6)	IMPAD	1990Bh03	HFI 59 109 (90)
	595	5.4 ps	13/2+	+8(3)	IMPAD	1990Bh03	HFI 59 109 (90)
	2560	46 ps	17/2-	+2.5(5)	IMPAD	1990Bh06	PL B252 540 (90)
39 Y 84	112	79 ns	(4+)	+2.31(3)	TDPAD	2005Io02	PR C72 044313 (05)
	210	292 ns	(4-)	+0.94(2)	TDPAD	2005Io02	PR C72 044313 (05)
39 Y 85	266	178 ns	(5/2)-	+1.36(2)	TDPAD	2000Io02	PR C62 014306 (00)
39 Y 86	208	70 ns	(5)-	-0.415(15)	TDPAD	2010Ru03	Eur Phys J A44 31 (2011)
	243	28.6 ns	2-	-1.06(6)	TDPAC	1968Tr11	Cf 68HI 145 (68)
	302	127 ns	6+	+3.78(12)	TDPAD/R	2010Ru03	Eur Phys J A44 31 (2010)
39 Y 90	203	250 ps	3-	-0.85(7)	IPAC	1974Kl06	NP A224 1 (74)
40 Zr 88	1057	2.5 ps	2+	+0.6(2)	TF	2012Ku14	PR C85 044322 (12)
	2140	1.5 ps	4+	+2.6(7)	TF	2012Ku14	PR C85 044322 (12)
	2888	1.32 μs	8+	-1.81(2)	TDPAD	1978Ha52	HFI 4 196 (78)
40 Zr 89	2995	5.1 ns	21/2+	+9.4(4)	TDPAD	1988Ba11	ZP A329 429 (88)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
40 Zr 90	2186	0.088 ps	2+	+2.5(6)	TF	2000Ja11	PL B494 187 (00)
	2748	140 ps	3-	+3.0(5)	TF	2000Ja11	PL B494 187 (00)
	3589	131 ns	8+	+10.84(6)	TDPAD	1977Ha49	NP A293 248 (77)
40 Zr 91	2287	29 ns	15/2-	+5.25(8)	TDPAD	1976Ba02	NP A257 135 (76)
	3167	4.4 μs	(21/2+)	+9.82(8)	TDPAD	1982RaZR	BAPS 27 727 (82)
40 Zr 92	934	5.0 ps	2+	-0.36(5)	TF	2008We07	PRC C78 031301(R) (08)
	1495	102 ps	4+	-2.0(4)	TF	1999Ja13	PL B468 13 (99)
	1847	0.096 ps	2+	1.5(10)	TF	2008We07	PRC C78 031301(R) (08)
40 Zr 94	919	6.9 ps	2+	0.64(10)	TF	2008We07	PRC C78 031301(R) (08)
	1470	500 ps	4+	-3.2(16)	TF	1999Ja13	PL B468 13 (99)
	1671	0.12 ps	2+	+1.8(5)	TF	2008We07	PRC C78 031301(R) (08)
40 Zr 96	1750	0.57 ps	2+	+0.06(14)	TF	2003Ku11	PL B562 193 (03)
	1897	68 ps	3-	+2.9(5)	TF	2003Ku11	PL B562 193 (03)
40 Zr 97	1264	102 ns	7/2+	+1.37(14)	TDPAC	1985Be20	PL 156B 159 (85)
40 Zr 99	122	1.07 ns	3/2+	+0.42(6)	IPAC	1995Wo01	PR C51 2381 (95)
40 Zr 100	213	0.61 ns	2+	+0.60(6)	IPAC	2004Sm04	PL B591 55 (04)
40 Zr 101	98	0.6 ns	(5/2+)	+0.12(7)	IPAC	2006Or05	PR C73 054310 (06)
	217	0.33 ns	(5/2-)	-0.5(3)	IPAC	2006Or05	PR C73 054310 (06)
	232	<70 ps	(7/2+)	+0.6(4)	IPAC	2006Or05	PR C73 054310 (06)
	321	0.27 ns	(7/2-)	-0.14(11)	IPAC	2006Or05	PR C73 054310 (06)
40 Zr 102	152	1.8 ns	2+	+0.44(10)	IPAC	2004Sm04	PL B591 55 (04)
41 Nb 87	2412	58 ps	17/2-	+7.0(9)	IMPAD	1995We03	NP A584 133 (95)
	2491	13.9 ps	21/2+	+4.3(14)	IMPAD	1995We03	NP A584 133 (95)
41 Nb 89	2193	13.8 ns	21/2+	+3.40(7)	TDPAD	1994Kr01	PR C49 705 (94)
41 Nb 90	122	63 μs	6+	+3.72(2)	TDPAD	1975Ho16	PL 58B 43 (75)
	1880	472 ns	11-	+8.78(3)	TDPAD	1978Ha52	HFI 4 196 (78)
41 Nb 91	1984	10 ns	13/2-	+9.14(13)	TDPAD	1977ZaZW	Cf77Tash 374 (77)
	2034	3.8 μs	17/2-	+10.82(14)	TDPAD	1977Ha49	NP A293 248 (77)
	3467	0.9 ns	21/2+	+12(2)	IPAD	1977Ba34	APPo B8 147 (77)
41 Nb 92	225	5.9 μs	2-	-1.398(14)	SOPAD, TDPAD	1974Le05	NP A221 319 (74)
	2203	167 ns	11-	+9.7(3)	TDPAD	1977Br12	PR C15 2044 (77)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
42 Mo 89	2584	9.5 ns	21/2+	+8.3(4)	TDPAD	1995We12	ZP A353 7 (95)
42 Mo 90	2549	16 ps	5-	+5.5(14)	IMPAD	1994We09	JP G20 L77 (94)
	2875	1.1 μs	8+	-1.391(14)	TDPAD	1978Ha52	HFI 4 196 (78)
	4556	526 ps	12+	+6.0(7)	IMPAD	1994We09	JP G20 L77 (94)
	4842	39 ps	11-	+4.6(14)	IMPAD	1994We09	JP G20 L77 (94)
42 Mo 91	2267	47 ns	21/2+	+8.81(8)	TDPAD	1983Ra08	PR C27 1532 (83)
	2279	38 ns	17/2-	+4.51(6)	TDPAD	1983Ra08	PR C27 1532 (83)
42 Mo 92	1509	0.35 ps	2+	+2.3(3)	TF	2001Ma17	PR C63 034312 (01)
	2760	190 ns	8+	+11.30(5)	TDPAD	1977Ha49	NP A293 248 (77)
	4486	8.7 ns	11-	+13.9(3)	TDPAD	1977Ha49	NP A293 248 (77)
42 Mo 94	871	2.8 ps	2+	+0.62(9)	TF	2001Ma17	PR C63 034312 (01)
	2956	98 ns	8+	+10.54(12)	TDPAD	1975Fa04	ZP A273 157 (75)
42 Mo 95	204	0.75 ns	3/2+	-0.404(12)	IPAC	1984Al11	ZP A317 107 (84)
42 Mo 96	778	3.7 ps	2+	+0.79(6)	TF	2001Ma17	PR C63 034312 (01)
42 Mo 98	787	3.5 ps	2+	+0.97(6)	TF	2011Ch23	PR C83 054318 (2011)
42 Mo 99	98	15.5 ns	5/2+	-0.775(5)	TDPAD	1978Ra21	PR C18 2494 (78)
42 Mo 100	536	12.6 ps	2+	+0.94(7)	TF	2001Ma17	PR C63 034312 (01)
42 Mo 102	297	125 ps	2+	0.76(13)	IPAC	1985Me13	ZP A321 593 (85)
				+0.8(4)	IPAC	2004Sm04	PL B591 55 (04)
42 Mo 103	103	0.43 ns	5/2+	+0.14(3)	IPAC	2006Or05	PR C73 054310 (06)
	354	1.20 ns	7/2-	-0.33(11)	IPAC	2006Or05	PR C73 054310 (06)
42 Mo 104	192	0.9 ns	2+	+0.54(4)	IPAC	2004Sm04	PL B591 55 (04)
42 Mo 105	95	0.48 ns	7/2-	-0.22(3)	IPAC	2006Or05	PR C73 054310 (06)
	233	0.11 ns	9/2-	-0.12(16)	IPAC	2006Or05	PR C73 054310 (06)
42 Mo 106	172	1.25 ns	2+	+0.42(4)	IPAC	2004Sm04	PL B591 55 (04)
42 Mo 108	193	0.50 ns	2+	+1.0(6)	IPAC	2004Sm04	PL B591 55 (04)
43 Tc 92	2002	3.2 ns	11-	+8.9(3)	TDPAD	1996Tu03	PR C54 2904 (96)
43 Tc 93	2185	10.2 μs	17/2-	+10.46(5)	TDPAD	1977Ha49	NP A293 248 (77)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
43 Tc 96	121	26 ns	(2)-	-0.47(2)	TDPAD	1977BeWG	Cf77Tash 370 (77)
43 Tc 99	141	0.19 ns	7/2+	+4.48(15)	IPAC	1993Al23	ZP A347 1 (93)
	181	3.61 ns	5/2+	3.48(4)	NMR/ON	1995Hi06	ZP A350 311 (95)
44 Ru 93	2082	2.5 μs	21/2+	+8.97(2)	TDPAD	1983Gr33	HFI 15 65 (83)
	2280	35 ns	17/2-	+4.4(2)	TDPAD	1983Gr33	HFI 15 65 (83)
44 Ru 94	2498	65 ns	6+	+8.12(5)	TDPAD	1977Ha49	NP A293 248 (77)
	2644	71 μs	8+	+11.10(4)	TDPAD	1977Ha49	NP A293 248 (77)
	4489	0.76 ns	11-	14.1(1.7)	IMPAD	1999Ju04	EurPJ A6 29 (99)
	4716	24 ps	12+	12.4(1.7)	IMPAD	1999Ju04	EurPJ A6 29 (99)
44 Ru 95	2285	3 ns	17/2+	+6.98(14)	TDPAC	1976Le30	BRASP 40 6-128 (76)
	2540	10 ns	21/2+	+9.17(7)	TDPAD	1988Gr34	PRL 61 1249 (88)
	3908	36 ps	25/2-	11(4)	IMPAD	1999Ju04	EurPJ A6 29 (99)
	6211	9.5 ps	29/2+	9(5)	IMPAD	1999Ju04	EurPJ A6 29 (99)
	7624	21 ps	35/2+	7(2)	IMPAD	1999Ju04	EurPJ A6 29 (99)
44 Ru 96	833	2.9 ps	2+	+0.89(6)	TF	2011Ch23	PR C83 054318 (11)
	1515	6.9 ps	4+	+2.3(3)	TF	2012To01	PR C85 017305 (12)
44 Ru 97	2739	7.8 ns	21/2+	+9.2(8)	TDPAD	1982Di18	RRou 27 731 (82)
44 Ru 98	652	5.5 ps	2+	+0.82(6)	TF	2011Ch23	PR C83 054318 (11)
44 Ru 99	90	20.5 ns	3/2+	-0.284(6)	TDPAC	1965Ma27	PR 139 B532 (65)
				-0.292(3)	ME	1989Ra17	JDal 1253 (73)
				-0.292(7)	ME	1966Ki02	PR 144 1022 (66)/PR 149 990 (66)
44 Ru 100	540	12.6 ps	2+	+0.86(5)	TF	2011Ch23	PR C83 054318 (11)
44 Ru 101	127	0.65 ns	3/2+	-0.210(5)	TDPAC	1986Sc15	PR C33 2176 (86)
44 Ru 102	475	18 ps	2+	+0.91(5)	TF	2011Ch23	PR C83 054318 (11)
44 Ru 104	358	56 ps	2+	+0.81(4)	TF	2011Ch23	PR C83 054318 (11)
44 Ru 106	270	0.20 ns	2+	+0.6(2)	IPAC	2004Sm04	PL B591 55 (04)
44 Ru 108	242	0.36 ns	2+	+0.43(8)	IPAC	2005Sm08	J Phys. G 31 S1433 (05)
44 Ru 110	241	0.32 ns	2+	+0.84(12)	IPAC	2005Sm08	J Phys. G 31 S1433 (05)
44 Ru 112	237	0.32 ns	2+	+0.9(2)	IPAC	2004Sm04	PL B591 55 (04)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
45 Rh 95	2236	19 ns	17/2-	+10.9(3)	TDPAD	1983Gr33	HFI 15 65 (83)
45 Rh 100	75	215 ns	2+	+4.324(8)	TDPAC	1966Ma54	NIM 45 309 (66)
	220	130 ns	7+	+4.69(14)	TDPAD	1990Bi03	ZP A335 365 (90)
45 Rh 103	93	1.11 ns	9/2+	+4.9(8)	IPAC	1973Ba52	PS 8 90 (73)
	295	6.6 ps	3/2-	+0.81(8)	TF	1989La14	NP A496 589 (89)
	357	73 ps	5/2-	+1.08(8)	TF	1989La14	NP A496 589 (89)
	848	1.9 ps	7/2-	+2.0(6)	TF	1989La14	NP A496 589 (89)
	920	5.6 ps	9/2-	+2.8(5)	TF	1989La14	NP A496 589 (89)
45 Rh 104	345	47 ns	6-	+2.00(6)	TDPAD	1990Bi03	ZP A335 365 (90)
46 Pd 96	2531	2.1 μs	8+	+10.97(6)	TDPAD	1983Gr01	PL 120B 63 (83)
	7040	35 ns	(15+)	(+)12.5(6)	TDPAD	1989Al05	ZP A332 129 (89)
46 Pd 100	666	6.2 ps	2+	+0.6(3)	TF	2011To09	PR C84 044327
	1416	2.5 ps	4+	+1.8(6)	TF	2011To09	PR C84 044327
46 Pd 102	556	11.5 ps	2+	+0.82(6)	TF	2011Ch23	PR C83 054318 (2011)
46 Pd 103	785	25 ns	11/2-	-1.05(6)	TDPAD	1981KaZE	ZfK-455 27 (81)
46 Pd 104	556	9.9 ps	2+	+0.89(6)	TF	2011Ch23	PR C83 054318 (2011)
46 Pd 105	281	67 ps	3/2+	-0.074(13)	IPAC	1981Al19	ZP A302 223 (81)
	319	39 ps	5/2+	+1.0(2)	IPAC	1981Al19	ZP A302 223 (81)
	645	126 ps	7/2-	-1.49(9)	IPAC	1981Al19	ZP A302 223 (81)
46 Pd 106	512	12 ps	2+	+0.79(5)	TF	2011Ch23	PR C83 054318 (2011)
	1128	3.1 ps	2+	+1.0(2)	TF	2010Gu20	PR C82 064301
	1229	1.5 ps	4+	+1.8(4)	TF	2010Gu20	PR C82 064301
46 Pd 108	434	24 ps	2+	+0.69(4)	TF	2011Ch23	PR C83 054318 (2011)
46 Pd 110	374	44 ps	2+	+0.67(4)	TF	2011Ch23	PR C83 054318 (2011)
46 Pd 114	333	82 ps	2+	+0.5(2)	IPAC	2004Sm04	PL B591 55 (04)
46 Pd 116	340	0.11 ns	2+	+0.4(2)	IPAC	2004Sm04	PL B591 55 (04)
47 Ag 104	212	1.4 ns	7+	4.8(3)	IPAD	1989VoZR	Cf89Tshkt 71 (89)
47 Ag 105	1734	5.6 ns	15/2+	+3.73(14)	TDPAD	1980Le05	IzF 44 202 (80)
47 Ag 107	325	5.0 ps	3/2-	+0.9(2)	TF	1986Ba14	PR C33 1461 (86)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	423	30 ps	5/2-	+1.0(2)	TF	1986Ba14	PR C33 1461 (86)
47 Ag 108	215	46 ns	3+	+3.888(15)	TDPAD, R	1974Be47/1976Ha57	NP A229 72 (74)/JPJa 41 1830 (76)
47 Ag 109	311	5.9 ps	3/2-	+1.0(2)	TF	1986Ba14	PR C33 1461 (86)
	415	33 ps	5/2-	+0.73(15)	TF	1986Ba14	PR C33 1461 (86)
47 Ag 110	119	37 ns	3+	+3.77(3)	TDPAD	1974Be47	NP A229 72 (74)/JPJa 41 1830 (76)
48 Cd 100	2548	60 ns	8+	9.9(5)	TDPAD	1992Al17	ZP A344 1 (92)
48 Cd 102	2719	39 ns	8+	10.3(2)	TDPAD	1992Al17	ZP A344 1 (92)
48 Cd 105	2517	4.5 μs	21/2+	+9.17(6)	SOPAD	1978Sp09	HFI 4 229 (78)
48 Cd 106	633	5.1 ps	2+	+0.79(6)	TF	2011Ch23	PR C83 054318 (2011)
	1494	1.7 ps	4+	+0.9(2)	TF	2016Be24	PR C94 034303 (2016)
	4660	62 ns	12+	+8.9(2)	TDPAD, R	1986Vo14	YadF 44 849 (86)
48 Cd 107	846	71 ns	11/2-	-1.041(11)	TDPAD	1974Be17	NP A222 399 (74)
	2679	55 ns	21/2+	+9.10(10)	TDPAD	1974Ha48	PL 52B 329 (74)
48 Cd 108	633	6.9 ps	2+	+0.78(6)	TF	2011Ch23	PR C83 054318 (2011)
	4154	35 ps	10+	-2.5(8)	TF	2015Fa06	HFI 230 155 (2015)
	4710	10 ps	12+	-2.4(8)	TF	2015Fa06	HFI 230 155 (2015)
	5504	1.5 ps	14+	-1.5(6)	TF	2015Fa06	HFI 230 155 (2015)
	6460	0.4 ps	16+	-1.4(5)	TF	2015Fa06	HFI 230 155 (2015)
48 Cd 109	463	10.9 μs	11/2-	-1.096(2)	SOPAD	1971BiZI	Cf70HI 356 (70)
48 Cd 110	658	5.0 ps	2+	+0.81(6)	TF	2011Ch23	PR C83 054318 (2011)
	3611	0.49 ns	10+	-0.9(3)	IMPAD	1995Re15	NP A591 533 (95)
48 Cd 111	245	84 ns	5/2+	-0.766(3)	TDPAC	1974Be51	ZP 270 203 (74)
	342	24 ps	3/2+	+0.9(6)	TF	2016St09	PR C93 031302 (2016)
	620	9.7 ps	5/2+	+0.48(13)	TF	2016St09	PR C93 031302 (2016)
48 Cd 112	617	6.5 ps	2+	+0.72(5)	TF	2011Ch23	PR C83 054318 (2011)
48 Cd 113	299	29 ps	3/2+	-0.4(8)	TF	1988Be45	HFI 43 457 (88)
	584	6.9 ps	5/2+	+0.42(10)	TF	2016St09	PR C93 031302 (2016)
	681	4.9 ps	3/2+	+2.1(6)	TF	2016St09	PR C93 031302 (2016)
48 Cd 114	558	10.2 ps	2+	+0.65(4)	TF	2011Ch23	PR C83 054318 (2011)
48 Cd 116	513	14.1 ps	2+	+0.59(5)	TF	2011Ch23	PR C83 054318 (2011)
					END		

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
49 In 111	2717	13.7 ns	21/2+	+5.3(2)	TDPAD	1980Le05	IzF 44 202 (80)
				+4.9(2)	TDPAD	1981Va15	ZP A301 137 (81)
49 In 112	351	0.69 μs	7+	+4.73(4)	TDPAD	1976Io04	NP A272 1 (76)
	614	2.81 μs	8-	+3.08(3)	TDPAD	1976Io04	NP A272 1 (76)
49 In 115	829	5.78 ns	3/2+	+0.74(13)	IPAC	1974Ba24	NP A222 168 (74)
49 In 117	589	0.19 ns	3/2-	> 0.84	IPAC, R	1986Bo36/1985Al05	ZP A325 475 (86)/ZP A320 425 (85)
	660	53.6 ns	3/2+	+0.910(10)	TDPAC	1983De54	HFI 15 31 (83)
49 In 119	654	130 ns	3/2+	+0.53(3)	TDPAD	1980HaYW	ARHMI 75 (79)
50 Sn 108	2365	7.3 ns	6+	-0.24(12)	TFL	1983Ha37	NP A410 317 (83)
50 Sn 110	1212	0.48 ps	2+	+0.6(2)	TF	2016Ku05	PR C93 044316 (2016)
	2197	(4 ps)	4+	+0.2(6)	TF	2016Ku05	PR C93 044316 (2016)
	2478	5.6 ns	6+	+0.07(3)	TDPAD	1989Vo17	BRASP 53 (11) 133 (89)
	3766	1.16 ns	8-	-2.4(12)	TDPAD	1989Vo17	BRASP 53 (11) 133 (89)
50 Sn 111	979	10.0 ns	11/2-	-1.26(11)	TDPAD	1974Br29	PR C10 1414 (74)
50 Sn 112	1257	0.38 ps	2+	(+)0.30(8)	RIV	2015Al24	PR C92 041303 (2015)
	2247	3.3 ps	4+	+1.5(7)	TF	2011Wa15	PR C84 014319 (11)
	2549	13.7 ns	6+	+0.53(3)	TDPAD	1983Le18	YadF 37 1342 (83)
50 Sn 113	738	86 ns	11/2-	-1.30(2)	TDPAD	1981Go17	IzF 45 2116 (81)
50 Sn 114	1300	0.42 ps	2+	+0.22(5)	TF	2011Wa15	PR C84 014319 (11)
	2188	5.3 ps	4+	+0.4(3)	TF	2011Wa15	PR C84 014319 (11)
	2275	0.36 ps	3-	-1.5(7)	TF	2011Wa15	PR C84 014319 (11)
	3087	733 ns	7-	-0.563(4)	TDPAD	1973IsZQ	Cf73Mun 1 256 (73)
50 Sn 115	613	3.26 ps	7/2+	+0.683(10)	TDPAD	1975Iv02	RRou 20 141 (75)
	714	159 μs	11/2-	-1.369(4)	NMR/AC	1971Br03	PL 34B 54 (71)
50 Sn 116	1294	0.37 ps	2+	+0.01(4)	TF	2011Wa15	PR C84 014319 (11)
	2266	0.34 ps	3-	-0.0(7)	TF	2011Wa15	PR C84 014319 (2011)
	2366	348 ns	5-	-0.374(3)	TDPAD	1973IsZQ	Cf73Mun 1 256 (73)
	3547	833 ns	10+	-2.307(15)	TDPAD	1973IsZQ	Cf73Mun 1 256 (73)
50 Sn 117	159	279 ps	3/2+	+0.66(5)	IPAC	1086Bo31	ZP A325 281 (86)
50 Sn 118	1230	0.485 ps	2+	+0.34(20)	TF	2008Ea02	PL B665 147 (08)
	2321	21.7 ns	5-	-0.34(4)	IPAC	1962Bo16	ZP 168 370 (62)
	2575	230 ns	7-	-0.683(4)	TDPAD	1973IsZQ	Cf73Mun 1 256 (73)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	3108	2.52 μs	(9+)	-2.184(6)	TDPAD	1973IsZQ	Cf73Mun 1 256 (73)
			(10+)	-2.427(7)	TDPAD	1973IsZQ	Cf73Mun 1 256 (73)
50 Sn 119	24	18.0 ns	3/2+	+0.633(3)	ME	1973Cr01	ZP 258 56 (73)
50 Sn 120	1171	0.64 ps	2+	-0.20(6)	RIV	2015Al24	PR C92 041303 (2015)
	2284	5.55 ns	5-	-0.37(5)	IPAC	1962Bo16	ZP 168 370 (62)
50 Sn 122	1140	0.78 ps	2+	-0.09(4)	TF	2011Wa15	PR C84 014319 (11)
	2142	1.6 ps	4+	-0.7(7)	TF	2011Wa15	PR C84 014319 (11)
50 Sn 124	1132	0.92 ps	2+	-0.19(2)	RIV	2015Al24	PR C92 041303 (2015)
50 Sn 126	1141	1.15 ps	2+	(-)0.24(6)	RIV	2013Al10	PR C87 054325 (2013)
	2219	6.6 μs	7-	-0.69(6)	TDPAD	2010Il01	PL B687 305 (10)
50 Sn 127	1827	4.5 μs	(19/2)	-1.6(2)	TDPAD	2010At03	Eur Phys Lett 91 42001 (10)
50 Sn 128	1169	1.6 ps	2+	(-)0.46(12)	RIV	2013Al10	PR C87 054325 (2013)
	2492	2.9 μs	10+	-2.0(4)	TDPAD	2010At03	Eur Phys Lett 91 42001 (10)
51 Sb 112	826	536 ns	8-	+2.192(8)	TDPAD	1976Ke07	HFI 2 336 (76)
51 Sb 114	496	219 μs	8-	+2.265(5)	SOPAD	1976Ke07	HFI 2 336 (76)
51 Sb 115	1300	6.2 ns	11/2-	+5.53(8)	TDPAD	1980Le05	IzF 44 202 (80)
	2796	159 ns	19/2-	+2.73(4)	TDPAD	1979Fa03	PR C19 720 (79)
51 Sb 116	94	194 ns	1+	+2.47(9)	TDPAD	1993Di06	ZP A347 37 (93)
51 Sb 117	1323	3.8 ns	11/2-	+5.35(9)	TDPAD, R	1980Le05	IzF 44 202 (80)
	3131	355 ns	(25/2)+	+1.45(4)	TDPAD	1972Me15	PL B40 192 (72)
	3231	290 ns	23/2-	+5.03(6)	TDPAD	1987Io01	NP A466 317 (87)
51 Sb 118	51	20.6 μs	(3)+	+2.63(5)	TDPAD	1975Pl04	PL 57B 235 (75)
	270	13.4 ns	3-	-3.76(9)	TDPAD	1985Di07	ZP A320 613 (85)
	965	22.6 ns	7+	+4.76(13)	TDPAD	1985Di07	ZP A320 613 (85)
51 Sb 119	2554	130 ns	19/2-	+3.14(6)	TDPAC	1991Io02	NP A531 112 (91)
51 Sb 120	78	246 ns	3+	+2.584(6)	TDPAD	1976Io03	PL 64B 151 (76)
51 Sb 121	37	3.5 ns	7/2+	+2.518(7)	ME	1976La09	PR C13 2589 (76)
51 Sb 122	61	1.86 μs	3+	+2.983(12)	SOPAD	1973He10	PR C7 2128 (73)
	137	530 μs	5+	+3.05(10)	TDPAD	1977Co18	RRou 22 541 (77)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
51 Sb 124	41	3.2 μs	3+	+2.97(3)	TDPAD	1981Io04	HFI 9 75 (81)
	125	86 ns	6-	+0.384(12)	TDPAD	1981Io04	HFI 9 75 (81)
52 Te 115	280	7.5 μs	11/2-	-0.954(5)	TDPAD	1977MiZL	DisA 37 4025B (77)
52 Te 117	274	19.9 ns	5/2+	-0.787(12)	TDPAD	1981Io07	HFI 9 71 (81)
52 Te 120	560	9.3 ps	2+	+0.58(11)	TF	1981Sh15	PR C24 954 (81)
52 Te 121	443	85.3 ns	7/2+	+0.738(10)	TDPAD	1980Io01	PL 90B 65 (80)
52 Te 122	564	7.46 ps	2+	+0.70(3)	TF	2007St24	PR C76 034306 (07)
52 Te 123	159	0.20 ns	3/2+	0.72(12)	IPAC	1970Ro31	ZP A240 396 (70)
	440	22 ps	3/2+	+0.51(9)	IMPAC	1974Ro40	NP A236 165 (74)
	489	30.7 ns	7/2+	+0.787(14)	TDPAD	1981Io07/1981Io05	HFI 9 71 (81)/RRou 26 239 (81)
	506	13.5 ps	5/2+	+0.10(6)	IMPAC	1974Ro40	NP A236 165 (74)
52 Te 124	603	6.2 ps	2+	+0.66(4)	TF	2007St24	PR C76 034306 (07)
52 Te 125	35	1.48 ns	3/2+	+0.605(4)	ME	1975Bo51	PL 54A 293 (75)
	321	673 ps	9/2-	-0.95(3)	IPAC	1970Cr07	NP A154 369 (70)
	443	19 ps	3/2+	+0.89(7)	TF	2017St11	PR C96 014321 (2017)
	463	13 ps	5/2+	+0.52(6)	TF	2017St11	PR C96 014321 (2017)
52 Te 126	666	4.52 ps	2+	+0.68(3)	TF	2007St24	PR C76 034306 (07)
	2974	10.7 ns	10+	-1.52(9)	TDPAD	1983Go02	YadF 37 257 (83)
52 Te 127	341	0.41 ns	9/2-	-0.98(15)	IPAC	1985De04	PR C31 593 (85)
52 Te 128	743	3.3 ps	2+	+0.64(3)	TF	2007St24	PR C76 034306 (07)
52 Te 130	839	2.3 ps	2+	+0.70(4)	TF	2007St24	PR C76 034306 (07)
52 Te 132	974	1.8 ps	2+	+0.70(10)	RIV	2005St18	PRL 94 192501 (05)
	1775	145 ns	6+	+4.7(5)	TDPAC	1986Fo02	NP A451 104 (86)
52 Te 134	1279	0.79 ps	2+	1.52(18)	RIV	2013St24	PR C88 051304(R)(2013)
	1576	1.4 ns	4+	3(2)	IPAC	2008Go28	PR C78 044331 (08)
	1691	164 ns	6+	+5.08(15)	FDPAC	1976Wo03	PRL 36 1072 (76)
52 Te 136	606	19 ps	2+	+0.68(+16-12)	RIV	2017St11	PR C96 014321 (2017)
53 I 119	307	35 ns	9/2+	+5.40(14)	TDPAD	1982Da17	NP A383 421 (82)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
53 I 121	2353	80 ns	(21/2+)	+12.6(11)	TDPAD	1982Ha46	NP A389 341 (82)
53 I 123	2660	27 ns	21/2+	+10.9(9)	TDPAD	L	Cf83Gron NP14 (83)
53 I 125	188	0.34 ns	3/2+	+1.08(7)	IPAC	1973Ka37	ZP 265 65 (73)
53 I 126	111	56 ns	1+,2+,3+	-2.24(2)	TDPAD	L	PC75 Block (75)
53 I 127	58	1.95 ns	7/2+	+2.54(5)	ME	1972Wo13	PR C6 228 (72)
	203	0.39 ns	3/2+	+0.97(7)	IPAC	1976Le23	HPAc 49 661 (76)
53 I 128	138	845 ns	4-	-0.72(3)	IPAC	1982Al10	IzF 46 52 (82)
53 I 129	28	16.8 ns	5/2+	+2.805(3)	ME	1981De35	PL 106B 457 (79)
53 I 130	85	254 ns	(6-)	-0.24(2)	TDPAD	L	PC75 Bloch (75)
53 I 131	150	0.95 ns	5/2+	+2.8(5)	IPAC	1967Ta07	NP A102 203 (67)
	1797	5.9 ns	9/2,11/2,13/2-	-1.2(4)	IPAC	1967Ta07	NP A102 203 (67)
53 I 132	50	7.14 ns	3+	+2.06(18)	TDPAC	2009Ta23	PR C80 034304 (09)
	278	1.42 ns	1+	+1.88(11)	TDPAC	1979Oo01	NP A321 180 (79)
54 Xe 123	185	5.5 μs	7/2(-)	-0.902(7)	TDPAD	1982Ze05	ZP A308 227 (82)
54 Xe 124	354	47 ps	2+	+0.50(4)	IMPAC	1975Go18	PR C12 628 (75)
54 Xe 125	296	140 ns	7/2+	+0.93(4)	TDPAD	1983Al21	ZP A314 17 (83)
54 Xe 126	389	40.8 ps	2+	+0.54(8)	IMPAC	1975Go18	PR C12 628 (75)
54 Xe 127	342	37 ns	7/2+	+0.85(3)	TDPAD	1984Lo07	ZP A317 215 (84)
54 Xe 128	443	18 ps	2+	+0.68(7)	IMPAC	1975Go18	PR C12 628 (75)
	2787	83 ns	8-	-0.29(7)	TDPAD	1984Lo07	ZP A317 215 (84)
54 Xe 129	40	0.97 ns	3/2+	+0.58(8)	ME	1974VaYZ	JPCo 35 C6-301 (74)
54 Xe 130	538	8.6 ps	2+	+0.67(10)	TF	2002Ja02	PR C65 024316 2002
	1122	4.6 ps	2+	+0.9(2)	TF	2002Ja02	PR C65 024316 2002
	1205	2.4 ps	4+	+1.7(4)	TF	2002Ja02	PR C65 024316 2002
	2972	5.1 ns	10+	-2.05(14)	TDPAD	1983Go02	YadF 37 257 (83)
54 Xe 132	668	4.6 ps	2+	+0.63(10)	TF	2002Ja02	PR C65 024316 2002
	1298	3.0 ps	2+	+0.2(4)	TF	2002Ja02	PR C65 024316 2002
	1440	1.8 ps	4+	+2.4(6)	TF	2002Ja02	PR C65 024316 2002
	2214	87 ns	7-	-0.06(3)	TDPAD	1986Vo14	YadF 44 849 (86)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	2752	8.4 ms	10+	(-)1.95(5)	TDPAD	1976Ha50	ZP A278 303 (76)
54 Xe 134	847	2.08 ps	2+	+0.71(10)	TF	2002Ja02	PR C65 024316 2002
	1731	2.2 ps	4+	+3.2(8)	TF	2002Ja02	PR C65 024316 2002
54 Xe 136	1313	0.36 ps	2+	+1.53(24)	TF	2002Ja02	PR C65 024316 2002
	1694	1.29 ns	4+	3.2(6)	IPAC	1985Be04	PR C31 570 (85)
54 Xe 140	377	70 ps	2+	1.1(4)	IPAC	2009Go09	PR C79 034316 (09)
54 Xe 142	287	0.20 ns	2+	0.8(3)	IPAC	2009Go09	PR C79 034316 (09)
55 Cs 127	66	24.9 ns	(5/2)+	2.7(5)	TDPAC	1999Co22	NIMPR B152 357 (99)
55 Cs 129	575	718 ns	11/2-	+6.55(10)	TDPAD	1978De29	PR C18 2061 (78)
55 Cs 131	134	8.6 ns	5/2+	+1.86(8)	TDPAC	1973AoZZ	JPJS 34 427 (73)
55 Cs 133	81	6.28 ns	5/2+	+3.45(2)	ME	1968Ca03	NP A109 59 (68)
	161	172 ps	5/2+	+2.25(15)	IPAC	1979Th02	NP A318 97 (79)
55 Cs 134	11	47 ns	5+	+3.35(7)	TDPAC	1970DrZX	Cf70Delft 549 (70)
56 Ba 129	182	15.2 ns	9/2-	-0.86(3)	TDPAD	2013Ka27	PR C87 064312 (2013)
	2462	47 ns	23/2+	-2.68(8)	TDPAD	2013Ka27	PR C87 064312 (2013)
56 Ba 130	357	42 ps	2+	+0.70(10)	TF	1980Br01	PR C21 574 (80)
56 Ba 132	465	15.1 ps	2+	+0.68(10)	TF	1980Br01	PR C21 574 (80)
	3116	8.9 ns	10+	-1.59(5)	TDPAD	1996Da02	PR C53 1009 (96)
56 Ba 133	12	7.0 ns	3/2+	+0.51(7)	XHFS	1981Gr18	ZETF 80 120 (81)
56 Ba 134	605	5.1 ps	2+	+0.86(10)	TF	1980Br01	PR C21 574 (80)
	2957	2.6 μs	10+	-2.0(1)	TDPAD	1982BeZY	BAPS 27 27 (82)
56 Ba 136	818	1.93 ps	2+	+0.69(10)	TF	1980Br01	PR C21 574 (80)
	2140	1.6 ns	5-	-1.9(2)	IPAC	1979Oh03	HFI 7 103 (79)
56 Ba 138	1436	0.20 ps	2+	+1.4(2)	TF	1987Ba65	ZP A328 275 (87)
	1899	2.16 ns	4+	3.2(6)	IPAC	1985Be04	PR C31 570 (85)
	2091	0.8 μs	6+	5.9(12)	TDPAD	1976Ik04	HFI 2 331 (76)
56 Ba 142	360	65 ps	2+	0.85(10)	IPAC	1988Wo03	PR C37 1253 (88)
56 Ba 143	117	3.5 ns	9/2-	+0.5(3)	IMPAC	1999Sm05	PL B453 206 (99)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
56 Ba 144	199	0.71 ns	2+	0.68(10)	IPAC	1983Wo05	PL 123B 165 (83)
56 Ba 145	113	0.2 ns	(7/2)-	-1.4(10)	IMPAC	1999Sm05	PL B453 206 (99)
56 Ba 146	181	0.86 ns	2+	0.56(14)	IPAC	1983Wo05	PL 123B 165 (83)
57 La 130	319	33 ns	6+	+2.9(2)	TDPAD	2014Io01	PR C90 014323 (14)
57 La 131	2121	38 ns	21/2-	+11.20(4)	TDPAD	2017Ka03	PL B765 317 (2014)
57 La 133	536	62 ns	11/2-	7.5(5)	TDPAC	1979BuZW	CF79Riga 81 (79)
57 La 135	2737	26 ns	(23/2-)	0.0(2)	TDPAD	1976Le29	IzF 40 1249 (76)
57 La 137	1870	342 ns	19/2-	+2.34(6)	TDPAD	1982KiZV	BAPS 27 728 (82)
57 La 138	73	116 ns	3+	+2.89(5)	TDPAD	1979Bo11	ZP A291 49 (79)
58 Ce 126	2199	8 ps	(9-)	(+)7(3)	IPAD	1987IsZS	Cf87Melb. 93 (87)
	2629	4 ps	(11-)	(+)8(4)	IPAD	1987IsZS	Cf87Melb. 93 (87)
58 Ce 129	108	60 ns	(7/2-)	-0.65(4)	TDPAD	1998Io01	NP A633 459 (98)
58 Ce 131	162	88 ns	9/2-	-0.85(3)	TDPAD	1998Io01	NP A633 459 (98)
58 Ce 134	3209	308 ns	10+	-1.87(2)	TDPAD, R	1984Be68	PL 101A 507 (84)
	3719	5.8 ps	10+	-3(3)	IMPAD	1982Ze04	NP A383 165 (82)
58 Ce 135	2125	8.2 ns	19/2+	-0.66(10)	IPAD	1982Ze01	ZP A304 269 (82)
58 Ce 136	3095	2.2 μs	10+	-1.80(2)	TDPAD	1980Ba68	PRL 45 1015 (80)
58 Ce 138	3539	81 ns	10+	-1.70(3)	TDPAD	1980Ba68	PRL 45 1015 (80)
58 Ce 139	2631	70 ns	19/2-	+3.99(6)	TDPAD	1980Ba68	PRL 45 1015 (80)
58 Ce 140	1596	92 fs	2+	+1.9(3)	TF	1991Ba38	NP A533 541 (91)
	2083	3.4 ns	4+	4.06(15)	TDPAC	1965Le16	PR 140 B811 (65)
	3715	23 ns	10+	+10.3(4)	TDPAD	1988Ka04	ZP A329 143 (88)
58 Ce 142	641	5.6 ps	2+	+0.42(10)	TF	1991Ba38	NP A533 541 (91)
58 Ce 146	258	0.23 ns	2+	0.9(2)	IPAC	2009Go09	PR C79 034316 (09)
58 Ce 148	158	1.01 ns	2+	0.74(12)	IPAC	1986Gi05	PR C33 1030 (86)
58 Ce 150	306	0.3 ns	4+	+3.2(16)	IMPAC	1999Sm05	PL B453 206 (99)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
59 Pr 136	595	91.7 ns	6+	+3.42(11)	TDPAD	1993Ba42	NP A603 50 (96)
59 Pr 139	822	43 ns	11/2-	+6.6(5)	TDPAD	1979Ke07	ZP A291 319 (79)
				+7.2(6)	TDPAD	1982Ri09	PRL 48 516 (82)
59 Pr 141	145	1.85 ns	7/2+	+2.95(9)	ME	1976St73	JPCR 5 1093 (76)
	1118	4.8 ns	11/2-	+6.2(4)	TDPAD	1984Go12	ZETF 87 3 (84)
	1796	1.0 ns	15/2+	+8(2)	IPAD	1984Go12	ZETF 87 3 (84)
59 Pr 143	57	4.1 ns	5/2+	+3.4(1)	TDPAC	1977Ne12	HFI 3 147 (77)
59 Pr 144	80	0.136 ns	1-	-1.2(4)	IPAC	1975Ba32	PS 11 363 (75)
60 Nd 134	295	64 ps	2+	+1.2(4)	IMPAD	1987Bi13	PR C36 974 (87)
60 Nd 135	199	39 ps	11/2-	-0.5(3)	IMPAD	1987Bi13	PR C36 974 (87)
60 Nd 136	3297	51 ps	10+	+11(4)	IMPAD	1987Bi13	PR C36 974 (87)
	3687	19 ps	12+	+14(5)	IMPAD	1987Bi13	PR C36 974 (87)
60 Nd 138	3175	0.41 μs	10+	-1.74(4)	TDPAD	1982Ri09	PRL 48 516 (82)
60 Nd 140	3621	22 ns	10+	-1.92(12)	TDPAD	1980Me11	NP A346 281 (80)
60 Nd 142	1576	110 fs	2+	+1.7(2)	TF	1991Ba38	NP A533 541 (91)
60 Nd 143	1228	6.79 ns	13/2+	+0.38(3)	IPAD	1994KA23	ZP A348 173 (94)
	2911	0.48 ns	21/2+	+7.2(13)	IPAD	1994KA23	ZP A348 173 (94)
60 Nd 144	697	2.97 ps	2+	+0.40(4)	TF	2001Ho02	PR C63 024315
	1314	7.4 ps	4+	+0.52(15)	TF	2001Ho02	PR C63 024315
	1791	21 ps	6+	-3.4(14)	TF	2001Ho02	PR C63 024315
60 Nd 145	72	0.72 ns	5/2-	-0.320(4)	ME	1970Ka36	ZP 240 100 (70)
60 Nd 146	454	20.9 ps	2+	+0.58(6)	TF	2001Ho02	PR C63 024315
	1043	4 ps	4+	+0.77(13)	TF	2001Ho02	PR C63 024315
60 Nd 148	302	80 ps	2+	+0.72(7)	TF	2001Ho02	PR C63 024315
	752	6.9 ps	4+	+1.44(18)	TF	2001Ho02	PR C63 024315
	1280	2.9 ps	6+	+1.6(3)	TF	2001Ho02	PR C63 024315
60 Nd 150	130	1.48 ns	2+	+0.84(9)	TF	2001Ho02	PR C63 024315
	381	60 ps	4+	+1.8(2)	TF	2001Ho02	PR C63 024315
	720	12 ps	6+	+2.1(5)	TF	2001Ho02	PR C63 024315
	1130	~2 ps	8+	+4.5(11)	TF	2001Ho02	PR C63 024315

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
61 Pm 143	960	24 ns	11/2-	+6.8(4)	TDPAD	1984Go12	ZETF 87 3 (84)
	1898	10.5 ns	15/2+	+7.7(4)	TDPAD	1984Go12	ZETF 87 3 (84)
61 Pm 147	91	2.5 ns	5/2+	3.55(10)	ME	1970Ba39	PL 32B 678 (70)
61 Pm 149	114	2.53 ns	5/2+	2.0(2)	IPAC	1970Se11	NP A159 494 (70)
	270	2.59 ns	7/2-	3.6(2)	IPAC	1970Se11	NP A159 494 (70)
61 Pm 151	256	0.93 ns	3/2+	1.8(2)	IPAC	1977Se06	NP A282 302 (77)
62 Sm 140	3172	19.4 ns	10+	-1.8(2)	TDPAD	1988Ba22	PL 206B 404 (88)
	3210	5.2 ns	10+	+12.7(9)	TDPAD	1988Ba22	PL 206B 404 (88)
62 Sm 144	1660	84 fs	2+	+1.6(3)	TF	1991Ba38	NP A533 541 (91)
	1810	25 ps	3-	+2.3(4)	TF	1990Ba41	HFI 59 133 (90)
62 Sm 147	121	0.80 ns	5/2-	-0.45(3)	ME	1971Pa04	PR C3 841 (71)
62 Sm 148	550	7.7 ps	2+	+0.54(7)	TF	1987Ba65	ZP A328 275 (87)
62 Sm 149	23	7.3 ns	5/2-	-0.6200(11)	ME	1970EiZY	Cf70HI 720 (70)
62 Sm 150	334	48 ps	2+	+0.82(6)	TF	1987By02	PL 26B 81 (67)
	773	6.5 ps	4+	+1.40(20)	TF	1987By02	PR C48 2640 (93)
	1046	0.9 ps	2+	+0.72(16)	TF	1987By02	NP A466 419 (87)
	1194	1.3 ps	2+	+0.82(14)	TF	1987By02	NP A466 419 (87)
	1279	2.4 ps	6+	+2.3(5)	TF	1987By02	PR C48 2640 (93)
62 Sm 151	92	78 ns	9/2+	-0.95(5)	TDPAC	1974Dr03	NP A223 195 (74)
	105	0.48 ns	3/2-	+0.31(11)	IPAC	1971Be23	IzF 35 135 (71)
	168	0.38 ns	5/2+	+1.8(5)	IPAC, R	1974Dr03	NP A223 195 (74)
62 Sm 152	122	1.40 ns	2+	+0.83(5)	ME	1967At04	PL 26B 81 (67)
	366	57.7 ps	4+	+1.6(2)	TF	1987By02	NP A466 419 (87)
	707	10.3 ps	6+	+2.3(4)	TF	1987By02	NP A466 419 (87)
	810	7.4 ps	2+	+0.76(20)	TF	1987By02	NP A466 419 (87)
	1086	1.09 ps	2+	+0.82(20)	TF	1987By02	NP A466 419 (87)
	1125	3.06 ps	8+	+2.8(6)	TF	1987By02	NP A466 419 (87)
	1609	1.38 ps	10+	+4(2)	TF	1987By02	NP A466 419 (87)
62 Sm 154	82	3.0 ns	2+	+0.78(4)	ME	1969Wh04	PR 186 1280 (69)
	267	172 ps	4+	+1.35(15)	IMPAC	1972Ku10	NP A186 513 (72)
	544	22.7 ps	6+	+1.9(3)	IMPAC	1972Ku10	NP A186 513 (72)
63 Eu 142	283 + x	6.2 ns	8+	(+)4.1(2)	TDPAD	1993Bi13	ZP A346 181 (93)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
63 Eu 145	716	0.49 μs	11/2-	+7.46(4)	TDPAD	1980Kl07	NP A350 61 (80)
63 Eu 147	625	765 ns	11/2-	+7.04(3)	TDPAD	1980Ba67	PL 77A 365 (80)
63 Eu 148	720	162 ns	9+	+6.12(5)	TDPAD	1980Ba67	PL 77A 365 (80)
63 Eu 149	496	2.45 μs	11/2-	+7.0(3)	TDPAD	1980Kl07	NP A350 61 (80)
63 Eu 151	22	9.6 ns	7/2+	+2.585(1)	ME	1972Cr09	ZP A256 155 (72)
63 Eu 153	83	0.79 ns	7/2+	+1.81(6)	ME	1969Ri02	ZP A218 223 (69)
	97	198 ps	5/2-	+3.2(2)	ME	1966At01	PR 145 915 (66)
	103	3.85 ns	3/2+	+2.040(3)	ME	1972Cr09	ZP 256 155 (72)
63 Eu 155	104	0.104 ns	5/2-	+9.6(10)	IPAC	1971Be23	IzF 35 2295 (71)
64 Gd 144	3433	145 ns	10+	+12.76(14)	TDPAD	1979Ha15	PRL 42 1451 (79)
64 Gd 146	1579	1.1 ns	3-	+2.1(9)	TDPAD	1979Ke03	ZP A290 229 (79)
	2982	6.7 ns	7-	+9.0(2)	TDPAD	1979Ha15	PRL 42 1451 (79)
	8916	4.3 ns	20-	+13(2)	TDPAD, R	1979Ha15	PRL 42 1451 (79)
64 Gd 147	997	21.4 ns	13/2+	+0.49(2)	TDPAD	1987Da27	PL 199B 26 (87)
	2760	4.5 ns	21/2+	+7.6(12)	TDPAD	1979Ha15	PRL 42 1451 (79)
	3582	27 ns	27/2-	+11.3(2)	TDPAD	1979Ha15	PRL 42 1451 (79)
	8587	510 ns	49/2+	+10.9(2)	TDPAD	1979Ha15	PRL 42 1451 (79)
	10993	0.8 ns	59/2-	+11(2)	TF	1989Ha15	PR 39C 2237 (89)
64 Gd 148	2695	16.6 ns	9-	-0.16(2)	TDPAD	1987Da27	PL 199B 26 (87)
64 Gd 149	165	1.7 ns	5/2-	-0.9(2)	IPAC, TDPAC	1977GrZF	Cf77Tokyo 379 (77)
64 Gd 151	108	2.8 ns	5/2-	-1.08(13)	IPAC, TDPAC	1977GrZF	Cf77Tokyo 379 (77)
	395	0.29 ns	3/2-	-2.5(8)	IPAC	1977GrZF	Cf77Tokyo 379 (77)
64 Gd 152	344	32.0 ps	2+	+0.96(8)	RIG/V	1974Ar23	NP A233 385 (74)
	755	7.3 ps	4+	+2.1(5)	TF	1999Ma06	PR C59 665 (99)
64 Gd 153	110	0.24 ns	5/2-	+0.40(15)	IPAC, TDPAC	1977GrZF	Cf77Tokyo 379 (77)
	129	2.52 ns	3/2-	+0.37(7)	IPAC	1977Ba63	HFI 3 423 (77)
64 Gd 154	123	1.18 ns	2+	+0.96(6)		1974Ar23	NP A233 385 (74)
64 Gd 155	87	6.50 ns	5/2+	-0.525(2)	ME	1978Co23	HFI 5 479 (78)
	105	1.16 ns	3/2+	+0.143(5)	ME	1978Co23	HFI 5 479 (78)
	146	101 ps	7/2-	+0.4(4)	TF	1998St28	NP A642 361 (98)
	252	58 ps	9/2-	+1.2(3)	TF	1998St28	NP A642 361 (98)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	392	23 ps	11/2-	+1.5(3)	TF	1998St28	NP A642 361 (98)
	534	15 ps	13/2-	+1.9(3)	TF	1998St28	NP A642 361 (98)
	730	5.8 ps	15/2-	+2.6(5)	TF	1998St28	NP A642 361 (98)
	897	4.9 ps	17/2-	+2.2(9)	TF	1998St28	NP A642 361 (98)
	1142	2.4 ps	19/2-	+2.9(10)	TF	1998St28	NP A642 361 (98)
64 Gd 156	89	2.21 ns	2+	+0.774(8)	ME	1974Ar23	NP A233 385 (74)
	288	112 ps	4+	+1.55(14)	TF	1991St01	ZP A338 135 (91)
	585	15.8 ps	6+	+2.2(4)	TF	1991St01	ZP A338 135 (91)
	965	4.3 ps	8+	+2.7(4)	TF	1992Br07	PR C45 1549 (92)
	1511	189 ps	4+	+3.24(11)	IPAC	1988Al33	ZP A331 277 (88)
64 Gd 157	64	0.46 μs	5/2+	-0.464(11)	ME	1974Ar23	NP A233 385 (74)
64 Gd 158	80	2.52 ns	2+	+0.762(8)	ME	1988Al33	ZP A331 277 (88)
	261	148 ps	4+	+1.55(12)	TF	1991St01	ZP A338 135 (91)
	539	16 ps	6+	2.3(3)	TF	1991St01	ZP A338 135 (91)
	904	5.1 ps	8+	3.4(5)	TF	1992Br07	PR C45 1549 (92)
64 Gd 160	75	2.72 ns	2+	+0.72(4)	RIGV	1974Ar23	NP A233 385 (74)
	248	-	4+	1.5(2)	TF	1991St01	ZP A338 135 (91)
	515	-	6+	2.3(3)	TF	1991St01	ZP A338 135 (91)
65 Tb 149	2518	2.4 ns	(27/2)+	4.9(12)	IPAD	1990Ad02	JPJa 59 66 (90)
66 Dy 149	8521	28 ns	(49/2)	+10.0(15)	TDPAD	2003Wa28	NP A728 365 (2003)
66 Dy 152	6129	9.5 ns	21-	+11.6(12)	TDPAD	1979Me01	PRL 42 23 (79)
66 Dy 158	99	1.66 ns	2+	+0.72(5)	IPAC	1993Al09	ZP A345 273 (93)
	317	72 ps	4+	+1.33(10)	IPAC	1997Al04	ZP A357 13 (97)
	1044	2.9 ps	8+	+3.3(10)	TF	1983Se09	ZP A357 13 (97)
66 Dy 160	87	2.02 ns	2+	+0.70(3)	TDPAC	1984Si07	PR C8 757 (73)
	284	104 ps	4+	+1.60(12)	IPAC	1997Al04	ZP A357 13 (97)
	581	18.6 ps	6+	+2.1(3)	TF	1999Br43	EurPJ A6 149 (99)
	966	1.31 ps	2+	+0.80(13)	TF	1999Br43	EurPJ A6 149 (99)
	967	3.8 ps	8+	+2.7(4)	TF	1999Br43	EurPJ A6 149 (99)
	1428	1.56 ps	10+	+3.1(6)	TF	1999Br43	EurPJ A6 149 (99)
	1950	0.89 ps	12+	+3.6(11)	TF	1999Br43	EurPJ A6 149 (99)
66 Dy 161	26	29.1 ns	5/2-	+0.594(3)	ME	1976St23	JPCR 5 1093 (76)
	44	0.83 ns	7/2+	-0.140(5)	ME	1976St23	JPCR 5 1093 (76)
	75	3.14 ns	3/2-	-0.403(4)	ME	1976St23	JPCR 5 1093 (76)
66 Dy 162	81	2.19 ns	2+	+0.69(3)	RIGV	1970Be36/1973Ka25	NP A151 401 (70)/PR C8 757 (73)
	549	18.4 ps	6+	+2.2(3)	TF	1999Br43	EurPJ A6 149 (99)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	888	2.0 ps	2+	+0.92(15)	TF	1999Br43	EurPJ A6 149 (99)
	921	4.2 ps	8+	+3.0(3)	TF	1999Br43	EurPJ A6 149 (99)
	1375	1.6 ps	10+	+3.6(7)	TF	1999Br43	EurPJ A6 149 (99)
66 Dy 164	73	2.39 ns	2+	+0.68(2)	ME	1968Mu01	ZP 208 184 (68)
	242	0.20 ns	4+	+1.5(5)	TF	1989Do12	HFI 110 313 (97)
	501	27.2 ps	6+	+2.0(3)	TF	1999Br43	EurPJ A6 149 (99)
	762	4.6 ps	2+	+0.76(13)	TF	1999Br43	EurPJ A6 149 (99)
	844	7.2 ps	8+	+2.5(4)	TF	1999Br43	EurPJ A6 149 (99)
	1261	2.3 ps	10+	+3.1(7)	TF	1999Br43	EurPJ A6 149 (99)
67 Ho 165	95	22 ps	9/2-	4.1(2)	ME	1972Ge21	ZP 257 29 (72)
67 Ho 166	54	3.4 ns	2-	+0.068(10)	IPAC	1979Ba40	NP A331 75 (79)
68 Er 154	3025	39 ns	11-	+0.167(13)	TDPAD	1984Ra11	PR C30 169 (84)
68 Er 155	563	34.8 ns	13/2+	-0.55(3)	TDPAD	1984Ra11	PR C30 169 (84)
68 Er 164	92	1.48 ns	2+	0.694(15)	ME	1976St23	JPCRD 5 835 (76)
	299	86 ps	4+	+1.4(2)	TF	1996Br09	NP A600 272 (96)
	614	-	6+	+1.9(3)	TF	1996Br09	NP A600 272 (96)
	860	1.9 ps	2+	+0.81(14))	TF	1996Br09	NP A600 272 (96)
	1025	2.6 ps	8+	+2.7(4)	TF	1996Br09	NP A600 272 (96)
	1518	1.0 ps	10+	+3.2(7)	TF	1996Br09	NP A600 272 (96)
68 Er 166	81	1.81 ns	2+	+0.629(10)	ME	1976St23	JPCRD 5 835 (76)
	265	118 ps	4+	+1.1(2)	TF	1996Br09	NP A600 272 (96)
	545	15.0 ps	6+	+1.7(3)	TF	1996Br09	NP A600 272 (96)
	786	3.1 ps	2+	+0.74(11)	TF	1996Br09	NP A600 272 (96)
	911	4.1 ps	8+	+2.2(4)	TF	1996Br09	NP A600 272 (96)
	1216	4.4 ps	6+	+1.5(2)	IPAC	1985Al22	ZP A322 467 (85)
	1350	1.62 ps	10+	+2.8(7)	TF	1996Br09	NP A600 272 (96)
68 Er 168	80	1.85 ns	2+	+0.656(13)	ME	1976St23	JPCRD 5 835 (76)
	264	114 ps	4+	+1.2(2)	TF	1996Br09	NP A600 272 (96)
	549	12.0 ps	6+	+1.8(3)	TF	1996Br09	NP A600 272 (96)
	821	2.8 ps	2+	+0.77(10)	TF	1996Br09	NP A600 272 (96)
	928	3.56 ps	8+	+2.4(4)	TF	1996Br09	NP A600 272 (96)
	1094	109 ns	4-	+0.96(4)	TDPAC	1980Fu03	PR C21 2575 (80)
	1396	1.45 ps	10+	+3.1(8)	TF	1996Br09	NP A600 272 (96)
68 Er 170	79	1.89 ns	2+	0.633(13)	ME	1969Wi04	PR 177 1786 (69)
	260	(135 ps)	4+	+1.09(15)	IMPAC	1968De28	Cf67HI 731 (68)
69 Tm 169	8	4.09 ns	3/2+	+0.513(5)	ME	1980Da27	JMMM 15/18 651 (80)
	118	62 ps	5/2+	+0.74(5)	IPAC	1969Gu01	NP A123 386 (69)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	139	302 ps	7/2+	+1.32(7)	IPAC	1969Gu01	NP A123 386 (69)
	332	19 ps	9/2+	+1.56(9)	TF	1999Ro03	NP A647 175 (99)
	368	42 ps	11/2+	+2.28(14)	TF	1999Ro03	NP A647 175 (99)
	379	52 ns	7/2-	+3.04(14)	TDPAC	1997De02	PR C55 1197 (97)
	637	5.4 ps	13/2+	+2.37(14)	TF	1999Ro03	NP A647 175 (99)
	691	8.1 ps	15/2+	+3.2(3)	TF	1999Ro03	NP A647 175 (99)
	1028	1.9 ps	17/2+	+3.2(3)	TF	1999Ro03	NP A647 175 (99)
	1104	1.9 ps	19/2+	+4.2(8)	TF	1999Ro03	NP A647 175 (99)
69 Tm 171	117	55 ps	5/2+	+0.8(4)	IPAC	1968Ka14	NP A119 417 (68)
	129	415 ps	7/2+	+1.27(12)	IPAC	1968Ka14	NP A119 417 (68)
	636	1.26 ns	7/2+	+1.2(2)	IPAC	1978Ba03	ZP A284 161 (78)
70 Yb 157	529	45 ns	13/2+	-0.75(8)	TDPAD	1984Ra11	PR C30 169 (84)
70 Yb 164	123	0.88 ns	2+	+0.64(10)	IPAC	2004Be13	PR C69 034320
70 Yb 170	84	1.60 ns	2+	+0.669(8)	ME	1976St23	JPCRD 5 835 (76)
70 Yb 171	67	0.79 ns	3/2-	0.349(2)	ME	1976St23	JPCRD 5 835 (76)
	76	1.64 ns	5/2-	+1.012(5)	ME	1970He25	PR C2 2414 (70)
	231	155 ps	7/2-	0.83(5)	TF	2000St06	NP A669 27 (00)
	247	149 ps	9/2-	1.53(7)	TF	2000St06	NP A669 27 (00)
	487	21.4 ps	11/2-	1.54(8)	TF	2000St06	NP A669 27 (00)
	509	21.3 ps	13/2-	2.31(12)	TF	2000St06	NP A669 27 (00)
	833	4.3 ps	15/2-	2.10(14)	TF	2000St06	NP A669 27 (00)
	860	4.2 ps	17/2-	2.83(15)	TF	2000St06	NP A669 27 (00)
	1264	(est 1.8 ps)	19/2	2.5(3)	TF	2000St06	NP A669 27 (00)
	1295	(est 1.8 ps)	21/2	3.1(3)	TF	2000St06	NP A669 27 (00)
70 Yb 172	79	1.65 ns	2+	+0.664(8)	ME	1976St23	JPCRD 5 835 (76)
	260	0.122 ns	4+	+1.37(5)	IPAC	1972Be94	Duzb 1972n 1 32 (1972)
	1172	8.1 ns	3+	+0.64(4)	TDPAC	1965Gu01	NP 61 65 (1965)
70 Yb 173	79	46 ps	7/2-	-0.20(7)	IPAC	1983Ca28	HFI 15 85 (83)
70 Yb 174	77	1.79 ns	2+	+0.672(5)	ME	1976St23	JPCRD 5 835 (76)
70 Yb 176	82	1.76 ns	2+	+0.76(4)	ME	1967Ec02	PR 163 1295 (67)
71 Lu 175	114	90 ps	9/2+	+2.21(17)	IPAC, R	1969Wa30	PhSS 32 151 (69)
	251	32 ps	11/2+	+2.8(9)	IPAC	1966De08	PL 21 659 (66)
71 Lu 177	121	117 ps	9/2+	+2.2(8)	IPAC	1973Il02	IzUz 1973n4 79 (73)
	150	130 ns	9/2-	+5.5(3)	TDPAC	1977Ne11	HFI 3 257 (77)
72 Hf 168	124	0.89 ns	2+	0.34(6)	IPAC	2012Wo03	PR C85 037304 (12)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
72 Hf 170	101	1.2 ns	2+	0.56(10)	IPAC	2007Wo08	PR C76 047308 (07)
72 Hf 172	95	1.28 ns	2+	0.50(10)	IPAC	2009Be42	PR C80 057303 (09)
	1685	4.8 ns	(6+)	+5.6(6)	TDPAD	1980Wa23	NP A349 1 (80)
	2006	163 ns	(8-)	+7.93(6)	TDPAD	1980Wa23	NP A349 1 (80)
72 Hf 173	1982	19.5 ns	(23/2)-	+6.6(2)	TDPAD	1980Wa23	NP A349 1 (80)
72 Hf 174	1549	138 ns	(6+)	+5.40(5)	TDPAD	1980Wa23	NP A349 1 (80)
72 Hf 176	88	1.43 ns	2+	+0.63(6)	IPAC	1996Al20	ZP A355 363 (96)
	290	87.9 ps	4+	+1.34(15)	IPAC	1996Al20	ZP A355 363 (96)
72 Hf 177	113	537 ps	9/2-	+1.03(3)	IPAC	1996Al20	ZP A355 363 (96)
	250	105 ps	11/2-	+1.5(5)	IPAC	1968Br15	CJP 46 1523 (68)
	321	0.66 ns	9/2+	-0.73(9)	IPAC	1969Hu06	NP A127 609 (69)
72 Hf 178	93	1.49 ns	2+	+0.60(4)	IPAC	1962Ka14	ArkF 22 257 (62)
	1554	77 ns	6+	+5.81(5)	TDPAD	1980Wa23	NP A349 1 (80)
72 Hf 180	93	1.52 ns	2+	+0.61(3)	IPAC	1996Al20	ZP A355 363 (96)
	309	71 ps	4+	+1.4(2)	IPAC	1996Al20	ZP A355 363 (96)
	641	10.0 ps	6+	+2.0(4)	IPAC	1996Al20	ZP A355 363 (96)
73 Ta 173	166	225 ns	9/2-	+2.66(8)	TDPAD	2006Th07	PR C74 034329 (06)
	1713	~ 100 ns	21/2-	+6.51(16)	TDPAD	2006Th07	PR C74 034329 (06)
73 Ta 177	71	70 ns	5/2+	+4.9(5)	PPDAC	1976Ao02/1974Ao01	NP A272 47 (76)/NIM 119 477 (74)
	186	3.62 μs	5/2-	+2.05(13)	TDPAC	1978Be67	IzF 42 2286 (78)
	1355	5.3 μs	21/2-	+0.080(14)	IPAD	1982Ao04	NP A381 13 (82)
73 Ta 181	6	6.05 μs	9/2-	+5.46(2)	ME	1978Sa25	ZP A288 291 (78)
	136	40 ps	9/2+	+2.6(7)	IPAC	1983Ak02	IzF 47 31 (83)
	482	10.8 ns	5/2+	+3.29(3)	CDPAC	1964Ag02	NP 58 651 (64)
74 W 168	199	213 ps	2+	+0.50(10)	IMPAD	1986Bi11	PL 178B 145 (86)
	562	12 ps	4+	+1.4(8)	IMPAD	1986Bi11	PL 178B 145 (86)
	2722	61 ps	12+	-2.5(8)	IMPAD	1986Bi11	PL 178B 145 (86)
74 W 175	235	216 ns	7/2+	-0.65(2)	TDPAD	2000Io03	PL B495 289 (00)
74 W 176	3747	41 ns	14+	+6.7(2)	TDPAD	2000Io03	PL B495 289 (00)
74 W 179	3348	750 ns	35/2-	8.31(9)	TDPAD	1998ByZZ	Nucl Structure '98 Gatlinburg 12 (1998)
74 W 180	104	1.28 ns	2+	0.52(3)	ME	1973Zi02	ZP 262 413 (73)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
74 W 182	100	1.32 ns	2+	+ 0.512(25)	ME	1976St23	JPCRD 5 835 (76)
	329	62 ps	4+	+0.9(2)	IPAC	1972Be94	DUzb 1972n1 32 (72)
	1289	1.12 ns	2-	+1.7(2)	IPAC	1973Se14	NP A211 573 (73)
	1374	78 ps	3-	2.2(3)	IPAC	1973Se14	NP A211 573 (73)
74 W 183	47	185 ps	3/2-	-0.1(1)	ME	1967Ag02	PR 155 1342 (67)
	99	0.73 ns	5/2-	+0.92(3)	ME	1976St23	JPCRD 5 835 (76)
	207	_	7/2-	0.4(2)	TF	1992La02	NP A536 397 (92)
	309	_	9/2-	1.53(14)	TF	1992La02	NP A536 397 (92)
	475	_	11/2-	1.1(2)	TF	1992La02	NP A536 397 (92)
	551	_	9/2-	2.2(9)	TF	1992La02	NP A536 397 (92)
	631	10 ps	13/2-	2.6(3)	TF	1992La02	NP A536 397 (92)
	1062	3.0 ps	17/2-	2.6(7)	TF	1992La02	NP A536 397 (92)
74 W 184	111	1.25 ns	2+	+0.578(14)	IPAC	1984Al06	ZP A316 87 (84)
	364	46 ps	4+	+1.17(9)	IPAC	1984Al06	ZP A316 87 (84)
	748	5.8 ps	6+	+1.8(2)	IPAC	1984Al06	ZP A316 87 (84)
	904	1.80 ps	2+	+0.24(8)	TF	1985St18	ZP A322 287 (85)
	1252	1.49 ps	8+	+2.9(6)	TF	1985St18	ZP A322 287 (85)
74 W 186	123	1.04 ns	2+	+0.621(17)	ME	1976St23	JPCRD 5 835 (76)
	396	36 ps	4+	+1.28(10)	TF	1985St07	ZP A320 669 (85)
	737	4.8 ps	2+	+0.39(8)	TF	1985St07	ZP A320 669 (85)
	809	4.0 ps	6+	+1.9(4)	TF	1985St07	ZP A320 669 (85)
75 Re 181	357	88 ns	5/2-	+2.03(10)	TDPAC	1978Be67	IzF 42 2286 (78)
75 Re 182	236	585 ns	(2)-	+2.15(8)	TDPAC	1978Be67	IzF 42 2286 (78)
	2256	82 ns	16-	+3.82(13)	TDPAD	1988Ja02	PL 202B 185 (88)
75 Re 183	496	7.8 ns	9/2-	+5.14(11)	TDPAD	1980Za09	IzF 44 1988 (80)
75 Re 185	125	10.2 ps	7/2+	+2.1(8)	IPAC	1973BeYN	Cf72 Kiev, 150 (72)
75 Re 186	314	24.1 ns	3+	+2.18(6)	TDPAD	1980Za09	IzF 44 1988 (80)
	~330	17.3 ns	(5)+	+4.62(11)	TDPAD	1980Za09	IzF 44 1988 (80)
75 Re 187	134	10.6 ps	7/2+	+1.9(9)	PAC	1973BeYN	Cf72 Kiev, 150 (72)
	206	555 ns	9/2-	+5.11(9)	TDPAC	1978Be67	IzF 42 2286 (78)
76 Os 182	7049	150 ns	25(+)	+10.6(2)	TDPAD	1989Al19	PL B228 463 (89)
76 Os 186	137	875 ps	2+	+0.58(3)	ME	1976St23	JPCRD 5 835 (76)
	1775	8.4 ns	(7-)	-0.22(14)	TDPAD	1984Go06	YadF 39 518 (84)
76 Os 188	155	688 ps	2+	0.63(3)	ME	1976St23	JPCRD 5 835 (76)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	478	17.7 ps	4+	+1.55(17)	TF	1985St05	NP A435 635 (85)
	633	9.4 ps	2+	+0.85(9)	TF	1985St05	NP A435 635 (85)
	940	2.95 ps	6+	+2.7(4)	TF	1985St05	NP A435 635 (85)
	966	6.0 ps	4+	+1.7(5)	TF	1985St05	NP A435 635 (85)
	1771	14.0 ps	7-	-0.17(11)	TDPAD	1984Go06	YadF 39 518 (84)
76 Os 189	36	0.52 ns	1/2-	+0.23(3)	ME	1969Wa02	PL 28B 548 (69)
	70	1.62 ns	5/2-	+0.981(9)	ME, IPAC	1972Wa24	ZP 254 112 (72)
	95	0.23 ns	3/2-	-0.32(5)	IPAC	1971Be23	IzF 35 2295 (71)
76 Os 190	187	375 ps	2+	+0.69(3)	TF	1992St06	ZP A342 373 (92)
	548	12.8 ps	4+	+1.58(19)	TF	1985St05	NP A435 635 (85)
	558	15.2 ps	2+	+0.69(9)	TF	1985St05	NP A435 635 (85)
76 Os 192	206	288 ps	2+	+0.79(2)	IMPAC, R	1985St05	NP A435 635 (85)
	489	32.6 ps	2+	+0.63(6)	TF	1985St05/1983Bo13	NP A435 635 (85)/NP A401 175 (83)
	580	14.7 ps	4+	+1.55(16)	TF	1985St05/1983Bo13	NP A435 635 (85)/NP A401 175 (83)
	910	9.8 ps	4+	+1.7(4)	TF	1985St05	NP A435 635 (85)
77 Ir 187	434	152 ns	11/2-	+6.21(5)	TDPAC	1978HaXO	ARHMI 1977 52 (78)
77 Ir 191	82	4.08 ns	1/2+	+0.581(5)	ME, R	1983Wa31	HFI 13 149 (83)
	129	89.9 ps	5/2+	+0.81(6)	TF	2000Be07	NP A669 241 (00)
	179	43 ps	3/2+	+1.4(4)	IPAC	1973Il02	IzUz 1973n4 79 (73)
	343	20.4 ps	7/2+	+1.40(6)	TF	2000Be07	NP A669 241 (00)
	503	13.4 ps	9/2+	+2.4(2)	TF	1996St22	HFI 97/98 479 (96)
	686	2.7 ps	7/2+	+0.8(3)	TF	1996St22	HFI 97/98 479 (96)
	832	3.2 ps	11/2+	+3.4(9)	TF	1996St22	HFI 97/98 479 (96)
77 Ir 193	73	6.1 ns	1/2+	+0.506(2)	ME	1983Wa31	HFI 13 149 (83)
	139	70 ps	5/2+	+0.89(4)	TF	2000Be07	NP A669 241 (00)
	180	43 ps	3/2+	+1.1(4)	IPAC	1973Il02	IzUz 1973n4 79 (73)
	358	18.2 ps	7/2+	+1.54(6)	TF	2000Be07	NP A669 241 (00)
	522	13.2 ps	9/2+	+2.2((2)	TF	1996St22	HFI 97/98 479 (96)
	621	4.3 ps	7/2+	+1.16(14)	TF	1996St22	HFI 97/98 479 (96)
	857	4.2 ps	11/2+	+2.7(7)	TF	1996St22	HFI 97/98 479 (96)
78 Pt 180	153	370 ps	2+	0.64(12)	IPAC	1998Br33	EurPJ A3 129 (98)
	411	22.9 ps	4+	1.6(6)	IPAC	2002Ro36	NIMPR 489 469 (2002)
78 Pt 182	155	479 ps	2+	+0.46(8)	IPAC	2002Ro36	NIMPR 489 469 (2002)
	420	32.5 ps	4+	+1.7(8)	IPAC	2002Ro36	NIMPR 489 469 (2002)
78 Pt 184	163	360 ps	2+	+0.56(6)	IPAC	1996St12	PRL 76 2246 (96)
	436	25 ps	4+	1.3(7)	IPAC	2002Ro36	NIMPR 489 469 (2002)
78 Pt 186	192	260 ps	2+	+0.54(6)	IPAC	1996St12	PRL 76 2246 (96)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
78 Pt 188	266	66 ps	2+	+0.58(8)	IPAC	1996St12	PRL 76 2246 (96)
78 Pt 190	296	62 ps	2+	+0.57(3)	TF	1995An15	NP A593 212 (95)
	1631	0.79 ns	7-	+4.3(6)	IPAD	2006Le06	NP A764 24 (2006)
	2297	48 ns	10-	-0.02(4)	IPAD	2006Le06	NP A764 24 (2006)
	2727	1.4 ns	12+	-2.0(14)	IPAD	2006Le06	NP A764 24 (2006)
78 Pt 192	317	43.7 ps	2+	+0.60(2)	TF	1995An15	NP A593 212 (95)
	612	26.5 ps	2+	+0.56(9)	TF	1992Br03	NP A536 366 (92)
	785	4.2 ps	4+	+1.12(12)	TF	1992Br03	NP A536 366 (92)
	1518	1.85 ns	7-	+3.4(8)	IPAD	2006Le06	NP A764 24 (2006)
	2172	272 ns	10-	-0.012(10)	IPAD	2006Le06	NP A764 24 (2006)
	2624	2.6 ns	12-	-2.2(11)	IPAD	2006Le06	NP A764 24 (2006)
78 Pt 194	328	41.8 ps	2+	+0.59(2)	TF	1992Br03	NP A536 366 (92)
	622	35 ps	2+	+0.56(11)	TF	1992Br03	NP A536 366 (92)
	811	3.7 ps	4+	+1.12(12)	TF	1992Br03	NP A536 366 (92)
	1485	3.45 ns	7-	+1.8(6)	IPAD	2006Le06	NP A764 24 (2006)
78 Pt 195	99	0.17 ns	3/2-	-0.61(5)	ME	1976St23	JPCRD 5 835 (76)
	130	0.61 ns	5/2-	+0.894(19)	ME	1976St23	JPCRD 5 835 (76)
	211	49 ps	3/2-	+0.21(5)	CEAD	1994La02	NP A568 617 (94)
	239	70 ps	5/2-	+0.64(9)	TF	1994La02	NP A568 617 (94)
	389	9 ps	5/2-	+0.39(10)	TF	1994La02	NP A568 617 (94)
	455	>10 ps	5/2-	+1.6(6)	TF	1994La02	NP A568 617 (94)
	508	9.5 ps	7/2-	+0.55(8)	TF	1994La02	NP A568 617 (94)
	544	>2.8 ps	5/2-	+1.5(4)	TF	1994La02	NP A568 617 (94)
	563	14 ps	9/2-	+1.55(12)	TF	1994La02	NP A568 617 (94)
	613	6 ps	7/2-	+1.4(4)	TF	1994La02	NP A568 617 (94)
	667	(16 ps)	9/2-	+1.52(16)	TF	1994La02	NP A568 617 (94)
	679	>2.8 ps	7/2-	+1.2(3)	TF	1994La02	NP A568 617 (94)
78 Pt 196	356	34 ps	2+	+0.59(2)	TF	1992Br03	NP A536 366 (92)
	689	33.8 ps	2+	+0.54(9)	R	1992Br03	NP A536 366 (92)
	877	3.55 ps	4+	+1.38(16)	TF	1992Br03	NP A536 366 (92)
78 Pt 197	53	16.6 ns	5/2-	+0.85(3)	TDPAC	1982So05	PR C25 1587 (82)
78 Pt 198	407	22.3 ps	2+	+0.63(2)	TF	1995An15	NP A593 212 (95)
	775	27 ps	2+	+0.61(11)	R	1992Br03	NP A536 366 (92)
	985	3.3 ps	4+	+1.2(2)	R	1992Br03	NP A536 366 (92)
78 Au 187	2669	100 ns	(31/2-)	(+)3.9(5)	TDPAD	1997Pe26	ZP A359 (97)
79 Au 189	2555	242 ns	31/2+	6.5(3)	TDPAD	1997Pe26	ZP A359 (97)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
79 Au 191	2489	400 ns	(31/2+)	6.5(6)	TDPAD	1997Pe26	ZP A359 (97)
79 Au 193	1947	10.4 ns	(21/2-)	+6.48(11)	TDPAD, R	L	Cf80 HFI-V, Berlin A 18-I (80)
	2477	3.5 ns	(31/2-)	5(3)	IPAD	1985Ko13	NP A439 189 (85)
	2701	1.8 ns	(35/2-)	2(2)	IPAD	1985Ko13	NP A439 189 (85)
79 Au 197	77	1.91 ns	1/2+	+0.416(3)	ME	1976St23	JPCRD 5 835 (76)
	279	18.6 ps	5/2+	+0.74(6)	TF	1988St09	ZP A330 131 (88)
	503	1.77 ps	5/2+	+3.0(5)	TF	1988St09	ZP A330 131 (88)
	548	4.6 ps	7/2+	+0.84(7)	TF	1988St09	ZP A330 131 (88)
	737	1.1 ps	7/2+	+1.7(5)	TF	1988St16	NP A486 374 (88)
	855	2.7 ps	9/2+	+1.5(5)	TF	1988St16	NP A486 374 (88)
	1231	0.91 ps	11/2+	+2.0(10)	TF	1988St16	NP A486 374 (88)
79 Au 198	312	124 ns	5+	-1.11(2)	TDPAD, R	L	Cf80 HFI-V, Berlin A 18-I (80)
80 Hg 188	2724	134 ns	12+	-2.02(12)	TDPAD	1983Se20	ZP A313 289 (83)
80 Hg 196	1841	5.2 ns	7-	-0.21(12)	IPAD	2006Le06	NP A764 24 (2006)
80 Hg 197	134	8.1 ns	5/2-	+0.855(15)	TDPAC	1977Kr11	ZP A283 337 (77)
80 Hg 198	412	23 ps	2+	+0.76(6)	TF	1995Br34	ZP A353 141 (95)
	1048	7.2 ps	4+	+1.6(2)	TF	1995Br34	ZP A353 141 (95)
	1684	6.9 ps	7-	-0.23(10)	IPAD	2006Le06	NP A764 24 (2006)
80 Hg 199	158	2.45 ns	5/2-	+0.88(3)	TDPAC	1977Kr11	ZP A283 337 (77)
	208	69 ps	3/2-	-0.56(9)	TF	1990Ba40	HFI 59 129 (90)
	414	115 ps	5/2-	+0.80(9)	TF	1990Ba40	HFI 59 129 (90)
80 Hg 200	368	46.4 ps	2+	+0.65(5)	TF	1995Br34	ZP A353 141 (95)
	947	3.2 ps	4+	1.02(17)	TF	1995Br34	ZP A353 141 (95)
80 Hg 202	440	27.3 ps	2+	+0.78(6)	TF	1995Br34	ZP A353 141 (95)
	1120	2.05 ps	4+	1.4(3)	TF	1995Br34	ZP A353 141 (95)
80 Hg 204	437	40.3 ps	2+	+0.64(6)	TF	1986Ko02	NP A448 123 (86)
80 Hg 206	2102	2.15 μs	5-	+5.45(5)	TDPAD	1982Be38	PR C26 914 (82)
81 Tl 192	388	296 ns	(8-)	+1.66(4)	TDPAD	1982Da17	NP A383 421 (82)
81 Tl 202	950	591 μs	7+	+0.90(4)	TDPAD	1974Ha06	NP A218 180 (74)
81 Tl 203	279	280 ps	3/2+	+0.10(14)	IPAC	1965Ka02	NP 61 582 (65)
	681	0.88 ps	5/2+	+2.6(11)	TF	1979Ha06	NP A314 161 (79)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
81 Tl 204	1104	62 μs	(7)+	+1.187(6)	TDPAD	1972Ma59	NP A195 577 (72)
81 Tl 205	204	1.46 ns	3/2+	-0.08(5)	TF	1984HaYY	Cf83 Meguro, 145 (83)
	619	0.90 ps	5/2+	+2.0(3)	TF	1984HaYY	Cf83 Meguro, 145 (83)
	2623	-	(5/2)-	0.71(15)	Mu-X	1972Ch07	NP A181 25 (72)
	3291	2.6 μs	25/2+	+6.80(10)	TDPAD	1982Ma05	PRL 48 466 (82)
81 Tl 206	1405	78 ns	(5)+	+4.27(6)	TDPAD	1976Ha44	PL 64B 273 (76)
82 Pb 188	2578	0.83 μs	8-	-0.30(6)	TDPAD	2010Io01	PR C81 024323 (10)
	2704	26 ns	11-	+11.3(3)	TDPAD	2010Io01	PR C81 024323 (10)
	2713	94 ns	12+	-2.15(7)	TDPAD	2010Io01	PR C81 024323 (10)
82 Pb 192	2624	1.09 μs	(12+)	-2.08(2)	TDPAD	1983St15	NP A411 248 (83)
82 Pb 193	1586 + x	20.5 ns	(21/2-)	-0.62(12)	TDPAD	2004Io01	PR C70 034305 (2004)
	2585 + x	9.4 ns	(29/2-)	+9.9(4)	TDPAD	1997Ch33	PRL 79 2002 (97)
	2613 + x	180 ns	(33/2+)	-2.82(15)	TDPAD	2004Io01	PR C70 034305 (2004)
82 Pb 194	2407	17 ns	(9)-	-0.38(14)	TDPAD	2004Vy01	PR C69 064318 (04)
	2628	370 ns	(12+)	-2.00(2)	TDPAD	1985St16	ZP A322 83 (85)
	2933	133 ns	(11)-	+11.3(2)	TDPAD	2004VY01	PR C69 064318 (04)
82 Pb 195	2902	95 ns	33/2+	-2.57(10)	TDPAD	1985St16	ZP A322 83 (85)
82 Pb 196	1798	140 ns	5-	+0.490(15)	TDPAD	1985St16	ZP A322 83 (85)
	2308	52 ns	9-	-0.33(9)	TDPAD	2004Vy01	PR C69 064318 (04)
	2695	270 ns	12+	-1.92(2)	TDPAD	1983St15	NP A411 248 (83)
	3193	72 ns	11-	+11.4(6)	TDPAD	2004Vy01	PR C69 064318 (04)
82 Pb 197	1913	1.15 μs	21/2-	-0.531(6)	TDPAD	1985St16	ZP A322 83 (85)
	3168	55 ns	(33/2+)	-2.51(10)	TDPAD	1985St16	ZP A322 83 (85)
82 Pb 198	1824	50 ns	(5)-	+0.38(3)	TDPAD	1985St16	ZP A322 83 (85)
	2141	4.19 μs	(7-)	-0.330(5)	R-TDPAD	1987Ca23	HFI 34 77 (87)
	2822	212 ns	(12)+	-1.86(2)	TDPAD	1983St15	NP A411 248 (83)
82 Pb 199	2559 + x	10.1 μs	(29/2-)	-1.076(3)	TDPAD	1988Ro08	NP A482 573 (88)
	3490 + x	63 ns	(33/2+)	-2.51(5)	TDPAD	1985St16	ZP A322 83 (85)
82 Pb 200	2154	45.1 ns	(7-)	-0.21(10)	TDPAD	1985St16	ZP A322 83 (85)
	2183	448 ns	(9-)	-0.257(10)	TDPAD	1974Lu03	NP A229 230 (74)
	3006	199 ns	(12+)	-1.836(7)	TDPAD	1987Fa15	NP A475 338 (87)
	5075	72 ns	(19-)	-1.79(13)	TDPAD	1987Fa15	NP A475 338 (87)
82 Pb 201	2720	63 ns	25/2-	-0.79(4)	TDPAD	1988Ro08	NP A482 573 (88)
	2720 + x	508 ns	(29/2-)	-1.011(6)	TDPAD	1988Ro08	NP A482 573 (88)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	4641 + x	43 ns	(41/2+)	-3.7(8)	TDPAD	1988Ro08	NP A482 573 (88)
82 Pb 202	1383	1.97 ns	4+	+0.008(16)	IPAC	1977Th02	ZP A280 371 (77)
	4091 + x	110 ns	16+	-0.67(16)	TDPAD	1986Ja13	NP A458 225 (86)
	5251 + u	107 ns	19-	-1.88(6)	TDPAD	1987Fa15	NP A475 338 (87)
82 Pb 203	1922	42 ns	21/2+	-0.64(2)	TDPAD	1986Ja21	PS 34 717 (86)
	2923 + x	122 ns	(25/2-)	-0.74(4)	TDPAD	1988Ro08	NP A482 573 (88)
82 Pb 204	899	2.88 ps	2+	<0.02	RIGV, R	1986Bi13	HFI 30 265 (86)
	1274	265 ns	4+	+0.225(4)	TDPAD	1974Lu03	NP A229 230 (74)
82 Pb 205	1014	5.55 ms	13/2+	-0.98(4)	TDPAD	1971Ma59	NP A176 497 (71)
	3196	217 ns	25/2-	-0.845(14)	TDPAD	1976Li09	ZP A277 273 (76)
	5161	63 ns	33/2+	-2.44(8)	TDPAD	1983St15	NP A411 248 (83)
82 Pb 206	803	8.3 ps	2+	<0.03	RIV/D, R	1986Bi13	HFI 30 265 (86)
	2200	125 μs	7-	-0.152(3)	SOPAD	1972Ma24	NP A186 97 (72)
	2384	30 ps	6-	+0.8(4)	IPAC	1970Za03	NP A146 215 (70)
	4027	202 ns	12+	-1.80(2)	TDPAD	1983St15	NP A411 248 (83)
82 Pb 207	570	130 ps	5/2-	+0.80(3)	IPAC	1973Ao01	JPJS 34 271 (73)
82 Pb 208	2615	16.7 ps	3-	+1.7(4)	IPAC	1969Bo12	PL 29B 226 (69)
	3198	294 ps	5-	+0.11(4)	IPAC	1969Bo01	NP A138 90 (69)
82 Pb 210	1195	49 ns	6+	-1.87(9)	TDPAD	1983De34	PR C28 1060 (83)
	1278	201 ns	8+	-2.50(6)	TDPAD	1983De34	PR C28 1060 (83)
83 Bi 202	605 + x	3.04 μs	(10-)	2.56(3)	TDPAD	1985No09	ZP A322 463 (85)
	2597 + x	310 ns	(17+)	2.06(5)	TDPAD	1982Hu07	NP A382 56 (82)
83 Bi 203	1991	90 ns	21/2+	2.79(4)	TDPAD	1982Hu07	NP A382 56 (82)
	2042	194 ns	25/2+	3.33(5)	TDPAD	1982Hu07	NP A382 56 (82)
83 Bi 204	806	13.0 ms	10-	2.4(2)	TDPAD	1985No09	ZP A322 463 (85)
83 Bi 205	2064	100 ns	21/2+	2.70(4)	TDPAD	1982Hu07	NP A382 56 (82)
	2139	220 ns	25/2+	3.21(5)	TDPAD	1982Hu07	NP A382 56 (82)
83 Bi 206	1045	0.89 ms	10-	2.644(14)	NMR/AC	1985No09	PL 46B 65 (73)/ZP A322 463 (85)
83 Bi 207	2101	182 μs	21/2+	+3.41(6)	SOPAD	1972Ma24	NP A186 97 (72)
83 Bi 208	1571	2.58 ms	10-	2.672(14)	NMR/AD	1985No09	ZP A322 463 (85)
83 Bi 209	2564	15 fs	(9/2)+	3.5(7)	Mu-X	1972Le07	NP A181 14 (72)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	2741	9.1 ps	15/2+	6.2(12)	Mu-X	1972Le07	NP A181 14 (72)
	2986	18 ns	19/2+	3.50(8)	TDPAD	1978Be17	PR C17 1359 (78)
83 Bi 210	433	57 ns	7-	+2.11(5)	TDPAD	1972Ba65	PRL 29 496 (72)
	439	38 ns	5-	+1.53(5)	TDPAD	1972Ba65	PRL 29 496 (72)
84 Po 198	1854	29 ns	8+	+7.3(2)	TDPAD	1986Ma31	ZP A324 123 (86)
	2566	200 ns	11-	+12.1(6)	TDPAD	1986Ma31	ZP A324 123 (86)
	2692+x	750 ns	12+	-1.86(4)	TDPAD	1986Ma31	ZP A324 123 (86)
84 Po 200	1774	61 ns	8+	+7.44(16)	TDPAD	1986Ma31	ZP A324 123 (86)
	2596	100 ns	11-	+11.9(2)	TDPAD	1986Ma31	ZP A324 123 (86)
	2805 + x	268 ns	12+	-1.79(2)	TDPAD	1986Ma31	ZP A324 123 (86)
84 Po 202	1692 + x	110 ns	8+	7.45(12)	TDPAD	1976Ha56	NP A273 253 (76)
	2604 + x	85 ns	11-	11.9(4)	TDPAD	1976Ha56	NP A273 253 (76)
84 Po 204	1639	154 ns	8+	+7.38(10)	SOPAD	1973Br14	NP A206 452 (73)
	3564	11.5 ns	15-	6.2(3)	TDPAD	1982Ha16	ZP A305 1 (82)
84 Po 205	880	645 μs	13/2+	-0.95(5)	TDPAD	1974BrXD	Cf74Upp 116 (74)
84 Po 206	1586	232 ns	8+	+7.35(10)	SOPAD	1973Br14	NP A206 452 (73)
84 Po 207	1115	49 μs	13/2+	-0.910(14)	TDPAD	1973Ri06	PL 44B 456 (73)
	2380	43 ns	25/2+	5.41(4)	TDPAD	1985Ro07	PS 31 122 (85)
84 Po 208	1528	350 ns	8+	+7.37(5)	TDPAD	1976Ha56	NP A273 253 (76)
	2703	8.0 ns	11-	12.11(14)	TDPAD	1985Ro07	PS 31 122 (85)
84 Po 209	1418	24 ns	13/2-	6.13(9)	TDPAD	1976Ha56	NP A273 253 (76)
	1473	89 ns	17/2-	7.75(5)	TDPAD	1976Ha56	NP A273 253 (76)
	4266	119 ns	31/2-	+9.68(8)	TDPAD	1976Re12	PS 14 95 (76)
84 Po 210	1473	43 ns	6+	5.48(5)	TDPAD	1976Ha56	NP A273 253 (76)
	1557	99 ns	8+	+7.35(5)	TDPAD	1976Ha56	NP A273 253 (76)
	2849	19.6 ns	11-	+12.20(9)	TDPAD	1976Ha56	NP A273 253 (76)
	4372	54 ns	13-	6.80(17)	TDPAD	1985Be22	PS 31 333 (85)
	5058	263 ns	16+	9.84(8)	TDPAD	1985Be22	PS 31 333 (85)
84 Po 211	1065	14 ns	15/2-	-0.38(15)	IPAD	1973FaZD	JPJS 34 287 (73)
85 At 207	2117	108 ns	25/2+	+3.75(13)	TDPAD	1981Sj01	PR C23 272 (81)
85 At 208	1090	48 ns	10-	+2.69(3)	TDPAD	1985No09	ZP A322 463 (85)
85 At 209	1428	25.3 ns	21/2-	+10.0(2)	TDPAD	1976Sj01	PR C14 1023 (76)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	2429	916 ns	29/2+	15.38(14)	TDPAD	1987Ca23	HFI 34 77 (87)
85 At 210	2550	482 ns	(15)-	15.48(15)	TDPAD	1987Ca23	HFI 34 77 (87)
	4028	5.66 μs	(19)+	13.26(13)	TDPAD	1987Ca23	HFI 34 77 (87)
85 At 211	1416	35.1 ns	(21/2)-	+9.56(9)	TDPAD	1976Ha62	HFI 2 334 (76)
	2641	50.8 ns	(29/2)+	+15.31(13)	TDPAD	1976Ha62	HFI 2 334 (76)
	4815	4.2 μs	(39/2)-	13.46(14)	TDPAD	1985Be22	PS 31 333 (85)
85 At 212	885	18.7 ns	(11+)	5.94(11)	TDPAD	1994By01	NP A567 445 (94)
	1605	35.4 ns	(15-)	9.46(8)	TDPAD	1994By01	NP A567 445 (94)
86 Rn 206	1924	6.3 ns	8+	6.6(4)	TDPAD	1981Ma28	HFI 9 87 (81)
	2476	65 ns	(10-)	11.15(10)	TDPAD	1981Ma28	HFI 9 87 (81)
86 Rn 207	899	185 μs	13/2+	-0.903(3)	TDPAD	1978Ha50	HFI 4 291 (78)
86 Rn 208	1828	487 ns	8+	6.94(8)	TDPAD	1981Ma28	HFI 9 87 (81)
	2618	11.8 ns	10-	10.72(10)	TDPAD	1981Ma28	HFI 9 87 (81)
86 Rn 210	1665 + x	644 ns	(8+)	7.14(6)	TDPAD	1986Po01	NP A448 189 (86)
	2564 + x	64 ns	(11)-	12.16(11)	TDPAD	1981Ma28	HFI 9 87 (81)
	3248 + x	76 ns	(14)+	14.85(10)	TDPAD	1986Po01	NP A448 189 (86)
	3812 + x	1.06 μs	(17)-	17.80(9)	TDPAD	1986Po01	NP A448 189 (86)
	4993 + x	12.3 ns	(20)+	22.22(10)		1986Po01	NP A448 189 (86)
	6469 + x	1.04 μs	(23)+	16.05(16)		1986Po01	NP A448 189 (86)
	7311 + x	34 ns	(26)-	19.0(2)		1986Po01	NP A448 189 (86)
86 Rn 211	1578 + x	596 ns	(17/2-)	+7.72(8)	TDPAD	1985Po06	PL 154B 263 (85)
	3926 + x	40 ns	(35/2+)	+17.7(2)	TDPAD	1985Po06	PL 154B 263 (85)
	5246 + x	14 ns	(43/2-)	+15.9(4)	TDPAD	1985Po06	PL 154B 263 (85)
	6100 + y	28 ns	(49/2+)	+18.7(2)	TDPAD	1985Po06	PL 154B 263 (85)
	8856 + y	201 ns	(63/2-)	+19.5(2)	TDPAD	1985Po06	PL 154B 263 (85)
86 Rn 212	1502	8.8 ns	4+	4.0(2)	TDPAD	1988St17	NP A486 397 (88)
	1640	118 ns	(6)+	5.43(5)	TDPAD	1988St17	NP A486 397 (88)
	1694	0.91 μs	(8+)	+7.15(2)	TDPAD, SOPAD	1979Ho06	NP A317 520 (79)
	3358	7.4 ns	(14+)	15.0(4)	TDPAD	1988St17	NP A486 397 (88)
	4067	29 ns	(17-)	17.9(2)	TDPAD	1988St17	NP A486 397 (88)
	6167 + x	109 ns	(22+)	15.8(2)	TDPAD	1988St17	NP A486 397 (88)
	7135 + x	18 ns	(25-)	17.8(5)	TDPAD	1977Ho17	PRL 39 389 (77)
	7871 + x	14 ns	(27-)	17.0(8)	TDPAD	1977Ho17	PRL 39 389 (77)
	8571 + x	154 ns	(30+)	19.62(9)	TDPAD	1977Ho17	PRL 39 389 (77)
86 Rn 213	1664	29 ns	(21/2+)	4.73(11)	TDPAD	1988St10	NP A482 692 (88)
	1664 + x	1.0 μs	(25/2+)	7.6(3)	TDPAD	1988St10	NP A482 692 (88)
	2187 + x	1.36 μs	(31/2-)	9.86(8)	TDPAD	1988St10	NP A482 692 (88)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
	3029 + x	26 ns	(37/2+)	13.61(13)	TDPAD	1988St10	NP A482 692 (88)
	3494 + x	28 ns	(43/2-)	15.52(15)	TDPAD	1988St10	NP A482 692 (88)
	4506 + x	12 ns	(49/2+)	19.8(3)	TDPAD	1988St10	NP A482 692 (88)
	5929 + y	164 ns	(55/2+)	16.54(14)	TDPAD	1988St10	NP A482 692 (88)
86 Rn 222	186	0.32 ns	2+	+0.92(14)	IPAC	1970Or02	NP A148 516 (70)
87 Fr 211	2423	146 ns	(29/2+)	15.31(15)	TDPAD	1986By01	NP A448 137 (86)
	4657	123 ns	(45/2-)	24.2(2)	TDPAD	1986By01	NP A448 137 (86)
87 Fr 212	1551	31.9 μs	(11+)	9.85(4)	SOPAD	1977Be56	HFI 3 297 (77)
	2492	604 ns	(15-)	+15.65(12)	TDPAD	1989By01	PL B217 38 (89)
	4834	4.2 ns	(22+)	22(4)	TDPAD	1986By01	NP A448 137 (86)
	5855	312 ns	(27-)	21.8(3)	TDPAD	1986By01	NP A448 137 (86)
87 Fr 213	1411	18 ns	17/2-	7.5(14)	TDPAD	1986By01	NP A448 137 (86)
	1590	505 ns	21/2-	9.28(3)	TDPAD	1977Be56	HFI 3 397 (77)
	2538	238 ns	29/2+	15.15(5)	TDPAD	1977Be56	HFI 3 397 (77)
	4993	13 ns	45/2-	23.2(7)	TDPAD	1986By01	NP A448 137 (86)
	8095	3.1 μs	65/2-	+22.5(2)	TDPAD	1989By01	PL B217 38 (89)
87 Fr 214	638	103 ns	(11+)	+5.60(7)	TDPAD	1994By01	NP A567 445 (94)
	4318 + x	8 ns	(27-)	+19.7(8)	TDPAD	1994By01	NP A567 445 (94)
	6477 + y	108 ns	(33+)	+22(3)	TDPAD	1994By01	NP A567 445 (94)
87 Fr 215	1440	4 ns	(19/2)-	3.1(9)	TDPAD	1984De16	NP A419 163 (84)
	2016	4.7 ns	(29/2+)	7(3)	TDPAD	1984De16	NP A419 163 (84)
	2251	5.3 ns	(33/2+)	8(2)	TDPAD	1984De16	NP A419 163 (84)
	3069	14.6 ns	(39/3-)	9.2(2)	TDPAD	1984De16	NP A419 163 (84)
88 Ra 212	1958	10.9 μs	(8)+	7.08(7)	SOPAD	1986Ko01	PR C33 392 (86)
	2613	0.85 μs	(11)-	12.0(2)	SOPAD	1986Ko01	PR C33 392 (86)
88 Ra 213	1770	2.15 ms	(17/2-)	7.4(4)	LEMS	1994Ne01	PR C49 645 (94)
88 Ra 214	1865	67μs	8+	7.04(3)	SOPAD	1977Be56	HFI 3 297 (77)
	2683	295 ns	11-	11.92(8)	TDPAD	1992St09	NP A548 159 (92)
	3478	279 ns	14+	14.22(6)	TDPAD	1992St09	NP A548 159 (92)
	4147	225 ns	17-	17.27(5)	TDPAD	1992St09	NP A548 159 (92)
	6577	128 ns	(25-)	16.5(3)	TDPAD	1992St09	NP A548 159 (92)
88 Ra 215	3757 + x	555 ns	(43/2-)	15.53(7)	TDPAD	1998St24	NP A641 401 (98)
	4567 + x	10.5 ns	(49/2+)	18.9(2)	TDPAD	1998St24	NP A641 401 (98)
88 Ra 216	3763	5.3 ns	19-	+9.7(6)	TDPAD	1985Ad09	NP A442 361 (85)
	5170	6.6 ns	(25-)	+15.8(15)	TDPAD	1985Ad09	NP A442 361 (85)

Nucleus	Ex (keV)	T1/2	I	μ(nm)	Method	NSR Keynumber	Journal Reference
88 Ra 223	50	0.63 ns	3/2-	+0.43(6)	IPAC	1970Le13	PR C2 672 (70)
88 Ra 224	84	0.75 ns	2+	+0.9(2)	IPAC	1973He13	ZP 260 57 (73)
89 Ac 215	1621	30 ns	(17/2-)	7.74(13)	TDPAD	1983De08	ZP A310 55(83)
	1796	185 ns	(21/2-)	9.56(16)	TDPAD	1983De08	ZP A310 55(83)
	2438+x	335 ns	(29/2+)	14.98(22)	TDPAD	1983De08	ZP A310 55(83)
89 Ac 217	0	69 ns	9/2-	+3.83(5)	TDPAD	1985De14	NP A436 311 (85)
	2013	740 ns	(29/2+)	+5.03(7)	TDPAD	1985De14	NP A436 311 (85)
93 Np 237	60	67 ns	5/2-	+1.85(20)	ME	1968Du02/1967Gu08	PR 171 316 (68)/NP A104 588(67)
93 Np 239	75	1.39 ns	5/2-	+2.2(4)	IPAC	1967Gu08	NP A104 588 (67)
94 Pu 237	1534	97 ns	(3/2)	-0.68(5)	TDPAD	1982Ra04	PRL 48 982 (82)
94 Pu 239	285	1.12 ns	5/2+	-1.3(3)	IPAC	1974Pa03	PR C9 1515 (74)
95 Am 242	2200	14 ms	(2+/3-)	-1.14(8)	LRSRD	1996Ba52	HFI 97/98 535 (96)
95 Am 243	84	2.3 ns	5/2+	+2.9(2)	ME	1986Sa10	PL 115A 71 (86)

Appendix 2

TABLE OF DIAMAGNETIC CORRECTIONS

Z	Element	Reference isotope(s)	Adopted Moment (nm) (see full Table)	Diamagnetic correction applied in this Table	LFJ Correction	Correction Adjustment (%) (Applied/LFJ–1)	Diamagnetic Correction Reference
1	H	p	2.792847356(23)	1.0000335(5)	1.000026	29	
2	He	2 He 3	1.066639915(3)	1.000060	1.000060	0	.
3	Li	3 Li 7	+3.96136	1.000091(3)	1.000105	-14	
4	Be	4 Be 9	-1.177430(5)	1.000097(4)	1.000153	-36	CPL 588 57 (2013)
5	B	5 B 10	+1.8004636(8)	1.000112(3)	1.000207	-46	JCP 130 044309 (2009)
		5 B 11	+2.688378(1)	1.000112(3)	1.000207		
6	C	6 C 13	+0.702369(4)	1.000195(5)	1.000267	-27	CPL 411 111 (2005)
7	N	7 N 14	+0.403573(2)	1.000224(5)	1.000333	-30	CPL 411 111 (2005)
		7 N 15	-0.2830569(14)	1.000224(5)	1.000333		
8	O	8 O 17	-1.893543(10)	1.000323(5)	1.000406	-20	CPL 411 111 (2005)
9	F	9 F 19	+2.628335(2)	1.000409(5)	1.000484	-16	CPL 411 111 (2005)
10	Ne	10 Ne 21	-0.66170(3)	1.00043(4)	1.000569	-	
11	Na	11 Na 23	+2.21750(3)	1.000581(10)	1.000650	-11	CPL 532 1 (2012)
12	Mg	12 Mg 25	-0.85533(3)	1.000602(18)	1.000732	-18	CPL 588 57 (2013)
13	Al	13 Al 27	+3.64070(2)	1.000600(4)	1.000817	-27	JCP 143 074301 (2015)
14	Si	14 Si 29	-0.555052(3)	1.000476	1.000905	-53	JPhysChem A110 11462 (2006)
15	P	15 P 31	+1.130925(5)	1.000615(15)	1.000998	-27	JPhysChem A115 10617 (2011)
16	S	16 S 33	+0.643247(11)	1.000204	1.001093	-81	CPL 411 111 (2005)
17	Cl	17 Cl 35	+0.82170(2)	1.000979	1.001191	-18	JCP 139 234302 (2013)
		17 Cl 37	+0.68400(1)				
18	Ar	18 Ar 37	+1.146(5)	1.00097(10)	1.001294	-	
19	K	19 K 39	+0.391470(8)	1.001300(20)	1.001394	-5	CPL 532 1 (2012)
		19 K 41	+0.214872(5)	1.001300(20)			
20	Ca	20 Ca 43	-1.31733(6)	1.001259(38)	1.001495	-16	CPL 588 57 (2013)

Z	Element	Reference isotope(s)	Adopted Moment (nm) (see full Table)	Diamagnetic correction applied in this Table	LFJ Correction	Correction Adjustment (%) (Applied/LFJ–1)	Diamagnetic Correction Reference
21	Sc	21 Sc 45	+4.75400(8)	1.001083(16)	1.001603	-32	CPL 660 127 (2016)
22	Ti	22 Ti 47	-0.78814(11)	1.00129(13)	1.001716	-	
23	V	23 V 50	+3.442(4)	1.00138(14)	1.001834	-	
		23 V 51	+5.1464(7)	1.00138(14)	1.001834	-	
24	Cr	24 Cr 53	-0.47431(7)	1.00146(15)	1.001956	-	
25	Mn	25 Mn 55	+3.4669(6)	1.00156(16)	1.002077	-	
26	Fe	26 Fe 57	+0.9064(7)	1.00165(17)	1.002203	-	
27	Co	27 Co 59	+4.615(25)	1.00175(18)	1.002332	-	
28	Ni	28 Ni 61	-0.74965(5)	1.00185(19)	1.002468	-	
29	Cu	29 Cu 63	+2.2259(4)	1.00196(20)	1.002611	-	
		29 Cu 65	+2.3844(4)	1.00196(20)	1.002611	-	
30	Zn	30 Zn 67	+0.87485(16)	1.00206(21)	1.002749	-	
31	Ga	31 Ga 69	+2.01502(6)	1.002044(31)	1.002899	-29	JCP 143 074301 (2015)
		31 Ga 71	+2.56033(9)	1.002044(31)	1.002899		
32	Ge	32 Ge 73	-0.87824(5)	1.001988	1.003031	-34	J Phys Chem A110 11462 (2006)
33	As	33 As 75	+1.4383(3)	1.00238(24)	1.003177	-	
34	Se	34 Se 77	+0.53356(5)	1.002447(15)	1.003327	-26	Mol Phys 111 1355 (2013)
35	Br	35 Br 79	+2.1046(6)	1.00261(26)	1.003479	-	
		35 Br 81	+2.2686(6)	1.00261(26)	1.003479	-	
36	Kr	36 Kr 83	-0.970730(3)	1.003577(3)	1.003635	-2	Magn Res Chem 52 430 (2014)
37	Rb	37 Rb 85	+1.35306(4)	1.00359(3)	1.003776	-5	CPL 532 1 (2012)
		37 Rb 87	+2.75129(8)				
38	Sr	38 Sr 87	-1.09316(11)	1.00353(11)	1.003950	-11	CPL 588 57 (2013)
39	Y	39 Y 89	-0.137298(5)	1.00326(4)	1.003950	-17	CPL 660 127 (2016)
40	Zr	40 Zr 91	-1.3022(4)	1.00321(32)	1.004282	-	
41	Nb	41 Nb 93	+6.1630(20)	1.00334(33)	1.004456	-	
42	Mo	42 Mo 95	-0.9132(3)	1.00348(35)	1.004633	-	
		42 Mo 97	-0.9324(3)	1.00348(35)	1.004633	-	

Z	Element	Reference isotope(s)	Adopted Moment (nm) (see full Table)	Diamagnetic correction applied in this Table	LFJ Correction	Correction Adjustment (%) (Applied/LFJ–1)	Diamagnetic Correction Reference
43	Tc	43 Tc 99	+5.6779(20)	1.00361(36)	1.004815	-	
44	Ru	44 Ru 99	-0.641(5)	1.00375(38)	1.005000	-	
		44 Ru 101	-0.718(6)	1.00375(38)	1.005000	-	
45	Rh	45 Rh 103	-0.08829(3)	1.00389(39)	1.005194	-	
46	Pd	46 Pd 105	-0.642(3)	1.00404(40)	1.005389	-	
47	Ag	47 Ag 107	-0.11352(5)	1.00419(42)	1.005586	-	
		47 Ag 109	-0.13051(5)	1.00419(42)	1.005586	-	
48	Cd	48 Cd 111	-0.5940(3)	1.00434(43)	1.005788	-	
49	In	49 In 113	+5.5208(4)	1.00451(6)	1.005994	-24	JCP 142 074301 (2015)
		49 In 115	+5.5326(4)	1.00451(6)	1.005994		
50	Sn	50 Sn 115	-0.9176(4)	1.00465(47)	1.006203	-	
		50 Sn 117	-0.9997(5)	1.00465(47)	1.006203	-	
		50 Sn 121	-1.0459(5)	1.00465(47)	1.006203	-	
51	Sb	51 Sb 121	+3.3580(16)	1.00481(48)	1.006419	-	
		51 Sb 123	+2.5457(12)	1.00481(48)	1.006419	-	
52	Te	52 Te 123	-0.7358(3)	1.00480(7)	1.006639	-28	Mol. P 111 1355 (2013)
		52 Te 125	-0.8870(5)	1.00498(50)	1.006639	-	
53	I	53 I 127	+2.8087(14)	1.00515(52)	1.006861	-	
		53 I 129	+2.6165(14)	1.00515(52)	1.006861	-	
54	Xe	54 Xe 129	-0.77796(2)	1.00733(10)	1.007092	3	Magn Res Chem 53 273 (2015)
		54 Xe 131	-0.69184(2)	1.00733(10)	1.007092		Magn Res Chem 53 273 (2015)
55	Cs	55 Cs 133	+2.5778(14)	1.00549(55)	1.007325	-	
56	Ba	56 Ba 135	+0.8381(2)	1.00685(21)	1.007564	-9	CPL 588 57 (2013)
		56 Ba 137	+0.9375(2)	1.00685(21)	1.007564		CPL 588 57 (2013)
57	La	57 La 139	+2.7791(2)	1.00636(5)	1.007811	-19	CPL 660 127 (2016)
58	Ce	none					no precise measurements
59	Pr	59 Pr 141	+4.266(3)	1.00626(63)	1.008341	-	
60	Nd	60 Nd 147	-1.063(5)	1.0065(7)	1.008616	-	

Z	Element	Reference isotope(s)	Adopted Moment (nm) (see full Table)	Diamagnetic correction applied in this Table	LFJ Correction	Correction Adjustment (%) (Applied/LFJ–1)	Diamagnetic Correction Reference
61	Pm	none					no precise measurements
62	Sm	62 Sm 147	-0.8090(14)	1.0069(7)	1.008897	-	
		62 Sm 149	-0.6677(11)	1.0069(7)	1.008897	-	
63	Eu	63 Eu 151	+3.4635(25)	1.0071(7)	1.009487	-	
		63 Eu 153	+1.5294(11)	1.0071(7)	1.009487	-	
64	Gd	64 Gd 155	-0.2591(4)	1.0073(7)	1.009789	-	
		64 Gd 157	-0.3398(6)	1.0073(7)	1.009789	-	
65	Tb	65 Tb 159	+2.009(4)	1.0076(7)	1.0101	-	
66	Dy	66 Dy 161	-0.479(3)	1.0078(8)	1.0104	-	
		66 Dy 163	-0.671(4)	1.0078(8)	1.0104	-	
67	Ho	67 Ho 165	+4.16(3)	1.0081(8)	1.0108	-	
68	Er	68 Er 167	-0.5623(4)	1.0083(8)	1.0111	-	
69	Tm	69 Tm 169	-0.2310(15)	1.0086(9)	1.0115	-	
70	Yb	70 Yb 171	+0.4923(4)	1.0089(9)	1.0118	-	
		70 Yb 173	-0.6780(6)	1.0089(9)	1.0118	-	
71	Lu	71 Lu 175	+2.2257(19)	1.0092(9)	1.0122	-	
72	Hf	72 Hf 177	+0.7910(9)	1.0095(10)	1.0126	-	
		72 Hf 179	-0.6389(14)	1.0095(10)	1.0126	-	
73	Ta	73 Ta 181	+2.365(4)	1.0098(10)	1.0130	-	
74	W	74 W 183	+0.11739(11)	1.0100(10)	1.0134	-	
75	Re	75 Re 185	+3.176(3)	1.0104(10)	1.0138	-	
		75 Re 187	+3.209(3)	1.0104(10)	1.0138	-	
76	Os	76 Os 187	+0.06442(7)	1.0107(11)	1.0143	-	
		76 Os 189	+0.6576(7)	1.0107(11)	1.0143	-	
77	Ir	77 Ir 191	+0.1502(6)	1.0110(11)	1.0147	-	
		77 Ir 193	+0.1630(6)	1.0110(11)	1.0147	-	
78	Pt	78 Pt 195	+0.6073(7)	1.0114(11)	1.0152	-	
79	Au	79 Au 197	+0.1452(2)	1.0118(12)	1.0157	-	

Z	Element	Reference isotope(s)	Adopted Moment (nm) (see full Table)	Diamagnetic correction applied in this Table	LFJ Correction	Correction Adjustment (%) (Applied/LFJ–1)	Diamagnetic Correction Reference
80	Hg	80 Hg 197	+0.5253(6)	1.0121(12)	1.0161	-	
		80 Hg 199	+0.5039(6)	1.0121(12)	1.0161	-	
		80 Hg 201	-0.5580(7)	1.0121(12)	1.0161	-	
81	Tl	81 Tl 203	+1.616(2)	1.0125(12)	1.0166	-	
		81 Tl 205	+1.632(2)	1.0125(12)	1.0166	-	
82	Pb	82 Pb 207	+0.5901(7)	1.0129(13)	1.0172	-20	Phys Chem Chem Phys 18 16483 (2016)
83	Bi	83 Bi 209	+4.093(5)	1.0133(13)	1.0177	-	
84	Po	none			1.0183		no precise measurements
85	At	none			1.0189		no precise measurements
86	Rn	86 Ra 209	(+)0.8348(12)	1.0146(15)	1.0195	-	
87	Fr	87 Fr 210	+4.38(5)	1.0151(15)	1.0202		calculated hyperfine interaction. no correction required to standard
88	Ra	88 Ra 225	-0.730(2)	1.0156(16)	1.0208	-	
89	Ac	none		1.0161(16)	1.0215		no precise measurements
90	Th	none		1.0167(17)	1.0222		no precise measurements
91	Pa	91 Pa 231	+1.99(2)	1.0173(17)	1.023	-	
92	U	none		1.018(2)	1.024		no precise measurements
93	Np	none		1.018(2)	1,024		no precise measurements
94	Pu	94 Pu 239	+0.202(4)	1.0188(19)	1.025	-	
95	Am	95 Am241	+1.60(3)	1.0195(20)	1.026	-	
		95 Am242	+0.3854(17)	1.0195(20)	1.026	-	
96	Cm	none		1.020(2)	1.027		no precise measurements
97	Bk	none		1.021(2)	1.028		no precise measurements
98		none		1.021(2)	1.029		no data
99	Es	none		1.022(2)	1.029		no precise measurements
100		none		1.022(2)	1.030		no precise measurements
101		none		1.023(2)	(1.031)		no data
102	No	none		1.024(2)	(1.032)		no precise measurements

Appendix 3

EXPERIMENTAL METHOD ABBREVIATIONS

CDPAC	Constant-Delay Perturbed Angular Correlation
CEAD	Integral Perturbed Angular Distribution after Coulomb Excitation
CER	Coulomb Excitation Re-orientation
FDPAC	Time Differential Perturbed Angular Correlation of Fission Fragments
IMPAC	Perturbed Angular Correlation after Ion Implantation
IMPAD	Perturbed Angular Distribution after Ion Implantation
IPAC	Integral Perturbed Angular Correlation
IPAD	Integral Perturbed Angular Distribution
LEMS	Level Mixing Spectroscopy
LRSRD	Laser Resonance Spectroscopy with Radioactive Detection
ME	Mossbauer Effect
Mu-X	Muonic X-ray Hyperfine Structure
NMR/AC	Nuclear Magnetic Resonance detected using Angular Correlation
NMR/AD	Nuclear Magnetic Resonance detected using Angular Distribution
NMR/ON	Nuclear Magnetic Resonance on Oriented Nuclei
OP/RD	Optical Pumping with Radioactive Detection
PAC	Perturbed Angular Correlation
PPDAC	Perturbed Polarisation-Directional Angular Correlation
RIGV	Recoil in Gas or Vacuum
RIV	Recoil in Vacuum
RIV/D	Recoil in Vacuum, Differential Method
SOPAD	Stroboscopic Observation of Perturbed Angular Distribution
TDPAC	Time Dependent Perturbed Angular Correlation
TDPAD	Time Dependent Perturbed Angular Distribution
TD-RIV	Time Dependent Recoil in Vacuum
TF	Transient Field
TFL	Tilted Foil TDPAD
XHFS	X-ray Hyperfine Shift

Appendix 4

LITERATURE REFERENCE CODES

APPo	Acta Phys. Polonica
ARHMI	Annual Report, Hahn-Meitner Inst. Berlin
ArkF	Arkiv der Physik
BAPS	Bulletin of the American Physical Society
BRASP	Bull. Acad. Sci. USSR, Phys. Ser.
Cf 68HI	Proc. Conf. Hyperfine Structure and Nuclear Radiations, Asilomar, Eds Matthias and Shirley, North Holland (1968).
Cf69Heid	Proc. Conf Nucl. Reactions Induced by Heacy Ions, Heidelberg, Eds R. Bock et al., North Holland (1970)
Cf70Delft	Proc. Conf Angular Corr. in Nuclear Disintegration, Delft, Eds van Krugten at al., Rotterdam Univ Press (1971)
Cf70HI	"Hyperfine Interactions in Excited Nuclei" Eds Kalish, Goldring, Gordon and Breach (1971)
Cf72 Kiev	Proc 22nd Conf Nucl. Spect. and Structure of Atomic Nuclei, Kiev (1972)
Cf73Mun 1 256 (73)	Proc Conf Nuclear Phys, Munich, Eds de Boer et al., North Holland (1973)
Cf74Upp	Contrib. Papers, Conf. Hyp. Int. in Nucl. React. And Decay, Uppsala, Eds Karlsson et al., Uppsala Grafiska AB, (1974)
Cf77Tash	Proc 27th Conf Nucl. Spect. and Structure of Atomic Nuclei, Tashkent (1977)
Cf77Tokyo	Proc Conf Nuclear Phys, Tokyo, (1977)
CF79Riga	Proc 29th Conf Nucl. Spect. and Structure of Atomic Nuclei, Riga (1979)
Cf80Ber	Conf HFI-V, Berlin, Book of Abstracts (1980)
Cf83Gron	Conf HFI-VI, Groningen, Book of Abstracts (1983)
Cf83Meguro	Proc. Symp. Electromag. Props of Atomic Nuclei, Tokyo, Eds Horie et al., (1984)
Cf87Melb	Proc Conf Nucl. Struc. Through Static aand Dynamic Moments, Melbourne, Ed. Bolotin, (1987)
Cf89Tshkt	Proc 39th Conf Nucl. Spect. and Structure of Atomic Nuclei, Tashkent (1989)
Chin Phys	Chinese Physics
Chin Phys Lett	Chinese Physics Letters
CJP	Canadian Journal of Physics
DisA	Dissertation Abstracts international
Duzb	Dokl. Acad. Nauk Uzb. SSR
EPL	European Physics Letters
Eur Phys J/ EurPJ	European Physics Journal

HFI	Hyperfine Interactions
HPAc	Helvetica Physics Acta
IzF	Izv. Akad. Nauk. SSSR Ser. Fiz. (trans Bull. Acad. Sci. USSR, Phy. Ser.)
IzUz	Izv. Akad. Nauk. UZB. SSR, Ser. Fiz.-Mat. Nauk.
JDal	J. Chem. Soc. Dalton Trans.
JMMM	J Mag. And Mag. Materials
JP/ JPhys	Journal of Physics (London)
JPCo	J de Phy (Paris) Colloq.
JPCR/JPCRD	Jour. Phys. Chem. Res. Data
JPJa	Jour. Phys. Soc. Japan
JPJS	Jour. Phys. Soc. Japan Supplement
NIM	Nuclear instruments and Methods
NIMPR	Nuclear Instruments and Methods in Physics Research
NP	Nuclear Physics
Nucl Structure '98 Gatlinburg	Proc. Conf. Nuclear Structure, Gatlinberg, Eds. Baktash et al., (1998)
NuoCL	Nuovo Cimento Letters
PC	Personal Communication.
PhSS	Physica Status Solidi
PL	Physics Letters
PR	Physical Review
PRL	Physical Review Letters
PS	Physica Scripta
R.Rou	Rev Roumanian Phys.
YadF	Yadern. Fiz. (Trans. Sov. J. Nuclear Physics)
ZETF	Zh. Eksp. Teor. Fiz. (Trans: Soviet Physics JEPT)
ZfK	Zentral Inst. fur Kernforshung, Rossendorf. Report.
ZNat	Zeitschrift fur Naturforschung Ser A
ZP	Zeitschrift fur Physik

Nuclear Data Section
International Atomic Energy Agency
Vienna International Centre, P.O. Box 100
A-1400 Vienna, Austria

E-mail: nds.contact-point@iaea.org
Fax: (43-1) 26007
Telephone: (43-1) 2600 21725
Web: https://nds.iaea.org