

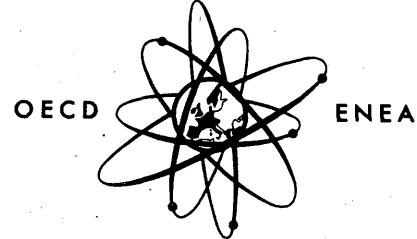


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EANDC 55 "U"

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COMPILATION OF EANDC REQUESTS



MARCH 1966

NUCLEAR DATA UNIT

INDC-151



INTERNATIONAL ATOMIC ENERGY AGENCY

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EUROPEAN-AMERICAN NUCLEAR DATA COMMITTEE

EANDC 55 "U"

COMPILATION OF EANDC REQUESTS

March 1966

O.E.C.D. European Nuclear Energy Agency
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COMPILATION OF EANDC REQUESTS

This report supercedes document EANDC 43 issued in April 1965 and is intended as a working document for the ninth meeting of the European-American Nuclear Data Committee to be held in Ascot in April 1966. It was prepared on the basis of the following sources :

1. Current Nuclear Data Requirements for the Reactor Programme in the United Kingdom (Revised in February 1966)
2. Compilation of Requests for Nuclear Cross Section Measurements (August 1965), WASH 1057 EANDC(US) 73 "U"
3. Compilation of Requests for Neutron Data from Euratom Countries (March 1965) (Unchanged in February 1966) EANDC(E) 58 "U"
4. Nuclear Data Requirements in Sweden and Switzerland (September 1965) (Unchanged in March 1966) EANDC(OR) 42 "L"
5. Canadian List of Requests for Measurement (March 1966) EANDC(Can) 29 "L"

EANDC Secretariat

ENEA

No.	ISOTOPE, ELEMENT OR COMPOUND	QUANTITY	ENERGY RANGE	ACCURACY	PRIORITY	REQUESTOR(S)	REASON BEHIND REQUEST; COMMENTS FROM REQUESTOR; REMARKS ON EXISTING OR FORTHCOMING WORK; OTHER COMMENTS
1.	H ₂ O	$\sigma_{nT}(E)$	Thermal region (20°C - 300°C)	Accuracy requirement not yet determined.	I	UK, C.G. Campbell	Planned to 1 or 2 %; Wraight, AWRE.
2.	H ₂ O	$\sigma_{nT}(E)$	eV-10 eV	5%	I	KAPL(Francis)	Desired at 150 and 200°C
3.	H ₂ O	$\sigma_{n,n}(E; E', \theta)$	Thermal region	20 %	II	BN, Belgium (G. Tavernier) CEN, Belgium (Dopchies)	Needed for reactor spectra calculations. Egelstaff (AERE-R3931, 1962) has curves and tabulations at 24°C and Brugger (IDO-16699 rev. 1962) has curves for 20 and 150°C. Kottwitz and Leonard, Hanford, have data for 22°C (WASH-1046 p.54) and Haywood and Thorson, Chalk River, have data for 20° and 150 °C. No action in Euratom Community.
					II	CEA, France (O. Tretiakoff)	
4.	H ₂ O	$\sigma_{n,n}(E; E', \theta)$	Thermal region 20°C - 300°C	Accuracy req. not yet determined.	I	U.K. : C.G. Campbell	Measurements complete to 300°C. Analysis not yet completed. One might hope to extrapolate to 373°C with the aid of other measurements.
5.	H ₂ O	$\sigma_{n,n}(E; E', \theta)$	Thermal region 300°C - 373°C	Accuracy req. not yet determined	II	U.K. : C.G. Campbell	Measurements complete to 300°C. Analysis not yet completed. One might hope to extrapolate to 373°C with the aid of other measurements.
6.	H ₂ O	$\sigma_{n,n}(E; E', \theta)$	eV-1 eV	20%, 10% in $\sigma_{n,n}(E; E')$	I	KAPL(Bhrlich)	Region above 0.1 eV needs clarification, Harwell, Egelstaff, AERE-R3931 24°, Phillips, Brugger, IDO-16699(Rev.) 20° and 150° C Hanford, Kottwitz, 22° C Chalk River, Haywood, and 150° C
7.	H ₂ O/D ₂ O /HDO	$\sigma_{n,n}(E; E', \theta)$	Thermal region (20°C only)	Accuracy req. not yet determined	I	U.K. : C.G. Campbell	To check effect of HDO; composition to give maximum effect. Measured but not yet tested against neutron spectrum measurements.
8.	D ²	$\sigma_{n,\gamma}(E)$	0.025 eV	5%	II	EIR, Switzerland	Integral value for well thermalized spectrum sufficient
9.	D ²	$\sigma_{(n, \gamma)}(E)$	Thermal	5-10 %	II	G.C. Hanna (Canada)	Low value reported by Raboy and Trail in ANL-6719. See BNL-325, 1964 supplement. New measurement by Merritt and Taylor is reported in EANDC(Can) 28.
10.	D ²	$\sigma_{n,n}(E; \theta)$	3 - 16 MeV	10%, 20% accept.	I	NDL (Donnert) IRL (Howerton)	Resolution in E:0.5 MeV, resolution in angle 5-10°, error pertains to ave. 1-cos θ. Phillips (Rice) working 3 - 12 MeV, has results 5-7-9 MeV. ANL, Lane et al. have results at lower energies.
11.	D ²	$\sigma_{d,n}(E, \theta)$	3-16 MeV	10%, at least 20%	II	UNC(Kalos NDL(Donnert))	Cross section and 1-cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10°. One result near 10 MeV useful. At 10 MeV, Priority I, goad (LASL), Phillips (Rice) starting above 4 MeV.
12.	D ₂ O/HDO/H ₂ O	$\sigma_{nT}(E)$	Thermal region (20°C only)	5%	III	U.K. : S.B. Wright	Over range 100% D ₂ O - 90% D ₂ O for flux distribution calculations.
13.	D ₂ O	$\sigma_{nT}(E)$	Thermal region (20°C - 300°C)	Accuracy requirement not yet determined	I	UK, C.G. Campbell	Planned to 1 or 2 %; Wraight, AWRE.
14.	D ₂ O	$\sigma_{n,\gamma}(E)$	Thermal region	5%	III	U.K. : C.G. Campbell	0.0253 eV data to 8% See Surrey and Motz ANL 6797, 236 (1963)

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15.	D ₂ O	$\sigma_{n,n}(E;E',\theta)$	Thermal region 20°C - 300°C	Accuracy req. not yet determined	I	U.K. : C.G. Campbell	Measurements complete to 150°C, but not tested against reactor physics measurements. Extrapolation to 373°C may be possible.
16.	D ₂ O	$\sigma_{n,n}(E;E',\theta)$	300°C - 373°C	Accuracy req. not yet determined.	III	U.K. : C.G. Campbell	Measurements complete to 150°C, but not tested against reactor physics measurements. Extrapolation to 373°C may be possible.
17.	D ₂ O	$\sigma_{n,n}(E;E',\theta)$	Thermal region		II	CEA, France (O. Tretiakoff) CEN, Belgium (Dochie)	Needed for reactor spectra calculations. Any information will be useful. Studsvik may work on this and Seibersdorf will attempt if required. No action in Euratom Community.
18.	D ₂ O	$\sigma_{n,n}(E)$	Thermal region	2 %	II	CEA, France (D. Breton)	Needed for determination of absorption cross-section at 2200 m/s (to + 3 %) by phase oscillation method.
19.	T ³	$\sigma_{nT}(E)$	eV-300 keV	5%	I	UNC(Kalos) NDL(Donnert)	A few measurements will help check theory. LASL working on it.
20.	T ³	$\sigma_{n,M}(E;E',\theta)$	14 MeV		II	LASL (Rosen)	Only the 14 MeV value of interest, no suitable results.
21.	T ³	$\sigma_{n,n}(E; \theta)$	500 keV - 16 MeV	10%, 20% accept.	II	NDL (Donnert) LASL (Rosen)	Resolution in E: 0.5 MeV, resolution in angle: 5-10°, error pertains to ave. of 1-cos θ. LASL, Seagrave, is doing 3 - 14 MeV.
22.	T ³	$\sigma_{d,n}(E)$	8-16 MeV	10%, at least 20%	I	UNC(Kalos) NDL(Donnert) LASL (Goad)	One result near 10 MeV useful. Cross section and 1-cos θ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotrop., angular resolution better than 10°. LASL 14 MeV meas. underway will go up.
23.	T ³	$\sigma_{d,n}(E)$	11-16 MeV	10%, at least 20%	II	UNC(Kalos) NDL(Donnert)	Cross section and 1-cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotrop., angular resolution better than 10°.
24.	T ³	$\sigma_{n,p}(E)$	11 - 16 MeV		II	LASL (Rosen)	Any partials or totals useful, LASL planning work.
25.	T ³	$\sigma_{n,d}(E)$	1 - 16 MeV		I	LASL (Rosen)	Any partials or totals useful, LASL planning work.
26.	He ³	$\sigma_{n,2n}(E)$	14 MeV	20 % only	III	LASL (Rosen)	Only point at 14 MeV desired.
27.	He ³	$\sigma_{n,p}(E)$	10 keV-3 MeV	10 %	I	LASL (Rosen)	No action.
28.	He ³	$\sigma_{n,p}(E)$	20 keV - 5 MeV	2 %	II	UK, S.B.Wright	Threshold detector for neutron spectrum measurements. In progress White, AWRE. See Macklin & Gibbons Conf. Antwerp 13.
29.	He ³	$\sigma_{n,p}(E;\theta)$	20 keV - 5 MeV	10 %	III	UK, S.B.Wright	Threshold detector for neutron spectrum measurements. In progress White, AWRE. See Macklin & Gibbons, Conf. Antwerp 13.
30.	Li	$\sigma_{n,n}(E; \theta)$	4 - 16 MeV	10%, 20% accept.	I	Columbia (Goldstein), ORNL (Blizard), LASL (Rosen), NDL (Donnert), UNC (Kalos).	Error pertains to ave. 1-cosθ and cross section above 6 MeV include first inelastic with resolution in energy 0.5 MeV, in angle 5-10°. Texas Nuclear (Bostrom et al) 4 MeV, WADC-TN-59-107. Optical model should give inf. above 6 MeV, LASL, Hopkins will do.
31.	Li ⁶	$\sigma_{nT}(E)$	1 - 14 MeV	2 %	I	LASL (Rosen)	No active work.
32.	Li ⁶	$\sigma_{n,A}(E)$	→ 200 keV	2 %	II	UK, R.D. Smith	For fast reactors. In progress; Barry, AWRE.
33.	Li ⁶	$\sigma_{n,A}(E)$	0.2 MeV-1 MeV	5 %	II	UK, R.D. Smith	For fast reactors. In progress; Barry, AWRE.
34.	Li ⁶	$\sigma_{n,A}(E)$	1 MeV →	10 %	II	UK, R.D. Smith	For fast reactors. In progress; Barry, AWRE.
35.	Li ⁶	$\sigma_{n,p}(E;E',\theta)$	2-16 MeV	10%, at least 20%	II	NDL(Donnert) GDF(Kidd)	Neutron and gamma resolution 0.5 MeV, angular distribution only if anisotropic, angular resolution better than 10°, gamma energy greater than 2 MeV

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36.	Li^6	$\sigma_{n,M}(E; E', \theta)$	2 - 16 MeV	10 %, at least 20 %	I	NDL (Donnert) LASL (Rosen)	Cross-section and $1-\cos\theta$ wanted. Energy resolution 0.5 MeV in and out. Angular distribution only if significant anisotropy. Angular resolution better than 10 degree. No suitable results. LASL, Hopkins working on this.
37.	Li^6	$\sigma_{n,n}(E; \theta)$	2-16 MeV	10%, at least 20%	I	NDI (Donnert)	Keep energy resolution 0.5 MeV, angular resolution 5-10°. No active work. ANL, Lane et al. have results to 2.3 MeV.
38.	Li^6	$\sigma_{n,a}(E)$	0 to 10 MeV	5 %	I	CEA, France (P. Lafore)	See Beets and Giertz, EANDC(E)18. Some measurements done by Schwarz, EANDC(OR)33"U" (1964), to be published. Univ. Liège, Belgium, carries out relative measurements (angular distribution between 90 and 500 keV and will extend to $E_n > 500$ keV: EANDC(E)52"U" p. 78. Measurements between 0.7 and 1.7 MeV done by Babcock (AFSNOC-TR-61-52) and between 20 and 200 keV in progress: CEA Cadarache.
39.	Li^6	$\sigma_{n,a}(E)$	0 to 10 MeV	10 %	II	CEN, Belgium (Beets)	See Beets and Giertz, EANDC(E)18. Some measurements done by Schwarz, EANDC(OR)33"U" (1964), to be published. Univ. Liège, Belgium, carries out relative measurements (angular distribution) between 90 and 500 keV and will extend to $E_n > 500$ keV: EANDC(E)52"U" (p. 78). Measurements between 0.7 and 1.7 MeV done by Babcock (AFSNOC-TR-61-52) and between 20 and 200 keV in progress: CEA Cadarache.
40.	Li^6	$\sigma_{n,a}(E)$	20 keV - 5 MeV	2 %	II	UK, S.B.Wright	Threshold detector for neutron spectrum measurements. In progress; Cox, AWRE. Bluet et al., Conf. Antwerp 168.
41.	Li^6	$\sigma_{n,a}(E)$	100 keV-14 MeV	10%, 20% acceptable	III	ORNL (Clark) LASL (Rosen)	Energy steps of 0.1 MeV for 0.1-1 MeV and steps of 1 MeV for 1-14 MeV desired, L Winand at Liège is working below 1.2 MeV-Cox has values at low end of interval.
42.	Li^6	$\sigma_{n,a}(E,\theta)$	0 to 500 keV		II	CEN, Belgium (Beets)	See Beets and Giertz, EANDC(E)18. Univ. Liège, Belgium, carried out relative measurements (angular distribution) between 90 and 500 keV: EANDC(E)52"U" (p. 78). Some results publ. in React. Sc. and Techn. 16, 383 (1962). Measurements between 10 and 60 keV in progress at CEA Cadarache, by Bluet (DRPSMNE/la-4/04) and between 0.7 and 1.7 MeV performed by Babcock (AFSNOC-TR-61-59). Theoretical studies on angular distribution between 10 and 600 keV at Cadarache: EANDC(E)52"U" (p. 124.)
43.	Li^6	$\sigma_{n,a}(E;\theta)$	20 keV - 5 MeV	10 %	III	UK, S.B.Wright	Threshold detector for neutron spectrum measurements. In progress; Cox, AWRE. Bluet et al., Conf. Antwerp 168.
44.	Li^7	$\sigma_{n\Gamma}(E)$	1-14 MeV	2 %	I	LASL (Rosen)	ANL, Lane et al., have results to 1.0 MeV.
45.	Li^7	$\sigma_{n,\gamma}(E)$	Thermal to 400 keV	20 %	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
46.	Li^7	$\sigma_{n\gamma}(E; E_\gamma, \theta)$	500 keV - 16 MeV	10%, at least 20%	II	NDL(Donnert) GDF(Kidd)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisot., $\sigma_{n\gamma}(E; E_\gamma)$ useful. Texas Nuclear should have some data.
47.	Li^7	$\sigma_{n,M}(E; E', \theta)$	500 keV-16 MeV	10%, at least 20%	I	NDL(Donnert) LASL (Goad)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisot. Angular resolution better than 10°. LASL, Hopkins is working on it.
48.	Li^7	$\sigma_{n,n}(E; E')$	Threshold to 10 MeV	25 %	III	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.

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49.	Li ⁷	$\sigma_{n,2n}(E; E')$	Threshold to 10 MeV	25 %	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors. Measurements at 10 and 14 MeV by Ashby et al. (<u>Phys. Rev. 129</u> , 1771 (1963)).
50.	Li ⁷	$\sigma_{n,2n}(E)$	8 - 16 MeV		I	LASL (Rosen)	No active work.
51.	Li ⁷	$\sigma_{n,d}(E)$	Threshold to 10 MeV	25 %	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
52.	Be	$\sigma_{n,\gamma}$	2200 m/s	5%	I	BBC/Krupp, Germany (Schatz)	
53.	Be	$\sigma_{n,\gamma}(E)$	Thermal region	1%	III	U.K. : G.H. Kinchin	For thermal reactors
54.	Be	$\sigma_{n,\gamma}(E)$	Thermal to 10 MeV	50%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
55.	Be	$\sigma_{n,n}(E; E', \theta)$	2-16 MeV	10%, 20% at worst	II	UNG(Kalos), KN(Jewell), NDL(Donner), LRL(Howerton)	Error in non el. cross section and average of 1-cose, angular distribution important only if anisotropic, LASL, Philips in <u>WASH 1028</u> (1960).
56.	Be	$\sigma_{n,n}(E; E', \theta)$	0 to 0.5 eV		II	CEN, Belgium (Dopchie), CEA, France (O. Tretiakoff)	Needed for reactor spectra calculations. Measurements at high temperatures are difficult but some are being made at Chalk River. No action in Euratom Community.
57.	Be	$\sigma_{n,n}(E; E', \theta)$	Thermal region 200°C - 1200°C (intervals of 100°C)	Accuracy req. not yet determined	III	J.R. : G.H. Kinchin	Measured at 200°C, theoretical extrapolation may suffice for higher temperature.
58.	Be	$\sigma_{n,n}(E)$	Thermal region	2%	II	CEA, France (D. Breton)	Needed for determination (to \pm 3%) of absorption cross-section at 2200 m/s by phase oscillation method.
59.	Be	$\sigma_{n,n}(E; \theta)$	7-16 MeV	10%, 20% accept.	I	UNG (Kalos), KN (Jewell), NDL (Donner), LRL (Howerton), ORNL (Blizard), Columbia (Goldstein)	Resolutions in E: 0.5 MeV, resolution in angle 5-10°, error pertains to ave. 1-cose. Above 6 MeV include first inel. with el. Phillips (Rice) has results at 7 MeV. Use optical model above 5 MeV.
60.	Be	$\sigma_{n,2n}(E)$	MeV-5 MeV	15%	II	AI (Cohen), BNL(Chernick), AEC(Hemmig)	In 2-3 MeV range error of 50 mb.
61.	Be	$\sigma_{n,2n}(E)$	Threshold to 6 MeV		II	CEA, France (J. Bussac)	
62.	Be	$\sigma_{n,2n}(E)$	Threshold - 5 MeV	10 %	II	UK, R.D. Smith	For fast reactors.
63.	Be	$\sigma_{n,2n}(E)$	6 to 15 MeV	10%	II	CEA, France (B. Lemaire)	
64.	Be	$\sigma_{n,2n}(E; E')$	Threshold to 6 MeV	10%	I	KFAJ, Germany (Gerwin)	For intermediate - fast reactors. No results available. Phillips, LASL, has been working on this. Also see Catron et al., (<u>Physics Rev. 123</u> , 218, 1961)
					I	BBC/Krupp Germany (Schatz)	
65.	Be	$\sigma_{n,a}(E)$	Threshold to 10 MeV	15%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
66.	Be	$\sigma_{\gamma,n}(E_\gamma)$	$1.7 < E_\gamma < 10$ MeV	20%	II	CEN, Belgium (Motte), BBC/Krupp, Germany (Schatz)	Needed for reactor dynamics experiments in Be-moderated reactors. No action in Euratom Community.
67.	BeO	$\sigma_{n,n}(E; E'; \theta)$	Thermal region 200°C - 1500°C	Accuracy req. not yet determined.	III	U.K. : G.H. Kinchin	Measurements at 200°C. Comparison with reactor physics not yet complete.

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68	BeO	$\lambda_{tr}(T)$		1%	I	BBC/Krupp Germany (Schatz)	General Atomics are expected to undertake this measurement.
69	Be 9	$\sigma_{n,2n}(E; E; \theta)$	2-4 MeV	10%, 20% acceptable	II	ORNL(Clark)	Measurements at 2.5, 2.8, 3.0, 3.5 and 4.0 MeV desired, angular resolution in steps of 0.1 in $\cos\theta$ desired, <u>BNL 400, UNC 5014</u> , <u>Nucl. Phys. 47, 225</u> .
70	B	$\sigma_{n,n}(E; \theta)$	2 - 16 MeV	10%, 20% accept.	III	Columbia (Goldstein), NDL(Donnert)	Error pertains to ave. $1-\cos\theta$. Above 6 MeV, sum el. and first insel., resolution in energy 0.5 MeV, in angle $5-10^\circ$. ANL, Lane et al. have data to 2.3 MeV, use optical model above 5 MeV.
71	B^{10}	$\sigma_{nT}(E)$	1 keV - 40 keV	5 %	III	UK, R.D. Smith	For fast reactors. In progress, 100 eV to 50 keV; Uttley, AERE.
72	B^{10}	$\sigma_{n,A}(E)$	→ 200 keV	2 %	II	UK, R.D. Smith	For fast reactors. $\sigma_{nT}(E)$ up to 5 MeV in progress; Diment, AERE. See Monahan & Mooring, Conf. Antwerp 85.
73	B^{10}	$\sigma_{n,A}(E)$	0.2 MeV-1 MeV	5 %	II	UK, R.D. Smith	For fast reactors. $\sigma_{nT}(E)$ up to 5 MeV in progress; Diment, AERE. See Monahan & Mooring, Conf. Antwerp 85.
74	B^{10}	$\sigma_{n,A}(E)$	1 MeV	10 %	II	UK, R.D. Smith	For fast reactors. $\sigma_{nT}(E)$ up to 5 MeV in progress; Diment, AERE. See Monahan & Mooring, Conf. Antwerp 85.
75	B^{10}	$\sigma_{n,g}(E; E; \gamma; \theta)$	800 keV-16 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle $5-10^\circ$ angular distribution only if signif. anisotro., $\sigma_{n,G}(E; E; \gamma)$ useful. No work in progress.
76	B^{10}	$\sigma_{n,M}(E; E'; \theta)$	800 keV-16 MeV	10%, at least 20%	II	NDL(Donnert)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10° . Tritium production at high energies of interest. No work in progress.
77	B^{10}	$\sigma_{n,n'}(E; E')$	40 keV-5 MeV	30 %	II	UK, R.D. Smith	For fast reactors. Some data available; A.B. Smith, <u>WASH 1056</u> (1964). Glazkov, JNE 18, 656 (1964).
78	B^{10}	$\sigma_{n,n}(E; \theta)$	40 keV-5 MeV	10 %	II	UK, R.D. Smith	For fast reactors. Planned; AERE.
79	B^{10}	$\sigma_{n,n}(E; \theta)$	2-16 MeV	10%, 20% acceptable	II	NDL(Donnert)	Resolution in $E, 0.5$ MeV, resolution in angle $5-10^\circ$, error pertains to ave. $1-\cos\theta$. Use optical model above 5 MeV. ANL, Lane et al. have data to 2.3 MeV.
80	B^{10}	$\sigma_{n,a}(E)$ & $\sigma_{n,\alpha\gamma}(E)$	0.01 eV-40 keV	See comments	I	U.K. : G.H. Kinchin	To be used as a standard in cross-section measurements. Energy dependence needed more accurately. In progress, 10 keV to 40 keV; Cox, AWRE. Ratio data available, Sowerby EANDC(UK)55 S. See also Monahan and Mooring, Antwerp Conf. 85 and Macklin and Gibbons, Antwerp Conf. 14.
81	B^{10}	$\sigma_{n,a}(E)$ & $\sigma_{n,\alpha\gamma}(E)$	40 keV-1 MeV	See comments	I	U.K. : G.H. Kinchin	To be used as a standard in cross-section measurements. In progress $\sigma_{n,A}(E)$ 0.01 - 0.3 MeV; Cox, AWRE.
82	B^{10}	$\sigma_{nD}(E)$	1 keV-1 MeV	10%	III	NDL(Donnert)	Energy resolution to 10%, 20% acceptable, $\sigma_{n,a}(E)$ values at ANL-AWRE, S.A. Cox; ANL values by Mooring.
83	B^{10}	$\sigma_{nD}(E)$	1-16 MeV	10%	II	NDL(Donnert)	Energy resolution to 10%, 20% acceptable, no active work, absolute cross section uncertain.

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84.	B ¹¹	$\sigma_{n,n}(E; \theta)$	40 keV-5 MeV	10 %	II	U.K., R.D.Smith	For fast reactors. See Monahan & Mooring, Conf. Antwerp '65.
85.	C	$\sigma_{n,\gamma}(E)$	Thermal region	1%	III	U.K. : G.H. Kinchin	For thermal reactors
86.	C	$\sigma_{n,G}(E; E_\gamma; \theta)$	5-16 MeV	10%, at least 20%	III	NDL(Donnert) GDF(Kidd)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotro. $\sigma_{n,G}(E; E_\gamma)$ useful, gamma energy higher than 4 MeV of interest; no work in progress. Texas Nuclear could do this.
87.	C	$\sigma_{n,M}(E; E'; \theta)$	5-16 MeV	10%, at least 20%	II	NDL(Donnert)	Cross section and 1-Cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro. angular resolution better than 10°, no active programme.
88.	C (graphite)	$\sigma_{n,n}(E; E'; \theta)$	Thermal region	20 %	II	CEN, Belgium (Dopchie) BN, Belgium (G. Tavernier)	Needed for reactor spectra calculations. Egelstaff, Harwell, has published values at 20°, 380° and 600°C. (AERE-R3931, 1962). Brugger also at 20°, 300° to 400° and 600°C (IDO-16699 (Rev.1) 1962).
					III	CEA, France (O. Tretiakoff) BEC/Krupp, Germany (Schatz)	Needed at 100°C intervals over range room temp. to 1500°C. Measurements in progress; Batchelor, AWRE, at spot points. No action in Euratom Community.
89.	C	$\sigma_{n,n}(E; E'; \theta)$	eV-1 eV	5% to 10%	II	AI(Cohen) PPC (DeBoisblanc)	Harwell, Egelstaff AERE-R3931(62) 20, 380, 600°C. Phillips, Brugger, IDO-16699(62) 20, 300-400, 600°C
90.	C	$\sigma_{n,n}(E; E'; \theta)$	1500°C-3000°C	Accuracy req. not yet determined.	III	U.K. : G.H. Kinchin	Theoretical extrapolation may suffice.
91.	C	$\sigma_{n,n}(E)$	Thermal region	2 %	II	CEA, France (D. Breton)	Needed for determination (to ± 3 %) of absorption cross-section at 2200 m/s by phase oscillation method.
92.	C	$\sigma_{n,n}(E; \theta)$	2 to 10 MeV	θ varying by 10° up to 180°	II	CEA, France (P. Lafore)	Accuracy high enough to obtain significant values for the first ten terms of the development in Legendre polynomials. Phillips, LASL, had data at 6, 6.3 and 7 MeV (BAPS 4, 358, 1959) and Wilenzick, Duke Univ., at 6 MeV (BAPS 6, 252, 1961). Bostrom et al., TNC, show results at 7.6 MeV (WADC-TN-59-107) whilst results from 1 to 7 MeV were shown by Beyster et al. (Phys. Rev. 104, 1319, 1956). Batchelor, AWRE, making spot measurements (1962). No action in Euratom Community
93.	C	$\sigma_{n,n}(E; \theta)$	5 MeV - 14 MeV	10%	II	U.K. : J. Butler	Graphite reactor calculations. Preliminary data available; Towle et al., AWRE. New data in BNL 400 cover range of request.
94.	C	$\sigma_{n,n}(E; \theta)$	6 - 16 MeV	10%, 20%, accept.	I	Columbia (Goldstein), ORNL(Blizard), LRL(Howerton), UHC(Kalos), NDL(Donnert)	Error pertains to ave. of 1-cosθ, prior II only for shielding, sum ei, and first inel. resolutions, in energy 0.5 MeV, in angle 5-10° use optical model above 6 MeV. No active work.

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95.	C	$\sigma_{n,n}(E; E', \theta)$	1000°C - 1500°C	Accuracy req. not yet determined.	I	U.K. : J.H. Kinchin	Measured but not yet analysed. Page, AERE.
96.	C (graphite)	$\lambda_{tr}(T)$	0°C < T < 500°C	1%	I	BBC/Krupp, Germany (Schatz)	Measurements are being prepared at Saclay, France.
97.	C (graphite)	$\lambda_{tr}(T)$	0°C < T < 500°C	1%	II	CEA, France (M. Sagot)	Measurements are being prepared at Saclay, France.
98.	N	$\sigma_{n,G}(E; E_Y, \theta)$	4-16 MeV	10%, at least 20%	I	ORNL (Maerker) NDL (Donnert) KN (Jewell) Naval Research Lab. (Ferguson) UNC (Kalos) IRL (Howerton)	Resolution in neutron and gamma energy 0.5 MeV resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n,G}(E; E_Y)$ useful. Gamma energy higher than 2 MeV wanted, Texas Nuclear working on this.
99.	N	$\sigma_{n,M}(E; E', \theta)$	4-16 MeV	10%, 20% at worst	I	UNC (Kalos) KN (Jewell) Naval Research Lab. (Ferguson) NDL (Donnert)	Error is in $1-\cos\theta$, if nonelastic processes are anisotropic, energy resolution in and out 0.5 MeV, integrated cross section useful, Cevolani and Petralia Nuovo Cim. Suppl. 26, 1328 (1962) 14 MeV IRL (Bauer) UCRL-7192 (1965) 14 MeV Northwestern plans measurements at 5-8 MeV. NDL plans measurements at 12-16 MeV
100.	N	$\sigma_{n,n}(E; E', \theta)$	Up to 14 MeV, Spot Value.	5%	III	U.K. : J. Butler	Air scattering calculations
101.	N	$\sigma_{n,n}(E; \theta)$	Up to 14 MeV	10 %	III	U.K. : J. Butler	Air scattering calculation.
102.	N	$\sigma_{n,n}(E; \theta)$	1-7 MeV	10%, 20% accept.	II	ORNL (Blizard) UNC (Kalos) KN (Jewell) Naval Res. Lab. San Francisco (Ferguson) ORNL (Maerker) NDL (Donnert)	10% in ave. $1-\cos\theta$, above 6 MeV sum of el. and first inel. Ang. resolution 2.5° 0-20°, 20-180° 5° resolution. NDL plans measurement at 1.8-3.8 and 12.6-16 MeV. Rice, Davis, 5-9 MeV, Northwestern plans measurement at 5-8 MeV. ORNL, Fowler, has values to 4 MeV. Use optical model above 5 MeV.
103.	N	$\sigma_{n,n}(E, \theta)$	7-16 MeV	10%, 20% accept.	I	UNC (Kalos) NDL (Donnert) KN (Jewell) NRD (Ferguson) ORNL (Maerker)	Ave. of $1-\cos\theta$ useful if known to 20%, desire 2.5° resolution 0-20°, 5° for range 20-180° desired energy resolution 0.5 MeV. Northwestern U. measurement plans at 5-8 MeV. NDL plans measurement at 5-8 MeV and will do 13-16 MeV, use optical model above 6 MeV.
104.	O	$\sigma_{n,T}(E)$	40 keV-200 keV	5%	III	U.K. : R.D. Smith	For fast reactors. No work planned Browne, Phys. Rev., 108, 1007 (1957).
104.	O	$\sigma_{n,G}(E; E_Y, \theta)$	4-16 MeV	10%, 20% at worst	I	UNC (Kalos) KN (Jewell) Naval Research Lab. (Ferguson) NDL (Donnert) ORNL (Maerker)	Angular distribution of gammas requested if anisotropic, neut. resolution less than 1 MeV (ORNL less than 0.5 MeV), gamma resolution 0.5 MeV at worst 1 MeV, below 10 MeV neut. request from ORNL only, all emitted gamma rays of interest, USNRDL-TR-791 at 14 MeV. Texas Nuclear could do this.
105.	O	$\sigma_{n,M}(E; E', \theta)$	6-10 MeV	10%, 20% at worst	II	UNC (Kalos) KN (Jewell) NRD (Ferguson) NDL (Donnert) Columbia (Goldstein) ORNL (Blizard)	Want average $1-\cos\theta$ unless isotropic then only cross section, energy resolution in and out less than 1 MeV. LASI, Phillips may do at 7 MeV, Northwestern plans measurements at 5-8 MeV.
106.	O	$\sigma_{n,M}(E; E', \theta)$	10-16 MeV	10%, at least 20%	I	UNC (Kalos) KN (Jewell) Naval Research Lab. (Ferguson) NDL (Donnert) Columbia (Goldstein) ORNL (Blizard)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr., angular resolution better than 10°. NDL plans measurements at 12.6-16 MeV.

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107	O	$\sigma_{n,n}(E,\theta)$	2 to 14 MeV	θ varying by 10° up to 180° .	II	CEA, France (P. Lafore)	Accuracy high enough to obtain significant values for the first ten terms of the development in Legendre polynomials. Measurements between 3.0 and 4.7 MeV: WASH-1046 p.30; WASH 1048, p.21. No action in Euratom Community.
108.	O	$\sigma_{n,n}(E; \theta)$	4-16 MeV	20%, 10% desirable	I	UNC (Kalos) KN (Jewell) Naval Research Lab. Wash. (Ferguson) ORNL (Marker) Columbia (Goldstein) ORNL (Blizard) NDL (Donnert)	20% in average $1-\cos\theta$ wanted, 0- 20° 2.5° resolution, 20- 180° resolution 5° , energy resolution 0.5 MeV, Columbia (Sayres) has data below 5 MeV, use optical model above 5 MeV. Northwestern plans measurement at 5-8 MeV. NDL plans measurement at 1.8-3.8 and 12.6-16 MeV.
109.	O	$\sigma_{d,n}(E)$	Threshold to 10 MeV	10 %	II	EIR, Switzerland	Production of F^{17} in D_2O reactors.
110.	O	$\sigma_{n,\alpha}(E)$	7.34 MeV-11 MeV	20%	III	U.K. : S.B. Wright	Radiation damage calculations.
111.	O	$\sigma_{nD}(E)$	9-14 MeV	20%	III	NBS (Caswell)	
112.	O^{17}	$\sigma_{n,\gamma}(E)$	Thermal	0.2 b	II	G.C. Hanna	For understanding absorption in D_2O .
113.	F	$\sigma_{n,A}(E)$	100 eV to 10 MeV	10 %	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
114	F	$\sigma_{n,n,(E;E')}$	Threshold to 10 MeV	10 %	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
115.	Na	$\sigma_{nT}(E)$	40 keV - 1 MeV	High resolution resonance structure	II	UK, R.D. Smith	For fast reactors.
116.	Na	$\sigma_{nT}(E)$	400 keV-1 MeV	7 %	II	UK, R.D. Smith	For fast reactors. In progress $\sigma_{n,n}(E)$; A.B. Smith, Garg et al., Conf. Antwerp 74.
117.	Na	$\sigma_{n,\gamma}(E)$	100 eV - 10 keV	10%	I	U.K. : R.D. Smith	For fast reactors. In progress; Moxon, AERE. Also in progress, $\sigma_{nT}(E)$ Pattenden, AERE.
118	Na	$\sigma_{n,\gamma}(E)$	100 eV to 100 keV	10% or better	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors. Measurements between 10 and 140 keV at CEA Cadarache: EANDC(E)57"U" p.123.
119.	Na	$\sigma_{n,\gamma}(E)$	100 eV to 100 KeV	10% or better	II	BN, Belgium (G. Tavernier)	For intermediate-fast reactors. Measurements between 10 and 140 keV at CEA Cadarache: EANDC(E)57"U" p.123.
120.	Na	$\sigma_{n,G}(E;E_\gamma, \theta)$	3-16 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy 0.5 MeV. Resolution in angle $5-10^\circ$, angular distribution only if signif. anisotro., $\sigma_{n,G}(E;E_\gamma)$ useful, gamma energy higher than 400 keV. See Proc. Antwerp Neutron Conf. 1965.
121.	Na	$\sigma_{n,M}(E;E',\theta)$	4-16 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10° . No active work.
122	Na	$\sigma_{n,n}(E)$	4 to 10 MeV	10%	II	KFK, Germany (J.J. Schmidt)	No measurements available. BCMN will start measuring some points in 1965.
123.	Na	$\sigma_{n,n'}(E)$	4 to 15 MeV	20%	III	CEA, France (C.P. Zaleski) EDF, France (R. Pasquer)	Zaleski requires $\Delta E = 100$ keV and $\Delta E' \approx 200$ keV. Pasquer requires ΔE and $\Delta E' \approx 500$ keV.

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124.	Na	$\sigma_{n,n}(E;E')$	Threshold to 10 MeV	10%	I	KFAJ, Germany (Gerwin)	
125.	Na	$\sigma_{n,n}(E;E')$	2 to 10 MeV	15%	II	CNEN, Italy (F. Pierantonio)	Towle and Gilboy, AWRE, show data at 1.0, 1.5, 2.5 and 4.0 MeV (<u>Nucl. Phys.</u> 32, 610, 1962) and have measured at 7 MeV: <u>EANDC(UK)34"U"</u> (1964). Montague, Harwell, plans measurements from threshold to 4 MeV. No action in Euratom Community.
126.	Na	$\sigma_{n,n}(E,E')$	2-14 MeV	No state- ment		AI(Cohen)	No active work.
127.	Na	$\sigma_{n,n}(E;E')$	4 MeV-10 MeV (Spot values)	5 %	II	UK, J. Butler	For reactor shielding. In progress; Towle, AWRE. Planned at 10 MeV; Eccleshall, AWRE.
128.	Na	$\sigma_{n,n}(E;E',\theta)$	4 MeV-10 MeV (Spot points)	10%	II	U.K. : R.D. Smith	For fast reactors. In progress Towle, AWRE.
129.	Na	resonance parameters	eV - 5 keV		II	ANL(Avery)	Resonance parameters particularly 3 keV res. ANL, Hibdon, Langsdorf 1963
130.	Na	Γ_γ	res. 2.95 keV	10%	I	CEA, France (C.P. Zaleski) EDF, France	Shielding. No action in Euratom Community.
131.	Na	$\sigma_{n,n}(E;\theta)$	0.1 to 1 MeV	10%	I	CEA, France (C.P. Zaleski) EDF, France (R. Pasquer)	Zaleski requires $\Delta E = 5$ to 10 keV and $\Delta \theta$ to get $\cos \theta$ to $\pm 5\%$. Pasquer requires $\Delta E = 50$ keV and $\Delta \theta = 50^\circ$.
132.	Na	$\sigma_{n,n}(E;\theta)$	400 keV-1 MeV	20%	II	U.K. : R. D. Smith	For fast reactors. Some data available 0.2 MeV to 2.2 MeV. Elwyn et al. <u>Nucl. Phys.</u> 59, 113 (1964). See also Korzh et al., <u>SJAE</u> , 16, 312 (1964).
133.	Na	$\sigma_{n,n}(E;\theta)$	2.2 to 10 MeV	10% or better	II	KFK, Germany (J.J. Schmidt) CEA, France (C.P. Zaleski) EDF, France (R. Pasquer)	Zaleski and Pasquer require measurements from 4 to 10 MeV with $E = 100$ to 200 keV and $\Delta \theta = 5^\circ$ to 10° . Towle and Gilboy (<u>Nucl. Phys.</u> 32, 610, 1962) measured at 4 energies between 1 and 4 MeV. Because of resonance fluctuations in $\sigma_{n,T}$, fluctuations in $\sigma_{n,n}(E,\theta)$ expected. Therefore, more experimental data needed. Separation of elastic and inelastic scattering angular dependences desired. No measurements between 4 and 10 MeV. University Padua, Italy will measure above 2 MeV: <u>EANDC(E)57"U"</u> (p.83.)
134.	Na	$\sigma_{n,n}(E;\theta)$	4 MeV-10 MeV (spot values)	10 %	II	UK, J. Butler & R.D. Smith	Fast reactor shielding. In progress; Towle, AWRE. Planned at 10 MeV; Eccleshall, AWRE.
135.	Na	$\sigma_{n,n}(E; \theta)$	4-16 MeV	10%, 20% accept.	III	NDL(Donnert)	Resolution in $E, 0.5$ MeV, resolution in angle $5-10^\circ$, ave. of $1-\cos\theta$ wanted to above error, use optical model above 6 MeV.
136	Mg	$\sigma_{n,G}(E;E_\gamma, \theta)$	1-16 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle $5-10^\circ$, angular distribution only if signif. anisotro., $\sigma_{n,G}(E, E_\gamma)$ useful, gamma energy higher than 500 keV. No active work.
137.	Mg	$\sigma_{n,n}(E; \theta)$	5-16 MeV	10%, 20% accept.	III	NDL(Donnert)	Resolution in $E, 0.5$ MeV, resolution in angle $5-10^\circ$, ave. $1-\cos\theta$ to above error, use optical model above 6 MeV.

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138.	Mg ²⁴	$\sigma_{n,n}(E)$	Threshold- 8 MeV	1% relative to $\sigma_{n,p}S^{32}$	II	U.K. : J. Butler	Detector applications Butler and Santry, <u>Can. J. Phys.</u> 41, 372 (1963)
139.	Mg ²⁴	$\sigma_{n,p}(E)$	Threshold to 18 MeV	see EANDC (E)51 p.23	II	KFK, Germany (H. Kapulla) KFA, Germany (T. Springer) EURATOM (Neutron Dosimetry Group)	Threshold detector for fast neutron spectra. BCMN has measured to $\pm 6\%$ between 12 and 20 MeV: Liskien and Paulsen, to be published in <u>J.Nucl.Energy</u> . Butler and Santry have measured to $\pm 7\%$ from threshold to 20 MeV: <u>Can. J.Phys.</u> 41, 372 (1963).
140.	Al	$\sigma_{n,\gamma}(E)$	100 eV - 10 keV	20%	II	U.K. : R. D. Smith	For fast reactors. Planned; Moxon, AERE.
141.	Al	$\sigma_{n,\gamma}(E)$	keV		II	KAPL(Ehrlich)	gamma-gamma for resonances at 6 and 35 keV. No active work.
142.	Al	$\sigma_{n,G}(E; E_\gamma, \theta)$	4 MeV- 16 MeV	10%, 20% at worst	II	UNC(Kalos) NDL(Donnert) GDP(Kidd)	Angular distribution of gammas requested only if strongly anisotropic, neut. resolution less than 1 MeV, gamma resolution less than 0.5 MeV, Nefeeev, <u>Sov. Prog. in Neut. Phys.</u> 24(1961) Texas Nuclear has data. See Proc. Antwerp Neutron Conf. 1965.
143.	Al	$\sigma_{n,M}(E; E', \theta)$	900 keV-16 MeV	10%, 20% at worst	III	UNC(Kalos) NDL(Donnert)	If strongly anisotropic 10% in average $1-\cos\theta$ otherwise integrated cross section, incident and exit neutron resolution 0.5 MeV, See EUR 119e for tabulation of information.
144.	Al	$\sigma_{n,n},(E, E')$	4-14 MeV	20%	II	KAPL(Ehrlich)	Energy resolution may be low but near threshold, Texas Nuclear has inelastic gamma yield.
145.	Al	$\sigma_{n,n},(E; E', \theta)$	4 MeV-10 MeV (Soot points)	10%	II	U.K. : R.D. Smith	For fast reactors. Planned at 10 MeV, Eccleshall, AWRE. In progress at 7 MeV, Towle AWRE, Prelim. data at 6 MeV Currie, AERE.
146.	Al	$\sigma_{n,n}(E; \theta)$	5-16 MeV	10%, 20% accept.	II	NDL(Donnert)	Resolution in $E, 0.5$ MeV, resolution in angle $5-10^\circ$, ave. of $1-\cos\theta$ wanted to above error, use optical model above 6 MeV.
147.	Al	$\sigma_{n,a}(E)$	Threshold-14 MeV	1% rel. to $\sigma_{n,p}S^{32}$	II	U.K. : J. Butler	Shielding, detector applications - See Liskien and Paulsen <u>EUR 119 e</u> (1963).
148.	Al ²⁷	$\sigma_{n,n'}(E)$	Threshold to 10 MeV	5%	I	EURATOM (Ispra)	Shielding. Nellis, Morgan et al., have data (BAPS 7, 120, J6, 1962) and Thomson, LASL, has nuclear temperature at 7 MeV. Towle and Gilboy, AWRE, are measuring at 1, 2, 3 and 4 MeV and plan at 7 MeV: <u>EANDC(UK)3411</u> (1964). Measurements between 2.5 and 3.4 MeV are done at CNEN, Casaccia: <u>EANDC(E)5711U</u> p.79.
149.	Al ²⁷	$\sigma_{n,a}(E)$	Threshold to 18 MeV	see EANDC (E)51 p.22	I	EURATOM (Neutron Dosimetry Group) KFK, Germany (H. Kapulla)	Threshold detector. BCMN is measuring between 12 and 20 MeV to about $\pm 6\%$. Butler and Santry, <u>Can.J.Phys.</u> 41, 372 (1963), have measured within $\pm 7\%$ from threshold to 12 MeV, relatively to $S^{32}(n,p)$.
150.	Al ²⁷	$\sigma_{n,p}(E)$	Threshold to 14 MeV	See EANDC(E)51 p. 23	II	EURATOM (Neutron Dosimetry Group) KFK, Germany (H. Kapulla) CEN, Belgium (Motte),	Calvi et al. (<u>Nucl.Phys.</u> 39, 621(1962)) Measured to $\pm 10\%$ relatively to the absol. meas. of Grundl et al., <u>Phys. Rev.</u> 109, 425 (1958), which have 15% accuracy.
151.	Al ²⁷	$\sigma_{n,p}(E)$	Threshold to 15 MeV	10%	II	EIR Switzerland	Fast flux measurements

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152.	Al ²⁷	$\sigma_{n,D}$	2200 m/s	1%	I	EURATOM, Ispra (V. Raievski)	Reference sample for comparison with industrial aluminum. BNL 325 (suppl.) value: (241 ± 3) mb Carré et Vidal (CBA, France, dec. 1962): (227 ± 3) mb by oscillation technique relative to boron. Euratom, Ispra will measure by exponential technique.
153.	Si	$\sigma_{n,\gamma}$	2200 m/s	3%	II	R. Sandlin, Sweden	Present accuracy: 9% For calibration of phosphorous threshold detectors
154.	Si	$\sigma_{n,G}(E; E_\gamma, \theta)$	1-3 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy 0.5 MeV resolution in angle 5-10° angular distribution only if signif. anisotrop., nG (E; E _γ) useful Gamma energy higher than 1.2 MeV No active work.
155.	Si	$\sigma_{n,G}(E; E_\gamma, \theta)$	3-16 MeV	10%, 20% at worst	II	UNC(Kalos) Naval Research Lab.(Ferguson) NDL(Donnert)	Angular distribution of gammas requested only if strongly anisotropic. If not integrated cross section, neutron resolution 1 MeV, gamma energy above 1.2 MeV, resolution 0.5 MeV, all emitted gammas desired, Hall, <u>WASH 1028</u> (1962)
156.	Si	$\sigma_{n,M}(E; E', \theta)$	1-5 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and 1-cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotrop., angular resolution better than 10°. NDL plans measurements at 1.8-3.8 MeV. No active work.
157.	Si	$\sigma_{n,M}(E; E', \theta)$	5-16 MeV	10%, at least 20%	I	NDL(Donnert) UNC(Kalos) NRD(Ferguson)	Cross section and 1-cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotrop., angular resolution better than 10°. NDL plans measurements at 12.6-16 MeV. ORNL, Dickens plans work.
158.	Si	$\sigma_{n,n'}(E)$	2 MeV - 14 MeV	10 %	II	UK, J. Butler	Shielding. Data available at 6 MeV; Stewart et al., Conf. Antwerp '61. Planned at 10 MeV; Eccleshall, AWRE. Note changes in energy range and accuracy. For 14 MeV data see Clarke & Cross, Nucl. Phys. 52, 177 (1964).
159.	Si	$\sigma_{n,n'}(E, E')$	2-14 MeV	50%	II	Columbia (Goldstein) ORNL(Blizard)	Error 10% in total inelastic, Duke, Lewis will look at this.
160.	Si	$\sigma_{n,n}(E; \theta)$	1 to -4 MeV	10%	II	U.K. : J. Butler	Shielding, Coppola et al., Antwerp Conf. 146.
161.	Si	$\sigma_{n,n}(E; \theta)$	2-16 MeV	10%, 20% useful	I	UNC(Kalos) Naval Res. Lab. San Francisco (Ferguson) NDL(Donnert)	Both cross section and ave. 1-cosθ wanted, energy resolution better than 1 MeV. Above 5 MeV, use optical model. NDL plans measurement at 1.8-3.8 and 12.6-16 MeV. ORNL, Dickens, will do at 5 MeV.
162.	Si	$\sigma_{n,a}(E)$	Threshold to 14 MeV	10%	II	CEA, France (P. Lafore)	Neutron spectrometry with pn-junctions. Mainsbridge, Bonner, Rabson at Rice Institute are measuring. Univ. Frankfurt, Germany, has measured for Si ²⁸ and Si ²⁹ between 5 and 7 MeV (Betz and Rössle, to be published) : <u>EANDC(E)57 "U"</u> p.3.
163.	Si	$\sigma_{n,a}(E)$	Threshold to 15 MeV	10%	II	EIR, Switzerland	Surface barrier counters
164.	Si	$\sigma_{n,p}(E)$	Threshold to 14 MeV	10%	II	CEA, France (P. Lafore)	Neutron spectrometry with pn-junctions. Mainsbridge, Bonner, Rabson at Rice Institute are measuring. No action at Euratom Community.
165.	Si	$\sigma_{n,p}(E)$	Threshold to 15 MeV	10%	II	EIR, Switzerland	Surface barrier counters

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166.	Si^{28}	$\sigma_{n,n}(E)$	100 eV - 10 MeV	10%	III	RID, Netherlands	Needed for multi-group neutron-shielding calculations with relation to several types of concrete. CNEN, Casaccia, has measured between 2.5 and 3.4 MeV : EANDC(E)51 "U" p. 79. Planned by Towle and Gilboy, AWRE, spot points 4 to 9 MeV. BCMN is preparing measurements.
167.	Si	$\sigma_{n,n}(E;E')$	4 MeV-10 MeV (Spot values)	5 %	II	UK, J. Butler	Data available at 6 MeV; Stewart et al., Conf. Antwerp '71. Planned at 10 MeV; Eccleshall, AWRE. Note changes in energy range and accuracy. For 14 MeV data see Clarke & Cross, Nucl. Phys. 53, 177 (1964).
168.	Si^{28}	$\sigma_{n,n}(E)$	100 eV - 10 MeV	10%	III	RID, Netherlands	Needed for multi-group neutron-shielding calculations with relation to several types of concrete. CNEN, Casaccia, has measured between 2.5 and 3.4 MeV : EANDC(E)51 "U" p. 79.
169.	Si^{28}	$\sigma_{n,p}(E)$	4 MeV-16 Mev	10%	II	Naval Research Lab.(Ferguson) NDL(Donnett)	Neutron Energy of 0.5 MeV desired or act. cross section for production of Al-28 useful, Rice Bonner Bull Amer. Phys Soc. 6, 440 (1961) 4.6-8.6 MeV.
170.	P	$\sigma_{n,p}(E)$	Threshold to 14 MeV	See EANDC(E)51 p.23	I	CEN, Belgium (Motte)	Threshold detector.
171.	P	$\sigma_{n,p}(E)$	Threshold to 14 MeV	See EANDC(E)51 p.23	II	EURATOM (Neutron Dosimetry Group) KFK, Germany (H. Kapulla)	Threshold detector.
172.	P^{31}	$\sigma_{n,p}(E)$	Threshold to 6 MeV	5%	II	EIR, Switzerland	Fast flux measurements in shields
173.	P^{31}	$\sigma_{n,n}(E)$	3 MeV - 10 MeV	10%	III	U.K. : S. B. Wright.	Threshold detection for neutron spectrum measurements. See Liskien and Paulsen, EUR 119e (1963).
174.	P^{31}	$\sigma_{n,p}(E)$	6-15 MeV	10%	II	EIR, Switzerland	Fast flux measurements in shields.
175.	S	$\sigma_{n,n}(E;E')$	2.5 MeV-14 MeV (spot values)	20 %	III	UK, J. Butler	Shielding. Planned at 10 MeV; Eccleshall, AWRE. Data available at 6 MeV; Stewart et al. Conf. Antwerp '71. For 14 MeV data see Clarke & Cross, Nucl. Phys. 53, 177 (1964).
176.	S^{32}	$\sigma_{n,p}(E)$	Threshold to 6 MeV	2 %	I	CEN, Belgium (Motte)	measurements performed by Butler and Santry : Can. J. Chem. 41, (1963).
177.	S^{32}	$\sigma_{n,p}(E)$	Threshold to 6 MeV	5%	I	EIR, Switzerland	Standard for flux measurements
178.	S^{32}	$\sigma_{n,p}(E)$	Threshold - 8 MeV	5 %	II	UK, J. Butler	Detector applications.
179.	S^{32}	$\sigma_{n,p}(E)$	Threshold to 14 MeV.	EANDC(E)51 p.22	I	EURATOM (Neutron Dosimetry Group) KFK, Germany (K.H. Beckurts)	KFK will measure at 14 MeV on an absolute basis. Measurements performed by Butler and Santry, Can. J. Chem. 41, 123 (1963).
180.	S^{32}	$\sigma_{n,p}(E)$	6 - 15 MeV	10 %	II	EIR, Switzerland	Standard for flux measurements.
181.	S^{32}	$\sigma_{n,p}(E)$	8-10 MeV	8%	III	U.K. : S. B. Wright	Flux monitoring.

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182.	S ³²	$\sigma_{n,p}(E)$	14 MeV	5%	III	U.K. : S.R. Wright J. Butler	Standard monitor for absolute fast flux measurement.
183.	Cl	$\sigma_{n,G}(E; E_\gamma, \theta)$	900 keV-16 MeV	10% at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy Q5 MeV resolution in angle 5-10° angular distribution only if signif. anisotr., $\sigma_{n,G}(E; E_\gamma)$ useful Gamma energy higher than 800 keV No active work.
184.	Cl	$\sigma_{n,M}(E; E', \theta)$	1-16 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and 1-cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if sig- nif. anisotr., angular resolution better than 10°. No active work.
185.	Cl	$\sigma_{n,n}(E; \theta)$	500 keV-16 MeV	10%, 20% accept.	III	NDL(Donnert)	Resolution in E, 0.5 MeV, resolution in angle 5-10°, ave. of 1-cosθ desired, use optical model above 5 MeV.
186.	Cl	$\sigma_{n,p}(E)$	10 keV - 2 MeV	10 %	II	UK, R.D. Smith	For fast reactors.
187.	K	$\epsilon_{n,\gamma}(E)$	1 to 100 keV	20 %	II	BN, Belgium (G. Tavernier)	Activation.
188.	K	$\sigma_{n,Y}(E)$	30 keV- 2 MeV	25% or 10 mb	III	UNC(Kalos)	No recent work in progress.
189.	K	$\sigma_{n,G}(E; E_\gamma, \theta)$	2-16 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy Q5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n,G}(E; E_\gamma)$ useful Gamma energy higher than 2.5 MeV, No active work.
190.	K	$\sigma_{n,M}(E; E', \theta)$	2-16 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and 1-cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if sig- nif. anisotr., angular resolution better than 10°. No active work.
191.	K	$\sigma_{n,n}(E; \theta)$	500 keV-16 MeV	10%, 20% accept.	III	NDL(Donnert)	Resolution in E, 0.5 MeV, resolution in angle 5-10°, ave. of 1-cosθ desired. Use optical model above 5 MeV.
192.	K	$\sigma_{n,\alpha}(E)$	MeV-2 MeV	25% or 10 mb	III	UNC(Goldstein)	Use of smallest error, Rice, Haenni WASH-1026 (1959), WASH- 1028 (1960)
193.	K	$\sigma_{n,p}(E)$	MeV-2 MeV	25% or 10 mb	III	UNC(Goldstein)	Use smallest error. No active work.
194.	K ⁴¹	$\sigma_{n,\gamma}(E)$	1 keV-1 MeV	20 % or 2 mb	I	UNC (Kalos)	Cross-section for activation of 12.5 hr period, resolution in energy 25 %.
195.	Ca	$\sigma_{n,T}(E)$	8V-10 keV	5% in cross section	I	UNC(Kalos) NRD(Ferguson) NDL(Donnert) LRL (Howerton)	Resolution sufficient to resolve any resonances in range. Columbia, Havens has data.
196.	Ca	$\sigma_{n,T}(E)$	600 keV- 3 MeV	3%	II	ORNL (Blizard)	Wilenzick, Duke, 60, WASH-1029 up to 1 MeV, Shradar at Case will do. Request better accuracy than available.
197.	Ca	$\sigma_{n,G}(E; E_\gamma, \theta)$	3-16 MeV	10%, at least 20%	II	NDL(Donnert) UNC(Kalos) Naval Research Lab.(Ferguson)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n,G}(E; E_\gamma)$ useful, Gamma energy higher than 3.3 MeV. Texas Nuclear could do this well.
198.	Ca	$\sigma_{n,n'}(E)$	1-14 MeV	10%	II	U.K. : J. Butler	4-7 MeV, planned. Shielding. Towle, AWRE, 10 MeV, planned, Eccleshall, AWRE
199.	Ca	$\sigma_{n,n'}(E, E')$	3-14 MeV	50%	III	ORNL (Blizard)	10% in total inelastic cross- section, NBS, Caswell doing at 12- 15 MeV.
200.	Ca	$\sigma_{n,n'}(E; E')$	4 MeV-10 MeV (Spot values)	5 %	II	UK, J. Butler	Shielding. 4 MeV - 7 MeV, planned; Towle, AWRE. Planned at 10 MeV; Eccleshall, AWRE.

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201.	Ca	$\sigma_{n,n}(E; \theta)$	6-16 MeV	10%, 20% useful	II	UNC(Kalos Naval Res. Lab. San Francisco (Ferguson) NDL(Donnert)	Both cross section and ave. 1-cos θ , wanted, energy resolution better than 1 MeV. Above 5 MeV use optical model.
202.	Ti ⁴⁶	$\sigma_{n,\gamma}$	2200 m/s		I	EURATOM (Neutron Dosimetry Group)	Any information would be useful. No action in Euratom Community.
203.	Ti	$\bar{\sigma}$	Fission neutrons	5-20%	I	R. Sandlin Sweden	Present accuracy: 8-15 mb
204.	Ti	$\sigma_{n,\gamma}(E)$	1-200 keV	20% or 5 mb	II	UNC (Kalos)	Resolution in energy 10 %.
205.	Ti	$\sigma_{n,g}(E; E_\gamma, \theta)$	1-16 MeV	10%, at least 20%	III	NDL(Donnert) GDF(Kidd)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotro., $\sigma_{n,g}(E; E_\gamma)$ useful, Gamma energy higher than 900 keV. No active work.
206.	Ti	$\sigma_{n,M}(E; E', \theta)$	1-16 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and 1-cos θ . wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10°. No active work.
207.	Ti	$\sigma_{n,n}(E; \theta)$	3 MeV-16 MeV	10%, 20% accept	III	NDL(Donnert) GDF(Kidd)	Resolution in E, 0.5 MeV, resolution in angle 5-10°, ave. 1-cos θ desired. Use optical model above 5 MeV.
208.	Ti	$\sigma_{n,p}(E)$	4-10 MeV	5-20%	I	R. Sandlin, Sweden	No measurement - In order to determine fast neutron doses for radiation damage experiments
209.	Ti ⁴⁶	$\sigma_{n,p}(E)$	Threshold to 14 MeV	See EANDC (E)51 p.22	I	EURATOM (Neutron Dosimetry Group) CEN, Belgium (Motte)	Threshold detector for integration of fast flux. Motte requires ± 5% from threshold to 9 MeV and ± 10% from 9 to 13 MeV. BCNN has measured at 17 energies between 12.7 and 16.6 MeV: Paulsen and Liskien, Nucl. Phys. 63, 393 (1965). Univ. Hamburg, Germany, has measured between 12 and 17 MeV (Bormann et al., to be published): EANDC(E)57"U" p.17 CEN has measured 10.0 mb for a mean fission spectrum (Fabry, Deworm, EANDC(E)57"U" p.71) FRM has measured for a fast neutron spectrum $\langle\sigma\rangle_{n,p} = 12.6 \pm 0.4$ mb Köhler and Knopf, EANDC(E)57"U" p.29). Measurements in SILOE reactor at CEA Grenoble gives 8.7 mb (Lioret, EANDC(E)57"U" p.172).
210.	Ti ⁴⁶	$\sigma_{n,p}(E)$	MeV-16 MeV	20%	III	Naval Research Lab.(Ferguson)	Energy resolution of 0.5 MeV desired, or act. cross section for production of Sc 46 useful, no active work.
211.	Ti ⁴⁷	$\sigma_{n,p}(E)$	Threshold to 7 MeV	5%	I	CEN, Belgium (Motte)	Threshold detector for fast neutron spectra measurements. FRM has measured average $\langle\sigma\rangle = 13.2 \pm 1.0$ mb (Köhler and Knopf, EANDC(E)57"U" p.29).
212.	Ti ⁴⁸	$\sigma_{n,n'}(E)$	1.8-10 MeV	20%	II	RN, Belgium (G. Tavernier)	Needed for multi-group neutron-shielding calculations with relation to several types of concrete. No action in Euratom Community.
213.	Ti ⁴⁸	$\sigma_{n,n'}(E)$	1.8-10 MeV	10%	III	RID, Netherlands	Needed for multi-group neutron-shielding calculations with relation to several types of concrete. No action in Euratom Community.
214.	Ti ⁴⁸	$\sigma_{n,n}(E)$	1.8-10 MeV	10%	III	RID, Netherlands	Needed for multi-group neutron-shielding calculations with relation to several types of concrete. No action in Euratom Community.
215.	Ti ⁴⁸	$\sigma_{n,p}(E)$	Threshold to 14 MeV	10%	I	CEN, Belgium (Motte)	Threshold detector for measurements of fast flux spectra. Univ. Hamburg, Germany, has measured between 12 and 20 MeV (Bormann, EANDC(E)57"U" p.17). Measurements between 12 and 17 MeV in progress at BCNN. FRM measured for fast neutron spectrum $\langle\sigma\rangle = 3.3 \pm 0.2$ mb (Köhler and Knopf, EANDC(E)57"U" p.29).

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216.	V	$\sigma_{n,\gamma}(E)$	1 - 150 keV	10%	III	ANL(Okrent)	Data is not consistent. No work in progress.
217.	V	$\sigma_{n,\gamma}(E)$	40 keV-5 MeV	5%	II	U.K. : P.D. Smith	For fast reactors. $\sigma_{n,T}$ to 100 keV resonance, analysis in progress, Morgenstern et al. Conf. Antwerp 86.
218.	V	$\sigma_{n,\gamma}(E)$	40 keV-5 MeV	2%	III	U.K. : P.D. Smith	For fast reactors. $\sigma_{n,T}$ to 100 keV resonance, analysis in progress, Morgenstern et al. Conf. Antwerp 86.
219.	V	$\sigma_{n,n'}(E; E')$	MeV - 14 MeV	15%	III	ANL(Okrent)	LASL, Thomson, Nucl. temp. at 7.0 MeV
220.	V	$\sigma_{n,n}(E; \theta)$	1-14 MeV	10%, at least 20%	III	ANL(Okrent)	Want average of $1-\cos\theta$ Above 5 MeV use optical model.
221.	V ⁵¹	$\sigma_{n,\gamma}(E)$	Thermal	3%	II	ASD(Dooley)	$\sigma_{n,\gamma}(E)$ at 0.025 eV wanted, activation cross section desired; No work in progress, Measurement in progress in Swit- zerland.
222.	V ⁵¹	$\sigma_{n,\gamma}(E)$	1 keV - 8 keV		II	KAPL(Francis)	Is it $1/\sqrt{V}$, are there re- sonances? ORNL, WASH 1048 no resonance. Measurement in progress in Swit- zerland.
223.	Cr	$\sigma_{nA}(E)$	1 to 10 MeV	20 %	II	KFAJ, Germany (Gerwin) CEA, France (J. Ravier)	For intermediate-fast reactors.
224.	Cr	$\sigma_{n,\gamma}(E)$	1 - 30 keV	20 % or 5 mb	I	UNC (Kalos) ORNL (Blizard)	Resonance parameters needed especially Γ_γ , energy resolution 20 %. Available information un- satisfactory.
225.	Cr	$\sigma_{n,\gamma}(E)$	1 to 200 keV	20 %	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
226.	Cr	$\sigma_{n,\gamma}(E)$	30-150 keV	25%, at worst 10 mb	II	Columbia (Goldstein) ORNL(Blizard)	ORNL, Gibbons, below 100 keV known.
227.	Cr	$\sigma_{n,\gamma}(E)$	40 keV-2 MeV	20%	II	U.K. : J. Butler	Steel activation.
228.	Cr	$\sigma_{n,G}(E; E_\gamma, \theta)$	2-14 MeV	10%	II	UNC (Kalos)	Energy resolution for neutron 10%, gamma energies above 0.5 MeV, gamma resolution 10% or 50 keV. Partly known 1-3.3 MeV.
229.	Cr	$\sigma_{n,M}(E; E')$	2-14 MeV	10%	II	UNC(Kalos)	Energy resolution 10% incident - Partial information available 0.9-3.3 MeV.
230.	Cr	$\sigma_{n,n'}(E; E')$	Threshold to 3 MeV	15 %	II	CEA, France (C.P. Zaleski) EDF, France	$\Delta E = 100$ keV and $\Delta E'$ allowing separation of the levels.
231.	Cr	$\sigma_{n,n}(E; E')$	3 to 15 MeV	20 %	II	CEA, France (C.P. Zaleski) EDF, France	$\Delta E = 500$ keV and $\Delta E'$ allowing separation of the levels.
232.	Cr	$\sigma_{n,n'}(E; E', \theta)$	Threshold - 7 MeV	10 %	II	UK, R.D. Smith	For fast reactors. In progress to 2 MeV; Hooton, AERE. Provi- sional data available; Towle, AWRE. Some data available 0.3 MeV to 15 MeV. Smith & Guenther, WASH 1052, 1 (1964). Some data avail- able; Van Patter et al., Phys. Rev. 128, 1246 (1964); Broder et al. JNE 18, 645 (1964); Glazkov, JNE 18, 656 (1964).
233.	Cr	$\sigma_{n,n}(E; \theta)$	0.8 - 3 MeV	15 %	II	UK, R.D. Smith	In progress to 2 MeV; Hooton, AERE. Provisional data available; Towle, AWRE. Some data available 0.3 MeV to 15 MeV. Smith & Guenther, WASH 1052, 1 (1964). Some data available; Van Patter et al., Phys. Rev. 128, 1246 (1964); Broder et al. JNE 18, 645 (1964); Glazkov, JNE 18, 656 (1964).

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234.	Cr	$\sigma_{n,n}(E;\theta)$	1.5 to 3 MeV	15 %	II	EDF, France	$\Delta E = 100$ keV and $\Delta\theta = 5^\circ$ required.
235.	Cr	$\sigma_{n,n}(E;\theta)$	2 - 16 MeV	10%, 20% accept.	II	UNC(Kalos) NDL(Donnert)	Resolution in $E, C, 5$ MeV, resolution in angle $5-10^\circ$, ave. $1-\cos\theta$ wanted. Use optical model above 5 MeV.
236.	Cr	$\sigma_{n,n}(E;\theta)$	3 to 15 MeV	20 %	II	EDF, France	$\Delta E = 500$ keV and $\Delta\theta = 10^\circ$ required.
237.	Cr	$\sigma_{n,a}$	Fission spectrum	30 %	I	U.K. : R.D. Smith	For fast reactors. Planned, Perkin, AERE.
238.	Cr	$\sigma_{n,p}$	Fission spectrum	30 %	II	U.K. : R.D. Smith	For fast reactors.
239.	Mn	$\sigma_{n\gamma}(E)$	thermal-1 keV	2%	II	DPS(Dessauer)	2% near thermal, 5% in resonance region, resonance integral is fairly well known. A 5% measurement of gamma gamma for 337 eV resonance would be helpful
240.	Mn	$\sigma_{n\gamma}(E)$	eV-100 eV	25%	II	LRL (Howerton)	Resolution less than 20%
241.	Mn	$\sigma_{n\gamma}(E)$	1 keV-25 keV	20%, at worst 5 mb	III	UNC(Kalos) NDL(Donnert)	Resolution sufficient to resolve resonances in range. No active work.
242.	Mn	$\sigma_{n\gamma}(E)$	1-40 keV	20%	III	ORNL(Blizard)	Capture widths for several resonances will do. Texas Nuclear NADC-59-107 (1959) 40 keV-3 MeV
243.	νn	$\sigma_{n,\gamma}(E)$	40 keV-5 MeV	5%	TT	U.K. : R.D. Smith	Detector applications.
244.	νn	$\sigma_{n,\gamma}(E)$	40 keV-5 MeV	2%	TT	U.K. : R.D. Smith	Detector applications
245.	Mn	$\sigma_{n,G}(E; E_\gamma, \theta)$	1-16 MeV	10%, at least 20%	III	NDL(Donnert) GDF (Kidd)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisot., $\sigma_{n,G}(E; E_\gamma)$ useful, Gamma energy higher than 900 keV, no active work.
246.	Mn	$\sigma_{nM}(E; E^*, \theta)$	1-16 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisot., angular resolution better than 10°, No active work.
247.	Mn	Γ_γ	340 eV resonance	5% or better	II	KPK, Germany (K.H. Beckurts)	Resonance detector. No action in Euratom Community.
248.	Mn	$\chi_{n,n}(E; \theta)$	1-16 MeV	10%, 20% accept.	III	NDL(Donnert)	Resolution in $E, 0.5$ MeV, resolution in angle $5-10^\circ$, average $1-\cos\theta$ wanted. Use optical model above 5 MeV ANL, Smith has results to 1.5 MeV.
249.	Mn	$\sigma_{n,2n}(E; E')$	MeV-16 MeV	20% in cross section	II	Naval Research Lab.(Ferguson) NDL(Donnert)	Energy resolution of 0.5 MeV desired activation cross section for production of μ 54 useful, UNC 5002, NDA 2133-4, Austal. J. Phys. 13, 186, Phys. Abst. 61 5362, Nuclonics 17, 1, Chalk River Report ORC 852
250.	Mn	$\sigma_{n,2n}(E; E'\theta)$	MeV-14 MeV	20%	III	UNC(Kalos) NDL(Donnert)	If not strongly anisotropic, measure integrated cross section, resolution less than 1 MeV. Vonach private Communication to Sigma Center 14 MeV (1960). Remy Comptes Rendus, 246, 1410 (1958) spectrum at 14 MeV, Weigold, Austal. J. Phys. 12, 186 (1960) at 14.5 MeV.
251.	Mn^{54}	$\sigma_{n,\gamma}$	2200 m/s	10%	II	CEN, Belgium (Motte)	For calculation of burnup of reaction product of $Fe^{54}(n,p) Mn^{54}$. Measurement planned at BR 2 (Mol) Hogg and Weber, IDO - 16977, p.41 (1964) have found an upper limit of 10 b. Measurement in progress in Switzerland.
252.	Mn^{55}	$\sigma_{n,\gamma}(E)$	100 eV - 40 keV	5%	II	U.K. : R. D. Smith.	Fast spectral indicator σ_{nT} above 1 keV. Morgenstern et al. Conf. Antwerp 86.

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253	Mn ⁵⁵	$\sigma_{n,\gamma}(E)$	100 eV - 40 keV	2%	III	U.K. : G.H. Kinchin	Fast spectral indicator $\sigma_{n\gamma}$ above 1 keV. Morgenstern Conf. Antwerp 86.
254	Mn ⁵⁵	$\sigma_{n,2n}(E)$	Threshold to 13 MeV	5 %	I	CEN, Belgium (Motte)	Threshold detector for integration of fast neutron spectra. BCNN has measured at 23 energies between 12.6 and 19.6 MeV (Liskien and Paulsen, to be published in <u>J. Nucl.</u> <u>Energy</u>).
255	Mn ⁵⁵	$\sigma_{n,2n}(E)$	11 - 16 MeV	20 % in cross-section	II	NRD (Ferguson) NDL (Donnert)	Incident energy resolution 0.5 MeV. Activation cross-section for produc- tion of Mn ⁵⁴ desired. No active work.
256	Fe	$\sigma_{n\gamma}(E)$	50 keV-300 keV	3 %	II	UK, R.D. Smith	For fast reactors. In progress; AERE. Gilboy et al. Nuc. Phys. 64, 130 (1965).
257	Fe	$\sigma_{n,\gamma}(E)$	100 eV - 40 keV	10%	I	U.K. : R. D. Smith	For fast reactors. Some data available. Moxon, Conf. Antwerp 88. Measure- ments on separated isotopes needed for better accuracy.
258	Fe	$\sigma_{n\gamma}(E)$	keV-175 keV	10%, at worst few mb	II	ANL(Okrent) APD (Zweifel)	Capture in 1-5 keV of particular interest. No work in progress.
259	Fe	$\sigma_{n,\gamma}(E)$	100 eV to 200 keV	10%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
260	Fe	$\sigma_{n,G}(E;E_\gamma, \theta)$	900 keV-4 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{nG}(E;E_\gamma)$ useful Gamma energy higher than 800 keV, No active work.
261	Fe	$\sigma_{n,G}(E;E_\gamma, \theta)$	4-16 MeV	10%, at least 20%	II	NDL(Donnert) GDF(Kidd) UNC(Kalos)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{nG}(E;E_\gamma)$ useful, Gamma energy higher than 800 keV, Texas Nuclear has some data.
262	Fe	$\sigma_{nM}(E;E', \theta)$	3-16 MeV	10%, 20% at worst	II	UNC(Kalos) NDL(Donnert) ORNL (Blizard)	If anisotropic, requested error in 1-cosθ is 10%, if isotropic, error applies to integr. cross- section. neut. resolution 1 MeV both in and out. Texas Nuclear, Bostrom WADC-59-21 (1959) 3, 7-4, 2 and 15 MeV, Wilen- zick, Duke (1961) 6 MeV, Ewing Bull Amer. Phys. Soc. 6, 149 Temp. at 2, 4, 5 and 7 MeV.
263	Fe	$\sigma_{n,n'}(E;E')$	Threshold to 10 MeV	10%	II	EURATOM KFAJ, Germany (Gerwin)	Can be calculated to ± 10% semi-empirically. This should be checked on a few points up to 4 MeV BCNN has measured between 0.4 and 2.3 MeV (Jacquot, to be published). Measurements above 4 MeV in progress by Hopkins, Los Alamos : <u>WASH-1046</u> , p.60 (1964).
264	Fe	$\sigma_{n,n'}(E;E')$	Threshold-14 MeV	20%	II	U.K. : J. Butler	Shielding.
265	Fe	$\sigma_{n,n'}(E;E')$	4 to 7 MeV	20%	II	CEA, France (C.P. Zaleski)	$\Delta E = 100$ keV and $\Delta E' \approx 200$ keV required. Measurements in progress by Hopkins, Los Alamos : <u>WASH-1046</u> , p.60 (1964).
266	Fe	$\sigma_{n,n'}(E;E')$	4 MeV - 14 MeV (spot value)	50%	II	U.K. : J. Butler	Shielding. In progress at 6 MeV, Currie, AERE. Planned at 10 MeV, Eccleshall, AWRE.

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267.	Fe	$\sigma_{n,n}(E; \theta)$	Threshold-4 MeV	2% %	II	U.K. : R.D. Smith	For fast reactors. Some data available; Glazkov, JNE, 18, 656 (1964); Hopkins and Gilbert, NSE, 19, 431 (1964).
268.	Fe	$\sigma_{n,n}(E; E', \theta)$	4 MeV - 7 MeV	3 - 10%	II	U.K. : R.D. Smith	For fast reactors. In progress Towle, AWRE.
269.	Fe	$\sigma_{n,n}(E, \theta)$	10 keV to 14 MeV	θ varying by 10° up to 180°	II	CEA, France (P. Lafore)	Accuracy high enough to obtain significant values for the first ten terms of the development in Legendre polynomials. BCMN has measured between 0.4 and 2.3 MeV and between 20° and 143° (Jacquot, to be published). Langsdorf et al., have data from 0.06 to 1.8 MeV (PR 107, 1077), Hill (PR 109, 2105, 1958) at 5 MeV and Beyster et al., PR 109, 2105, 1958) at 5 MeV. Gilboy, AWRE, has data at 1 MeV, Smith, ANL, at 0.8, 1.0, 1.2, 1.4, 1.6 MeV and Zilenzick et al., Duke Univ., at 6 MeV.
270.	Fe	$\sigma_{n,n}(E, \theta)$	50 keV-300 keV	20%	II	U.K. : R.D. Smith	For fast reactors. In progress, AERE, Gilboy, <u>Nucl. Phys.</u> 64, 130 (1965).
271.	Fe	$\sigma_{n,n}(E; \theta)$	7-16 MeV	10%, 20% accept.	II	NDL(Donnert)	Resolution in E 0.5 MeV, resolution in angle $5-10^\circ$, ave. $1-\cos\theta$ wanted. Use optical model above 5 MeV. A few measurements in the interval would be useful for normalizing the theory.
272.	Fe	$\sigma_{n,a}(E)$	Threshold-10 MeV	30%	I	U.K. : R.D. Smith	For fast reactors.
273.	Fe	$\sigma_{n,a}(E)$	Threshold to 10 MeV	20%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
274.	Fe	$\sigma_{n,a}(E)$	Fission spec- trum average.	30 %	I	UK, R.D.Smith	For fast reactors. Planned; Perkin, AWRE. Some data available; Martin, Durham University.
275.	Fe	$\sigma_{n,p}(E)$	Threshold to 10 MeV	20%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
276.	Fe	$\sigma_{n,p}(E)$	2-10 MeV	5-20%	I	R. Sandlin, Sweden	No measurement.
277.	Fe ⁵⁴	mean resonance parameters	40 keV-80 keV	10%	II	U.K. : R. Butler	Neutron absorption in steel. Provisional data, Cox, AERE. See Bowman et al., <u>Ann. Phys.</u> 17, 319 (1962).
278.	Fe ⁵⁴	$\sigma_{n,p}(E)$	Threshold - 10 MeV	5 %	II	UK, S.B.Wright	Long lived dose monitor, relative to σ at lower energy. Assessment of available data in progress; Wright, AWRE. Some data available to $\pm 10\%$; Lauber et al., AE-160 (1964), Salisbury & Chalmers, WASH-1053, 46 (1964)
279.	Fe ⁵⁴	$\sigma_{n,p}(E)$	Thr. to thr. + 8 MeV	see EANDC (E)51 p.22	I	EURATOM (Neutron Dosi- metry Group) GEN, Belgium (Motte) KFK, Germany (B. Kapulla) KFAJ, Germany (T. Springer)	Threshold detector for integrated fast flux. BCMN will start measuring some points in 1965. Relative measurements by Salisbury and Chalmers, WASH-1048, p.62(1964) between threshold and 6 MeV. Ab- solute high resolution results of Malmskog and Lauber, AE-160(1964). See also Carroll, Smith, Stocks- berry, <u>Trans. ANS meeting San Fran-</u> <u>cisco</u> , p. 268(1964). Measurement in SILOE reactor at Grenoble, France, gives 79 ± 8 mb (Lloret, EANDC(E)57"U" p. 172).
280.	Fe ⁵⁴	$\sigma_{n,n}(E)$	Reaction constant	near	II	U.K. : G.N. Walton	Circuit activation.

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281.	Fe ⁵⁴	$\sigma_{n,p}(E)$	14 MeV point	5 %	II	UK, S.B.Wright	Long lived dose monitor, relative to γ at lower energy. Assessment of available data in progress; Wright, AWRE. Some data available to $\pm 10\%$; Lauber et al., AE-160 (1964), Salisbury & Chalmers, WASH 1053, 46 (1964).
282.	Fe ⁵⁶	$\sigma_{n,p}(E)$	Threshold - 8 MeV	1 % relative to $\sigma_{n,p}[S^{32}]$	II	UK, J. Butler	Detector applications. Data available to $\pm 8\%$; Santry & Butler, Can. J. Phys. 42, 1030 (1964).
283.	Fe ⁵⁶	$\sigma_{n,p}(E)$	Thr. to thr. + 8 MeV	see EANDC (E)51 p.23	III	KFK, Germany (H. Kapulla) EURATOM (Neutron Dosimetry Group)	Threshold detector. Measurements to about $\pm 7\%$ by Butler + Santry, Can.J.Phys. 42, 1030 (1964). ECN has measured at 28 energies between 12.6 and 19.6 MeV to $\pm 6\%$ (Liskien and Paulsen, J.Nucl.Energy 12, 73 (1965)).
284.	Fe ⁵⁸	$\sigma_{n,\gamma}(E)$	0.025 eV-10 keV	20%	II	U.K. : J. Butler	For activation in steel
285.	Co	$\sigma_{nT}(E)$	132 eV	1%	I	PPG (Deboisblanc)	1% in parameters of this resonance desired. Available information too inaccurate.
286.	Co	$\sigma_{n\gamma}(E)$	132 eV	1%	I	PPG (Deboisblanc)	1% in parameters of this resonance desired. Fink Harwell (61) gamma gamma 0.70 eV err. 0.20 eV. ORNL, Block, WASH-1029 (60) gamma gamma 0.67 eV err. 0.15 eV.
287.	Co ⁵⁸	Level structure, spins and parity	eV-3MeV		III	KAPL(Francis)	Needed for inelastic scattering calculations
288.	Co ⁵⁹	$\sigma_{n,\gamma}$	2200 m/s	1%	II	U.K. : S.B. Wright	Standard for thermal flux monitoring. Required to resolve inconsistencies in measured values.
289.	Co ⁵⁹	$\sigma_{n,\gamma}(E)$	10 keV to 1 MeV	20%	II	BN, Belgium (G. Tavernier)	Steel activation.
290.	Co ⁵⁹	$\sigma_{n,\gamma}(E)$	40 keV-200 keV	20%	II	U.K. : J. Butler	Steel activation, σ_{nT} to 100 keV, Morgenstern et al., 96, Garg et al., CR 1860 (1965)
291.	Co ⁵⁹	$\sigma_{n,p}(E)$	Thr. to thr. + 8 MeV	See EANDC (E)51 p.23	III	EURATOM (Neutron Dosimetry Group)	Threshold detector. No action in Euratom Community.
292.	Ni	$\sigma_{nT}(E)$	0.2 to 0.5 MeV	5%	I	EDF, France	
293.	Ni	$\sigma_{nT}(E)$	0.3 - 1.5 MeV	6 %	II	UK, R.D. Smith	For fast reactors. In progress; Towle, AERE.
294.	Ni	$\sigma_{n,\gamma}(E)$	0.025 eV-40 keV	20%	II	U.K. : R. D. Smith	For fast reactors. Planned 100 eV- 40 keV, Moxon AERE, awaiting separated isotopes for better accuracy.
295.	Ni	$\sigma_{n\gamma}(E)$	eV-175 eV.	25%, at worst 10 mb	I	ORNL (Blizard) APD(Zweifel) UNC (Kalos)	No work in progress. ORNL good, may do.
296.	Ni	$\sigma_{n,\gamma}(E)$	100 eV - 40 keV	50%	I	U.K. : R. D. Smith	For fast reactors. Planned 100 eV-40 keV, Moxon AERE awaiting separated isotopes for better accuracy.
297.	Ni	$\sigma_{n,\gamma}(E)$	500 eV-30 keV	20 % or 5 mb at worst	I	UNC (Kalos)	Resonance parameters needed especially Γ_γ . Existing information uncertain.

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298	Ni	$\sigma_{n,\gamma}(E)$	1 keV to 200 keV	10%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
299	Ni	$\sigma_{n,\gamma}(E)$	40 keV-1 MeV	10% or 2 mb	II	U.K. : R.D. Smith	For fast reactors.
300	Ni	$\sigma_{nG}(E; E_\gamma)$	2-14 MeV	10%, 25 at worst	III	ORNL(Blizard)	Gamma energy above 0.5 MeV No active work.
301	Ni	$\sigma_{n,G}(E; E_\gamma, \theta)$	1-3 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotro., $\sigma_{nG}(E; E_\gamma)$ useful, Gamma energy higher than 1.3 MeV Bull Amer. Phys. Soc. 7, 120(56)
302	Ni	$\sigma_{nG}(E; E_\gamma, \theta)$	3-16 MeV	10%, at least 20%	II	NDL(Donnert) UNC(Kalos) GDF (Kidd)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotro., $\sigma_{nG}(E; E_\gamma)$ useful, Gamma energy higher than 1.3 MeV, Bull Amer. Phys. Soc. 7, 120(56)
303	Ni	$\sigma_{nM}(E; E')$	2-14 MeV	10%	II	UNC(Kalos)	Energy resolution 10%.
304	Ni	$\sigma_{nM}(E; E', \theta)$	1-3 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10°. No active work.
305	Ni	$\sigma_{n,n'}(E; E')$	Threshold to 10 MeV	5%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
306	Ni	$\sigma_{n,n'}(E; E')$	Threshold to 15 MeV	20%	II	EDF, France CEA, France (J. Ravier)	$\Delta E = 100$ keV, $\Delta E'$ allowing separation of the levels up to about 3 MeV and evaluation of nuclear temperature to $\pm 10\%$ near above 3 MeV.
307	Ni	$\sigma_{n,n'}(E; E', \theta)$	Threshold-4MeV	5%	II	U.K. : R.D. Smith	For fast reactors. In progress; Towle et al., AWRE.
308	Ni	$\sigma_{n,n'}(E; E', \theta)$	4 MeV - 7 MeV	5-10%	II	U.K. : R.D. Smith	For fast reactors. In progress; Towle et al., AWRE. Some data available Broder et al., JNE 18 645 (1964)
309	Ni	$\sigma_{n,n}(E; \theta)$	500 keV-1.5 MeV	20%	II	U.K. : R.D. Smith	For fast reactors. Apparently met by data, Smith, ANL, see also Korzh et al., SJAB 16, 312 (1964)
310	Ni	$\sigma_{n,n}(E, \theta)$	1.5 to 3 MeV	15%	II	CEA, France (C.P. Zaleski) EDF, France	$\Delta E = 100$ keV and $\Delta\theta \approx 50^\circ (\cos \theta \text{ to } + 10\%)$ required. No action in Euratom Community.
311	Ni	$\sigma_{n,n}(E; \theta)$	1.5 MeV-5 MeV	6-25%	II	U.K. : R.D. Smith	For fast reactors.
312	Ni	$\sigma_{n,n}(E; \theta)$	1.5 MeV- 5 MeV	25 %	II	UK, R.D. Smith	For fast reactors. In progress; Towle, AWRE.
313	Ni	$\sigma_{n,n}(E; \theta)$	3 to 15 MeV	20%	II	CEA, France (C.P. Zaleski) EDF, France	$\Delta E \approx 500$ keV and $\Delta\theta \approx 10^\circ$ required. No action in Euratom Community.
314	Ni	$\sigma_{n,n}(E; \theta)$	5-16 MeV	10%, 20% useful	III	NDL (Donnert) UNC (Kalos)	Both cross section and ave. $1-\cos\theta$ wanted, energy resolution better than 1 MeV. A few points would be useful in normalizing the theory. Above 5 MeV use optical model.
315	Ni	$\sigma_{n,\alpha}(E)$	Fission spectrum	30%	II	U.K. : R.D. Smith	For fast reactors. Planned, Perkin AWRE.

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316	Ni	$\sigma_{n,p}(E)$	Threshold to 10 MeV	5%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
317	Ni ⁵⁸	$\sigma_{n,2n}(E)$	Threshold to 25 MeV	See EANDC (E)51 p.23	III	EURATOM (Neutron Dosimetry Group)	Threshold detector. BCMN has measured at 27 energies between 12.6 and 19.6 MeV (Paulsen and Liskien, <u>Nukleonik</u> , in press).
318	Ni ⁵⁸	$\sigma_{n,p}(E)$	Threshold to 14 MeV	See EANDC (E)51 p.22	I	EURATOM (Neutron Dosimetry Group) CEN, Belgium (Motte) KFK, Germany (H. Kapulla)	Threshold detector. BCMN is planning some measurements. 1 to 1.5 MeV: Meadows, Whalen (ANL) (EANDC(US)27, p.3) and Phys. Rev. 130, 2022(1963). Measurements available to 6% relative to $\sigma_{n,f}(U35)$; Barry, AWRE (Reactor Sc. Techn. 16, 467(1962). Konijn and Lauber (<u>Nucl. Phys.</u> 48, 191(1963) have performed a high resolution measurement at 46 energies between 2.44 and 3.77 MeV with absolute uncertainties between 3 and 20%. Measurements with a mean fission spectrum: Fabry and Deworm, CEN (working paper for Euratom Dosimetry Group); Hoog and Weber (ASTM-341 p.133, Oct. 1962); Ritzman (ASTM-341 p.141); Passell and Heath (<u>Trans. Americ. Nucl. Soc.</u> 2, 21 (1959)).
319	Ni ⁵⁸	$\sigma_{n,p}(E)$	Threshold to 15 MeV	20%	II	BN, Belgium (G. Tavernier)	Activation.
320	Ni ⁵⁸	$\sigma_{n,n}(E)$	2 meV - 10 MeV	50%	I	U.S.: S.B. Wright	Long life dose monitor.
321	Ni ⁶⁰	$\sigma_{n,p}(E)$	Threshold to 15 MeV	20%	II	BN, Belgium (G. Tavernier)	BCMN has measured from 12.6 to 16.5 MeV (Paulsen and Liskien, <u>Nucl. Phys.</u> 63, 393(1965)).
322	Ni ⁶⁴	$\sigma_{n,\gamma}(E)$	eV-1 keV	10%	I	KAPL(Skolnik)	Is cross section 1/V in this region. No work in progress. Duke, Newson, may do.
323	Cu	$\bar{\sigma}$	Fission neutrons	5-20%	I	R. Sandlin, Sweden	No measurement - In order to determine fast neutron doses for radiation damage experiments.
324	Cu	$\sigma_{n,\gamma}$	Below 1.75 keV and above 1 MeV	20%	I	H. Häggblom, Sweden	For fast reactor calculations
325	Cu	$\sigma_{n,\gamma}(E)$	Thermal and resonance region	20%	II	BN, Belgium (G. Tavernier)	Thermal reactor calculations.
326	Cu	$\sigma_{n,a}(E)$	4-10 MeV	5-20%	I	R. Sandlin, Sweden	No measurement - In order to determine fast neutron doses for radiation damage experiments.
327	Cu ⁶³	$\sigma_{n,\gamma}$	At the resonances	20%	II	R. Sandlin, Sweden	For correction of self-absorption effects in determining epithermal neutron fluxes.
328	Cu ⁶³	$\sigma_{n,\gamma}(E)$	Thermal-1 keV	2%	II	DPS(Dessauer) AEC(Stetson)	2% near thermal, 5% in resonance region
329	Cu ⁶³	$\sigma_{n,2n}(E)$	Thr. to 21 MeV	See EANDC (E)51 p.23	III	EURATOM (Neutron Dosimetry Group)	BCMN has measured at 28 energies between 12.6 and 19.6 MeV to $\pm 6\%$ (Liskien and Paulsen, J. Nucl. Energy, 19, 73(1965)). Measurements between 16 and 18 MeV in progress at Saclay: EANDC(E)57 "U" p.152.
330	Cu ⁶³	$\sigma_{n,a}(E)$	Thr. to thr. 8 MeV	See EANDC(E)51 p.22	I	CEN, Belgium (Motte) EURATOM (Neutron Dosimetry Group)	Integration of fast neutron fluxes. BCMN has measured at 11 energies between 12.6 and 16.5 MeV (Paulsen and Liskien, <u>Nucl. Phys.</u> , 62, 393 (1965)). Measurement in SILOE reactor at Grenoble gives 0.44 mb (Lloret, EANDC(E)57 "U" p.172).
331	Cu ⁶³	$\sigma_{n,a}(E)$	MeV-16 MeV	20%	II	Naval Research Lab.(Ferguson)	Energy resolution of ~ 5 MeV desired. activation cross section for production of Co 60 useful. No active work.
332	Cu ⁶⁵	$\sigma_{n,\gamma}(E)$	Thermal-1 keV	2%	II	DPS(Dessauer) AEC(Stetson)	2% near thermal, 5% in resonance region
333	Cu ⁶⁵	$\sigma_{n,2n}(E)$	Thr. to 20 MeV	See EANDC(E)51 p.23	II	EURATOM (Neutron Dosimetry Group)	BCMN has measured at 27 energies between 12.6 and 19.6 MeV (Paulsen and Liskien, <u>Nukleonik</u> , in press.) Bormann et al. have measured at Hamburg, Germany (<u>Z. Physik</u> , 174, 1 (1963)).

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334	Zn ⁶⁴	$\sigma_{n,p}(E)$	2 to 14 MeV	10% or better	I	CEN, Belgium (Motte)	Threshold detector. Bormann et al. have measured between 12 and 19 MeV (Z. Phys. 174, 1 (1963)) Butler + Santry, EANDC (Can) 21 "L" (1964) have measured from 2.2 to 20.3 MeV relatively to S ³² (n,p).
335	Zn ⁶⁶	$\sigma_{n,2n}(E)$	11-16 MeV	20%	III	Naval Research Lab.(Ferguson)	Energy resolution of Q5 MeV desired activation cross section for production of Zn ⁶⁵
336	Ga	$\sigma_{nG}(E; E_\gamma, \theta)$	500 keV-16 MeV	10%, at least 20%	III	NDL(Donnert)	Resolution in neutron and gamma energy Q5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{nG}(E; E_\gamma)$ useful. Gamma energy higher than 500 keV
337	Ga	$\sigma_{nY}(E; E', \theta)$	500 keV-16 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and 1-cosθ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr., angular resolution better than 10°. No active work.
338	Ga	$\sigma_{n,n}(E; \theta)$	1-16 MeV	10%, 20% accept.	II	UNC(Kalos) NDL(Donnert)	Resolution in E, 0.5 MeV, resolution in angle 5-10°, ave. 1-cosθ wanted ANL, Smith, to 1.5 MeV. Use optical model above 5 MeV.
339	Kr ⁸³	$\sigma_{nT}(E)$	Thermal-1 keV	50%	II	WBA(Taylor)	Error in resonance absorption integral. Walker CRRP-913 (60) estimates, RI at 240 eV.
340	Kr ⁸³	$\sigma_{nY}(E)$	Thermal -1 keV	50%		WBA(Taylor)	Resonance integral desired Walker, CRRP-912 at 240 eV
341	Y	$\sigma_{nG}(E; E_\gamma, \theta)$	1-16 MeV	10%, at least 20%	III	GDF(Kidd)	Resolution in neutron and gamma energy Q5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{nG}(E; E_\gamma)$ useful. Gamma energy higher than 900 keV, WADC-TN-59-107,
342	Y	$\sigma_{nY}(E)$	eV-500 eV	15%	II	KAPL(Francis)	Corge, Phys. Rev. Letters 3 67(62), T _Y for 2.6, 7.4, 11.5 keV
343	Y	$\sigma_{nY}(E)$	keV-1 MeV	15%	II	ANL (Okrent)	Texas Nuclear, Bostrom, WADC-59-107 (59) at 100 to 680 keV, Duke, Newson up to 100 keV.
344	Y	$\sigma_{n,n}(E; \theta)$	6-16 MeV	10%, 20% accept	III	GDF(Kidd)	Resolution in E, 0.5 MeV, resolution in angle 5-10°, ave. 1-cosθ to above error. Use optical model above 5 MeV.
345	Sr ⁸⁷	$\sigma_{n,n'}(E, E')$	390 keV-16 MeV	15%	II	Harry Dia, Lab. (Berman)	Accuracy above for activation of the 2.8 hr isomer, low resolution, no active work.
346	Zr	$\sigma_{n,\gamma}(E)$	1 eV - 30 keV	20 % or 5 mb at worst	II	UNC (Kalos)	Resonance parameters especially T _γ , no work. T _n known to 20 % T _γ known to 30 %. See ORNL 3425 and 3432.
347	Zr	$\sigma_{n\gamma}(E; E')$	2 -14 MeV	10%	I	KAPL(Ehrlich) ANL (Okrent)	Inelastic cross section desired above 1.5 MeV. Values available only to 1.5 MeV. ORNL Dickens will do.
348	Zr	Spin and parity assignments	1-3 MeV		III	KAPL(Francis)	Needed for calculations of inelastic cross-sections. No experimental work under progress. Theoretical calculations under way at ORNL.
349	Zr ⁹⁰	$\sigma_{nT}(E)$	keV-10 keV	10% in parameters	I	KAPL(Francis)	Block, ORNL 62, at res-en 3.88 13.5, 17.8 keV.
350	Zr ⁹⁰	$\sigma_{nY}(E)$	keV-10 keV	10% in parameters	I	KAPL(Francis)	Block, ORNL, 62 at res-en 3.88, 13.5, 17.8 keV.
351	Zr ⁹¹	$\sigma_{nY}(E)$	keV-10 keV	10% in parameters	I	KAPL(Francis)	Block, ORNL(62) at res-en 0.18, 0.24, 0.29, 0.43, 0.68, 0.90, 1.54, 1.82, 1.99, 49, 2.74 keV, Feiner, KAPL-2000-8(59) RI 5.4 Err.1.6.
352	Zr ⁹²	$\sigma_{nY}(E)$	keV-10 keV	10% in parameters	I	KAPL(Francis)	Block, ORNL, (62) res-en 2.70 4.14, 4.67, 6.89 keV.

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353	Zr ⁹⁴	$\sigma_{n\gamma}(E)$	keV-10 keV	10% in parameters	I	KAPL(Francis)	Block, ORNL,(62) res-en, 2.25 5.84, 7.10, 12.6
354	Zr ⁹⁶	$\sigma_{n\gamma}(E)$	keV-10 keV	10% in parameters	I	KAPL(Francis)	Block, ORNL,(62) at res-en 0.30, 2.69, 3.83, 3.88, 4.11, 5.43, 5.94 keV.
355	Nb	$\sigma_{n\gamma}(E)$	1 keV-1 MeV		III	ANL(Okrent)	Repeat to resolve possible discrepancy at 175 keV. No work in progress.
356	Nb	$\sigma_{n\gamma}(E)$	1-2 MeV	25% at worst 10 mb	II	AI(Cohen)	No work in progress.
357	Nb	$\sigma_{n,n'(\text{E},\text{E}')}$	1-3 MeV	15%	II	ANL(Okrent)	Few incident energies only. No information in upper portion of energy interval.
358	Nb	$\sigma_{n,n'(\text{E};\text{E}',\theta)}$	Threshold-5MeV	25%	III	U.K. : R.D. Smith	For fast reactors. Some data available Smith ANL, Glazkov, JNE 18, 656 (1964) Broder et al., JNE 18 645 (1964).
359	Nb	$\sigma_{n,n'(\text{E};\theta)}$	40 keV- 200keV	25%	III	U.K. : R.D. Smith	For fast reactors.
360	Nb	$\sigma_{n,n'(\text{E};\theta)}$	1-16 MeV	10%, 20% accept	III	GDF(Kidd)	Resolution in E, 0.5 MeV, resolution in angle 5-10°, ave. 1-cosθ wanted. Use optical model above 5 MeV. ANL, Smith, to 1.5 MeV. LASL, Hopkins, will do.
361	Nb ⁸⁷	$\sigma_{n,n'(\text{E};\text{E}')}$	Threshold to 15 MeV	10 %	II	EIR, Switzerland	Fast flux measurements in shields.
362	Nb ⁹³	$\sigma_{n\gamma \rightarrow Nb^{94}}$	2200 m/s	5%	I	R. Sandlin, Sweden	For determination of thermal neutron doses for radiation damage experiments at high temperature.
363	Nb ⁹³	$\sigma_{n\gamma \rightarrow Nb^{94m}}$	2200 m/s	20%	I	R. Sandlin, Sweden	For determination of thermal neutron doses for radiation damage experiments at high temperature.
364	Nb ⁹³	$\sigma_{n,n'(\text{E})}$	2200 m/s	20%	I	R. Sandlin, Sweden	For determination of thermal neutron doses for radiation damage experiments at high temperature.
365	Nb ⁹³	$\sigma_{n,n'(\text{E})}$	Thr. to thr. + 8 MeV.	See EANDC(E)51 p.23	I	CEN, Belgium (Motte)	Integration of fast neutron fluxes. Measurements for mean fission spectrum in progress at CEN.
366	Nb ⁹³	$\sigma_{n,n'(\text{E})}$	Thr. to thr. + 8 MeV.	See EANDC(E)51 p. 23	II	EURATOM (Neutron Dosimetry Group)	Integration of fast neutron fluxes. Measurements for mean fission spectrum in progress at CEN.
367	Nb ⁹³	$\sigma_{n,2n}(\text{E})$	Threshold to 15 MeV	5%	II	CEN, Belgium (Motte)	Threshold detector for fast neutron spectra measurements. Bramlett and Fink have measured at 14.7 MeV (<u>Phys.Rev.131</u> , 2649(1963)).
368	Nb ⁹³	Level scheme of excited levels	up to 8 MeV		I	CEN, Belgium (Motte)	For theoretical evaluation of cross section for Nb ⁹³ (n,n') Nb ^{93m} . The differential gross-section of Nb ⁹³ (n,n') Nb ^{93m} will be difficult to measure by activation method because of long half-life of reaction product and probable low cross-section. Perhaps observation of inelastic scattered neutrons would be possible. The theoretical approach seems the most promising now. The cross-section for excitation of some levels has been calculated by the Hauser-Feshbach optical model (Goldman and Lubitz, KAPL-2163 (1961) and found to compare quite well with measured values (Broder et al., J. Nucl. Energy 18, 645 (1964); Nath et al., Nucl. Phys. 14, 78 (1959)) when spin and parity of the levels are well assigned. This implies that calculations for the metastable level should also be right at low neutron energies, but when the neutron energy is increased the contribution of γ-rays decaying from higher levels (Cohen and Price, Phys. Rev. 123, 283 (1961) should be taken into account. Resonance parameters and some spin assignments see also EANDC(E)57 "U" p.139.

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369	Nb ⁹⁴	$\sigma_{n,\gamma} \rightarrow Nb^{94m}$	2200 m/s	20%	I	R.Sandlin , Sweden	For determination of thermal neutron doses for radiation damage experiments at high temperature.
370	Mo	$\sigma_{n,\gamma}(E)$	100 eV - 40 keV	15%	II	U.K. : R. D. Smith	For fast reactors
371	Mo	$\sigma_{n,\gamma}(E)$	1 to 100 keV	20%	II	BN, Belgium (G. Tavernier)	Activation in fast reactors.
372	Mo	$\sigma_{n,\gamma}(E)$	1 keV to 10 MeV	10	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
373	Mo	$\sigma_{n,\gamma}(E)$	40 keV-1 MeV	2mb	II	U.K. : R.D. Smith	For fast reactors.
374	Mo	Γ_n, Γ_γ	700 eV to 10 keV	5%	II	KFK, Germany (J.J. Schmidt)	Pevzner et al. (<u>ZETF</u> 44, 1187, 1963) measured Γ_n of resonances for all stable isotopes up to several keV; no Γ_γ measured. Average accuracy in Γ : \pm 10 to 20%. Resonance energies found up to 2 keV by Corge et al. (<u>Compt.Rend.</u> 254, 4287, 1962) and up to 1 keV by Bollinger et al. (<u>ANL-6554</u> , 1962) without isotopic identification. To check and improve these results more isotopic measurements of Γ_n and particularly Γ_γ needed.
375	Mo	$\sigma_{n,n'}(E; E')$	Threshold to 3 MeV	15%	I	EDF, France	$\Delta E = 100$ keV and $\Delta E'$ allowing separation of the levels.
376	Mo	$\sigma_{n,n'}(E; E')$	Threshold to 10 MeV	10%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
377	Mo	$\sigma_{n,n'}(E, E')$	1 - 3 MeV	20%	III	ANL(Okrent) APD(Zweifel)	
378	Mo	$\sigma_{n,n'}(E; E')$	3 to 15 MeV	20%	II	EDF, France	$\Delta E = \Delta E' = 500$ keV required.
379	Mo	$\sigma_{n,n'}(E; E', \theta)$	Threshold-5MeV	10%	II	U.K. : R.D. Smith	For fast reactors. Some data available, Glazkov, <u>JNE</u> 18 656 (1964)
380	Mo	$\sigma_{n,\alpha}$	Fission Spectrum	25%	I	U.K. : R.D. Smith	For fast reactors. Planned, Perkin, AWRE.
381	Mo	$\sigma_{n,p}$	Fission Spectrum	25%	II	U.K. : R.D. Smith	For fast reactors.
382	Mo ⁹²	$\sigma_{n,p}(E)$	Threshold to thr. + 4 MeV	5%	II	CEN, Belgium (Motte)	
383	Mo ⁹²	$\sigma_{n,p}(E)$	Threshold + 4 MeV to threshold + 8 MeV	10%	II	CEN, Belgium (Motte)	Bramlitt and Fink have measured at 14.7 MeV: <u>Phys.Rev.</u> 131, 2649 (1963). Measurements in progress at Naples, Italy: <u>EANDC(E)57"II</u> p.174 and <u>Nucl.Phys.</u> 55, 364 (1964).
384	Mo ⁹⁵	$\sigma_{n,p}(E)$	Thr. to thr. + 8 MeV	See EANDC(E)51 p.23	III	KFK, Germany (H. Kapulla) EURATOM (Neutron Dosimetry Group)	Threshold detector. Bramlitt and Fink have measured at 14.7 MeV (<u>Phys.Rev.</u> 131, 2649, 1963). Measurements in progress at Naples, Italy: <u>EANDC(E)57"II</u> p.174 and <u>Nucl.Phys.</u> 55, 364 (1964).
385	Mo ⁹⁸	Res. Integral		5%	II	R.Sandlin , Sweden	For epithermal flux determinations.
386	Mo ⁹⁹	$\sigma_{n,\gamma}(E)$	thermal	25 %	III	WBA (Taylor)	Thermal cross-section desired, neutron energy 0.025 eV.

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387	Ru	$\sigma_{n,\gamma}(E)$	1-150 keV	10%	III	AI(Cohen)	No work in progress.
388	Ru ¹⁰³	$\sigma_{n,\gamma}(E)$	thermal	25 %	III	WBA (Taylor)	Thermal cross-section desired, neutron energy 0.025 eV.
389	Ru ¹⁰⁶	$\sigma_{n,\gamma}(E)$	0.01-500 eV	10% or \pm 10 b thermal and 20% res. int.	II	W.H. Walker (Canada)	High yield product from Pu ²³⁹ fission of unknown cross-section. Measurements are in progress at A.E.C.L.
390	Rh	$\sigma_{nT}(E)$	keV-1 keV	10%	II	WBA(Taylor)	10% in resonance absorption integral calculated from parameters ORNL, Macklin, Geneva Conf. 5, 96(55) RI 575 exp., 656 exp, 1146 calc., Chalk River, Walker CRRP-913(60) RI 1095 calc., Chrrien, BNL(59) 2g Γ_n for 12 resonances, 44-326 eV, ORNL Block, Saclay Symposium, 0.2 to 9 keV. Harwell, Patterson, AERE PR NP 3 40(62) at res-en. 18.7 34.4, 99.2, 110.2, 113.8, 162.5 eV.
391	Rh	$\sigma_{n,\gamma}(E)$	keV-1 keV	10%	II	WBA(Taylor)	10% in resonance absorption integral calculated from parameters ORNL, Macklin Geneva Conf. 5, 96(55) RI 575 exp., 656 exp, 1146 calc., Chalk River, Walker, CRRP-913(60) RI 1095 calc., Chrrien, BNL 59 2g Γ_n for 12 resonances, 44-326 eV, ORNL, Block Saclay Symposium, 0.2 to 9 keV.
392	Rh	$\sigma_{n,\gamma}(E)$	1-150 keV	10%	III	ANL(Okrent)	No work in progress.
393	Rh	$\sigma_{n,n}(E)$	Threshold-6 Mev	1% rel. to $\sigma_{n,p}^{32}$	II	U.K. : J. Butler	For formation of the 53 min isomer.
394	Rh	$\sigma_{n,n}(E)$	14 MeV point	1% rel. to $\sigma_{n,p}^{32}$	II	U.K. : J. Butler	For formation of the 53 min isomer.
395	Rh	Res. Integral		5%	II	R. Sandlin, Sweden	For epithermal neutron flux determinations.
396	Rh ¹⁰³	$\sigma_{n,n}(E)$	Threshold to 10 MeV	See EANDC (E)51 p.22	I	EURATOM (Neutron Dosimetry Group) CEN, Belgium (Mette) KFK, Germany (H. Kapulla)	Threshold detector. Measurements in progress at Chalk River: Santry a. Cross, EANDC(Can)17''L".
397	Rh ¹⁰³	$\sigma_{n,n}(E;E')$	Threshold to 15 MeV	10 %	II	EIR, Switzerland	Fast flux measurements in shields.
398	Rh ¹⁰³	$\sigma_{n,2n}(E)$	Thr. to thr. + 8 MeV	See EANDC (E)51 p.23	II	EURATOM (Neutron Dosimetry Group) KFK, Germany (H. Kapulla)	Threshold detector.
399	Pd ¹⁰⁷	$\sigma_{n,\gamma}(E)$	0.01-500 eV	10% or \pm 10 b	II	W.H. Walker (Canada)	Cross section unknown
400	Pd ¹⁰⁷	$\sigma_{n,\gamma}(E)$	thermal	25 %	III	WBA (Taylor)	Thermal cross-section desired, neutron energy 0.025 eV.
401	Ag	Res. Integral		5%	II	R. Sandlin, Sweden	In order to determine epithermal neutron doses in radiation damage experiments.
402	Ag ¹⁰⁹	$\sigma_{act}(Ag^{110m})$	135 eV-10 keV	10 %	II	UK, J. Butler	Resonance activation calculations. Preliminary data available 1 keV - 30 keV; Moxon, AERE.
403	Cd	$\sigma_{n,\gamma}$	2200 m/s	1%	I	CEA, France (R. Naudet)	
404	Cd ¹¹¹	$\sigma_{n,n}(E,E')$	400 keV-16 MeV	15% in act. 48 min. isom	II	Harry Dia. Lab. (Berman)	Activation only desired, poor resolution, No active work.

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405	In ¹¹⁵	$\sigma_{n,n'}(E)$	Thr. to thr. + 8 MeV	See EANDC (E) 51 p. 23	II	CEN, Belgium (Motte) KFK, Germany (H. Kapulla) EURATOM (Neutron Dosimetry Group)	Threshold detector. Measurements in progress at Chalk River (Santry). Measurements by Grench and Menlove, WASH-1046 p.76 + WASH-1048, p.64. The intensity of 335 keV gamma-ray of In ^{115m} has been clarified by recent measurement of internal conversion coefficient by Misra and Merritt, AECL-2044 p.31(1964).
406	In ¹¹⁵	$\sigma_{n,n'}(E;E')$	5-15 MeV $E' = 0.335$ MeV	10%	II	EIR, Switzerland	Fast flux measurements in shields.
407	In ¹¹⁵	$\sigma_{act}(In^{116m})$	50 eV-20 keV	10 %	II	UK, J. Butler	Resonance activation calculations. Preliminary data available 1 keV - 30 keV; Moxon, AERE.
408	Sn ¹¹⁷	$\sigma_{n,n'}(E;E')$	320 keV-16 MeV	15%	II	NDL (Donnert) Harry Dia. Lab. (Berman)	Need activation of 14 day isomer, low resolution. No active work.
409	Sn ¹¹⁹	$\sigma_{n,n'}(E;E')$	90 keV-16 MeV	15%	II	NDL (Donnert) Harry Dia. Lab. (Berman)	Activation of 275 day isomer is desired, low resolution, No active work.
410	Te ¹²³	$\sigma_{n,n'}(E;E')$	250 keV-16 MeV	15%	II	Harry Dia. Lab. (Berman) NDL(Donnert)	Activation of 104 day isomer is desired, low resolution, No active work.
411	Te ¹²⁵	$\sigma_{n,n'}(E;E')$	150 keV-16 MeV	15%	II	Harry Dia. Lab. (Berman) NDL(Donnert)	Activation of 58 day isomer is requested, low resolution, No active work.
412	Te ¹³²	$\sigma_{n,\gamma}(E)$	thermal	25 %	III	WBA (Taylor)	Thermal cross-section desired, neutron energy 0.025 eV.
413	I ¹³³	$\sigma_{n,\gamma}(E)$	thermal	25 %	III	WBA (Taylor) AEC (Radowsky)	Thermal cross-section desired, neutron energy 0.025 eV. BNL, Yaffe, BNL-C-9(49)600.
414	Xe ¹³¹	$\sigma_{n,\gamma}$ thermal and radiation widths		5% (ther- mal) and 10% (res. int.)	II	W.H. Walker (Canada)	AECL value of $\delta = 103^{+11}_{-5}$ b in spectrum with $r \sim 0.015$ (EANDC (Can) 16) is still subject to revision.
415	Xe ¹³¹	Product of yield in thermal fission multiplied by the thermal cross-section; for fission of U ²³⁵ , U ²³⁸ , Pu ²³⁹ and Pu ²⁴¹		10%	II	U.K. : G.H. Kinchin	For thermal reactors. Separate measurements of yields and cross-section are acceptable.
416	Xe 133	$\sigma_{n\gamma}(E)$	Thermal	10%	II	AEC (Radowsky)	$\sigma_{n\gamma}(E)$ at 0.025 eV wanted No work in progress.
417	Cs	$\sigma_{nT}(E)$	eV-1 keV	10% in res. integ.	II	WBA(Taylor)	Calculated from parameters 17 resonances known, 6-530 eV. Harwell Tattersall, AERE-R-2887(59) RI 504-Eiland, KAPL-2000-11(60) RI 400, err 25, ANL Persiani, ANL Newsletter I, RI 394 calc., Columbia, Garg, Bull Am. Phys. Soc. 1, 289 (62) $\sigma_{nT}(E)$ up to 4 keV
418	Cs	$\sigma_{n\gamma}(E)$	eV-1 keV	10% in res. int.	II	WBA(Taylor)	Calculated from parameters, 17 resonances known, 6-530 eV. Harwell Tattersall, AERE-R-2887(59) RI 504, Eiland, KAPL-2000-11(60) RI 400 err 25, ANL Persiani, ANL Newsletter I, RI 394 calc. Columbia will do (Havens)
419	Cs ¹³³	Resonance parameters	1 eV	10 % in resonan- ce integral	II	WBA (Taylor)	$\sigma_{n,\gamma}(E)$ at 0.025 eV wanted.
420	Ba	$\sigma_{n,\gamma}(E)$	10 to 100 keV	20%	II	BN, Belgium (G. Tavernier)	Activation of baryte concrete in fast reactors.
421	Ba	$\sigma_{n,n'}(E;E')$	4 MeV-10 MeV (spot value)	5%	II	U.K. : J. Butler	Shielding. Planned at 10 MeV, Eccleshall AWRE.
422	Ba ¹³⁵	$\sigma_{n,n'}(E;E')$	270 keV-16 MeV	15%	II	Harry Dia. Lab. (Berman) NDL(Donnert)	Activation of the 28.7 hr. isomer is requested, low resolution. No active work.

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423	Ba ¹³⁷	$\sigma_{n,n}(E;E')$	670 keV-16 MeV	15%	II	Harry Dia. Lab. (Berman)	Activation of 2.6 min isomer is requested, low resolution. No active work.
424	Ce ¹⁴¹	$\sigma_{n,\gamma}(E)$	thermal	25 %	III	WBA (Taylor)	Thermal cross-section desired, neutron energy 0.025 eV.
425	Nd ¹⁴³	$\sigma_{nT}(E)$	eV-1 keV	10% in res. integ.	II	WBA(Taylor)	Calculated from parameters. No active work. $\sigma_{n,\gamma}(E)$ at 0.025 eV wanted.
426	Nd ¹⁴³	$\sigma_{n,\gamma}(E)$	0.01- 500 eV	3% (thermal) and 20% (res. int.)	II	W.H. Walker (Canada)	6% uncertainty in thermal cross-section. Higher accuracy is desirable for this important poison. The resonance parameter data of Bianchi et al., EANDC(E)49 p. 64 may be adequate for the resonance integral.
427	Nd ¹⁴³	$\sigma_{n\gamma}(E)$	eV-10 eV	10% in res. int.	II	WBA(Taylor)	$\sigma_{n,\gamma}(E)$ wanted at 0.025 eV No active work. Gamma total known to 15%, gamma gamma to 50%
428	Nd ¹⁴⁵	Resonance parameters	1 eV	10 %	II	WBA (Taylor)	$\sigma_{n,\gamma}(E)$ at 0.025 eV wanted. Γ_γ known to 20 %, Γ total known to 50 %.
429	Nd ¹⁴⁷	$\sigma_{n\gamma}(E)$	Thermal	10%	II	AEC(Radkowsky) WBA (Taylor)	$\sigma_{n\gamma}(E)$ at 0.025 eV wanted, needed for fission poison.
430	Pm ¹⁴⁷	$\sigma_{nT}(E)$	eV-1 keV	10% in res. integ.	II	WBA(Taylor)	Calculated from parameters, ORNL, Harvey, Geneva Conf. 16 150(58)12 resonances between 1 and 50 eV. MTR, Moore may do.
431	Pm ¹⁴⁷	$\sigma_{n,\gamma}(E)$	0.01- 500 eV	10% (thermal) and 10% (Res. int.)	II	W.H. Walker (Canada)	Existing measurements discrepant (Schuman et al., N.S.E. 12, 512, 1962, Harvey et al. (Geneva 1958), AWRE (1965) reported in EANDC-47, p. 14.
432	Pm ¹⁴⁷	$\sigma_{n,\gamma}(E)$	thermal	10 %	II	WBA (Taylor)	Needed for fission poison, neutron energy 0.025 eV. Soughton, 1960 Vienna Conference, 140B.
433	Pm ¹⁴⁷	$\sigma_{n\gamma}(E)$	eV-1 keV	10% in res.integr.	II	WBA(Taylor)	Calculated from parameters, ORNL, Harvey, Geneva Conf. 16 150(58).
434	Pm ¹⁴⁷	Product of yield in thermal fission multiplied by the thermal cross-section; for fission of U ²³³ , U ²³⁵ , Pu ²³⁹ and Pu ²⁴¹		10%	II	U.K. : G.H. Kinchin	For thermal reactors. Separate measurements of yield and cross-section are acceptable. Preliminary results on $\sigma_{n,A}$ and res. int. available; Fenner, AWRE.
435	Pm ¹⁴⁸	$\sigma_{n,\gamma}(E)$	0.01- 500 eV	10% (thermal) and 20% (res. int.)	II	W.H. Walker (Canada)	Very high cross section; accuracy inadequate. Data also required, to lower accuracy, for 5d isomer.
436	Pm ¹⁴⁸	$\sigma_{n,\gamma}(E)$	thermal	10 %	II	WBA (Taylor)	Fission product poison, neutron energy 0.025 eV., PPC, IDO-16665, metastable state cross-section also desired.
437	Pm ¹⁴⁹	$\sigma_{n,\gamma}(E)$	thermal	25 %	II	WBA (Taylor)	Fission product poison, neutron energy 0.025 eV.
438	Pm ¹⁵¹	$\sigma_{n\gamma}(E)$	Thermal	10%	II	AEC(Radkowsky)	$\sigma_{n\gamma}(E)$ at 0.025 eV wanted
439	Sm ¹⁴⁷	$\sigma_{n\gamma}(E)$	Thermal	10%	II	AEC(Radkowsky)	$\sigma_{n\gamma}(E)$ at 0.025 eV wanted
440	Sm ¹⁴⁷	$\sigma_{n,\gamma}$	Thermal	20%	II	W.H. Walker (Canada)	Unpublished data exist but accuracy of thermal cross section is inadequate.
441	Sm ¹⁵⁰	$\sigma_{n,\gamma}(E)$	thermal	10 %	III	WBA (Taylor)	Fission production, neutron energy 0.025 eV.

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442	Sm ¹⁵¹	$\sigma_{nT}(E)$	eV-1 keV	10% in res. integ.	II	WBA(Taylor)	Calculated from parameters. Pattenden, ORNL(62), Res. integ. 3000 b, 7 resonances between -0.015 and 10.45 eV. ORNL, Harvey Geneva Conf. 16, 150(58)5 reson- ances between 1.1 and 6.3 eV.
443	Sm ¹⁵¹	$\sigma_{nY}(E)$	eV-1 keV	10% in res. int.	II	WBA(Taylor)	Calculated from parameters. Pattenden, ORNL(62), Res. integ. 3000 b, 7 resonances between -0.015 and 10.45 eV. ORNL, Harvey, Geneva Conf. 16, 150(58)5 reson- ances between 1.1 and 6.3 eV.
444	Sm ¹⁵³	$\sigma_{n,Y}(E)$	thermal	25 %	III	WBA (Taylor)	Fission production, neutron energy 0.025 eV.
445	Eu ¹⁵¹	$\sigma_{act}(E)$	0.005 to 10 eV	2% thermal 5% above	I	CEA, France (J. Bussac)	9.2 h activity. For use as a "neutron thermometer". Fontenay- aux-Roses, France, will measure thermal absolute cross-section. Tassan, Hellsten and Sailor (<u>Nucl.</u> <u>Sc. and Eng.</u> 10, 169(1961) measured between 0.1 and 1 eV. Parameters for double resonance at 0.321 and 0.460 eV have been derived by fitting the data to the sum of two single-level Breit Wigner ex- pressions.
446	Eu ¹⁵¹	$\sigma_{act}(E)$	0.005 to 10 eV	2% thermal 5% above	II	KFAJ, Germany (T. Springer)	9.2 h activity. For use as a "neutron thermometer". Fontenay- aux-Roses, France, will measure thermal absolute cross-section. Tassan, Hellsten and Sailor (<u>Nucl.</u> <u>Sc. and Eng.</u> 10, 169(1961) measured between 0.1 and 1 eV. Parameters for double resonance at 0.321 and 0.460 eV have been derived by fitting the data to the sum of two single-level Breit-Wigner expressions.
447	Eu ¹⁵¹	$\sigma_{act}(E)$	10 to 250 eV	\pm 5%	II	KFAJ, Germany (T. Springer)	9.2 h activity. For use as a "neutron thermometer". Fontenay- aux-Roses, France, will measure thermal absolute cross-section and resonance integral.
448	Eu ¹⁵¹	$\sigma_{nY}(E)$	eV-1 keV	2%	II	DPS(Dessauer) AEC(Stetson)	2% near thermal, 5% in resonance region
449	Eu ¹⁵³	$\sigma_{nY}(E)$	eV-1 keV	2%	II	DPS(Dessauer) AEC(Stetson)	2% near thermal, 5% in resonance region. No active work, see ANL Newsletter 1-61.
450	Eu ¹⁵⁴	$\sigma_{nT}(E)$	eV-1 keV	10%	II	WBA(Taylor)	Resonance parameters wanted
451	Eu ¹⁵⁴	$\sigma_{nY}(E)$	eV-1 keV	10%	II	WBA(Taylor)	Resonance parameters wanted
452	Eu ¹⁵⁵	$\sigma_{nT}(E)$	eV-1 keV	10%	II	WBA(Taylor)	Resonance parameters wanted
453	Eu ¹⁵⁵	$\sigma_{nY}(E)$	eV-1 keV	10%	II	WBA(Taylor)	Resonance parameters wanted
454	Dy ¹⁶⁴	$\sigma_{act}(E)$	2-100 eV	5%	II	EIR, Switzerland	σ_{act} to 139 min Dy ¹⁶⁵ isomeric state. Measurement in progress in Swit- zerland.
455	Dy ¹⁶⁴	Res. Integral		10%	II	EIR, Switzerland	RI to 139 min Dy ¹⁶⁵ Measurement in progress in Swit- zerland.
456	Er ¹⁶⁷	$\sigma_{n,n'}(E;E')$	210 keV-16 MeV	15%	II	Harry Dia- Lab. (Berman)	Activation of 2.5-s isomer re- quested, low resolution
457	Lu ¹⁷⁵	$\sigma_{act}(E)$	0.005-250 eV	2% thermal 5% above	II	KFAJ, Germany (T. Springer)	For use as a "neutron thermo- meter". No action in Euratom Community. Measurement in progress in Swit- zerland.
458	Lu ¹⁷⁵	$\sigma_{act}(E)$	0.005 to 250 eV	2% thermal 5% above	II	EIR Switzerland	Neutron "thermometer" Measurement in progress in Swit- zerland.
459	Lu ¹⁷⁶	$\sigma_{act}(E)$	0.005-10 eV	2% thermal 5% above	I	CEA, France (J. Bussac)	For use as a "neutron thermometer". No action in Euratom Community. Measurement in progress in Swit- zerland.

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460	Lu ¹⁷⁶	$\sigma_{act}(E)$	0.005-10 eV	2% thermal 5% above	II	KFAJ, Germany (T. Springer)	For use as a "neutron thermometer". No action in Euratom Community Measurement in progress in Switzerland.
461	Lu ¹⁷⁶	$\sigma_{act}(E)$	0.005 to 250 eV	2% thermal 5% above	II	EIR, Switzerland	Neutron "thermometer" Measurement in progress in Switzerland.
462	Lu ¹⁷⁶	$\sigma_{act}(E)$	10-250 eV	5%	I	KFAJ, Germany (T. Springer) EURATOM	For use as a "neutron thermometer". See Roberge and Sailor; Nucl. Sc. and Eng. 7, 502 (1960), No action in Euratom Community.
463	Hf	$\sigma_{n,\gamma}(E)$	eV-1 keV	10% in res. integ.	II	WBA(Taylor)	Calculated from parameters. Havens, Columbia, has data. RPI has data ORNL, see WASH 1048.
464	Hf	$\sigma_{n,\gamma}(E)$	100 eV - 40 keV	10%	III	U.K. : G.H. Kinchin	For fast reactors
465	Hf	$\sigma_{n,\gamma}(E)$	1 keV to 1 MeV	20%	III	BN, Belgium (G. Tavernier)	Fast reactor calculation.
466	Hf	$\sigma_{n,\gamma}(E)$	40 keV-1 MeV	10%	III	U.K. : R.D. Smith	For fast reactors
467	Hf ¹⁷⁶	$\sigma_{n,\gamma}(E)$	eV-1 keV	50% in res. integ.	II	WBA(Taylor)	Calculated from parameters, Havens, Columbia has data, RPI has data, see WASH 1048
468	Hf ¹⁷⁷	$\sigma_{n,\gamma}(E)$	eV-1 keV	10% in res. integ.	I	WBA(Taylor)	Calculated from parameters, Havens, Columbia has data, RPI has data, see WASH 1048.
469	Hf ¹⁷⁸	$\sigma_{n,\gamma}(E)$	eV-1 keV	10% in res. integ.	I	WBA (Taylor)	Calculated from parameters, Havens, Columbia has data, RPI has data, see WASH 1048.
470	Hf ¹⁷⁹	$\sigma_{n,\gamma}(E)$	eV-1 keV	10% in res. integ.	II	WBA (Taylor)	Calculated from parameters. Havens, Columbia, has data. RPI has data, see WASH 1048.
471	Hf ¹⁷⁹	$\sigma_{n,n'}(E; E')$	380 keV-16 MeV	15%	II	Harry Dia. Lab. (Berman)	Activation of 19-s isomer is requested, low resolution
472	Hf ¹⁸⁰	$\sigma_{n,\gamma}(E)$	eV-1 keV	15% in res. integ.	II	WBA(Taylor)	Calculated from parameters. Havens, Columbia, has data, RPI has data, see WASH 1048.
473	W	$\sigma_{n,\gamma}(E)$	1 to 100 keV	20%	II	BN, Belgium (G. Tavernier)	Fast reactor calculation-activation
474	W	$\sigma_{n,\gamma}(E)$	10 keV-50 keV	20%	I	ANL (Loewenstein)	RPI will do.
475	W	$\sigma_{n,\gamma}(E)$	40 keV-150 keV	20%	III	U.W. : J. Butler	Shielding
476	W	$\sigma_{n,\gamma}(E)$	1-2 MeV	25%	III	ORNL (Blizard)	No work in progress.
477	W	$\sigma_{n,G}(E; E_\gamma, \theta)$	2-16 MeV	10%, at least 20%	II	NDL(Donnert) UNG(Kalos) GDF(Kidd) ORNL (Blizard)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n,G}(E; E_\gamma, \theta)$ useful Gamma energy higher than 500 keV
478	W	$\sigma_{n,M}(E; E_\gamma, \theta)$	2-16 MeV	10%, at least 20%	II	NDL(Donnert) UNG(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr., angular resolution better than 10°. No active work.
479	W	$\sigma_{n,n'}(E; E')$	100 keV-2.5 MeV	10%	III	U.W. : J. Butler	Shielding.
480	W	$\sigma_{n,n'}(E; E')$	1-4 MeV	20%	II	ANL (Loewenstein) ORNL (Blizard)	ANL, Smith has data to 1.5 MeV Detailed excitation functions are wanted.

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481	W	$\sigma_{n,n}(E; E')$	4-10 MeV (spot values)	20%	III	U.K. : J. Butler	Shielding. Planned at 10 MeV, Eccleshall, AWRE.
482	W	$\sigma_{n,n}(E; \theta)$	2-16 MeV	10%, 20% accept	II	NDL(Donnert)	Resolution in E , 0.5 MeV, resolution in angle $5-10^\circ$, ave. of $1-\cos\theta$ wanted. A few points of use in normalizing the theory. Use optical model above 5 MeV. No active work in progress.
483	^{184}W	$\sigma_{n,2n}(E)$	7-16 MeV	20% in cross sec- tion	II	Naval Research Lab.(Ferguson)	Energy resolution of 0.5 MeV activation cross section for production of W^{183} wanted. No recent information on status.
484	Re	$\sigma_{n,\gamma}(E)$	1-100 keV	20%	I	ANL (Loewenstein)	ANL, Stupegia, 1963. General Atomic could do below 5 keV.
485	Re	$\sigma_{n,n'}(E)$	1-4 MeV	20%	II	ANL (Loewenstein)	ANL, Smith has data to 1.5 MeV. Detailed inelastic excitation functions desired.
486	^{191}Ir	$\sigma_{n,\gamma} \rightarrow \text{Ir}^{192}$ ($7/4$ d)	2200 m/s	5%	II	Blomberg, Sweden	Present value: 700 ± 200 b For spectrum measurement in reactors. Measurement in progress in Swit- zerland.
487	^{195}Pt	$\sigma_{n,n'}(E)$	260 keV-16 MeV	15%	II	Harry Dia. Lab. (Berman)	Activation of 4.1-D isomer is requested, low resolution, no active work.
488	Au	$\sigma_{n,\gamma}(E)$	40 keV-3 MeV	5% or 2 mb	II	UK, R.D.Smith	Detectors applications. Data available; Barry et al., JNE 18, 491 (1964). Further data available; Harris et al., Nuc. Phys. 69, 37 (1965).
489	Au	$\sigma_{n,\gamma}(E)$	40 keV-3 MeV	2 %	III	UK, R.D.Smith	Detector applications. Data available; Barry et al., JNE 18, 491 (1964). Further data available; Harris et al., Nuc. Phys. 69, 37 (1965).
490	Au	Γ_n, Γ_γ	4.906 eV res.	better than 1 %	II	CEA, France (D. Breton)	Au is being utilized as a standard for resonance integral measurements. CEA Saclay has measured, but accu- racy is not sufficient : <u>EANDC(E)</u> <u>57</u> "u p.138.
491	^{197}Au	$\sigma_{n,\gamma}(E)$	100 eV - 40 keV	5%	II	U.K. : G.H. Kinchin	Fast reactors. Data available; Ashgar et al., Antwerp P 65 and Nucl. Inst., Meth, 24, 445 (1963) but discrepancies still exist. See also Harris et al., Nucl. Phys. 69, 37 (1965).
492	Hg	$\sigma_{n,\gamma}(E)$	1 keV-1 MeV	20%	III	APD(Zweifel)	No work in progress.
493	^{199}Hg	$\sigma_{n,n}(E; E')$	530 keV-16 MeV	15%	II	Harry Dia. Lab. (Berman)	Activation of 42-M isomer requested. low resolution. No active work.
494	^{204}Tl	$\sigma_{n,\gamma}(E)$	thermal	10 %	III	Hanford (Rohrman)	Test feasibility of Tl^{204} production no active work.
495	^{204}Tl	Resonance parameters	1 eV	10 % in reso- nance inte- gral	III	Hanford (Rohr- man)	Test feasibility of Tl^{204} produc- tion in reactors.
496	Pb	$\sigma_{n,\gamma}(E)$	1-50 keV		II	ORNL (Blizard)	Are there any p-wave resonances. Totals well known, estimate from these.
497	Pb	$\sigma_{n,\gamma}(E)$	1 to 100 keV	20 %	II	EN, Belgium (G. Tavernier)	Fast reactor calculation.
498	Pb	$\sigma_{n,\gamma}(E)$	40 keV-50 keV	20%	II	U.V. : J. Butler	Shielding.
499	Pb	$\sigma_{n,G}(E; E_\gamma, \theta)$	6-16 MeV	10% at least 20%	I	NDL(Donnert) UNC(Kalos) GDF(Kidd)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle $5-10^\circ$, angular distribution only if signif. anisotrop., $\sigma_{n,G}(E; E_\gamma)$ useful. Gamma energy higher than 500 keV wanted. Texas Nuclear has data available at wide energy intervals.

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500	Pb	$\sigma_{nM}(E; E', \theta)$	2-8 MeV	10%, at least 20%	III	UNC (Kalos) NDL (Donnert) ORNL (Blizard)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10° , No recent information on status.
501	Pb	$\sigma_{nM}(E; E', \theta)$	8-16 MeV	10%, at least 20%	II	NDL (Donnert) UNC (Kalos) GDP (Kidd) ORNL (Blizard)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10° . ORNL, Stelson has data 12-14 MeV.
502	Pb	$\sigma_{n,n}(E; E')$	6 MeV-10 MeV	50%	II	U.K. : J. Butler	Shielding.
503	Pb	$\sigma_{n,n}(E; E_\gamma)$	$E_n = 2.5 - 14 \text{ MeV}$ $E_\gamma > 1/2 \text{ MeV}$	20%	II	U.K. : J. Butler	Shielding. In progress 3.5 - 8.5 MeV; Perkin, AWRE.
504	Pb	$\sigma_{n,n}(E; \theta)$	5-16 MeV	10%, 20% accept.	II	NDL (Donnert)	Resolution in E , 0.5 MeV, resolution in angle 5-10°, ave. $1-\cos\theta$ wanted. Use optical model. A few points of use in normalizing theory.
505	Ph	$\sigma_{n,n}(E)$	threshold-10 MeV	20%	II	U.K. : J. Butler	Shielding. In progress, Mather, AWRE.
506	Bi	$\sigma_{n,\gamma}(E)$	1-30 keV	25%, at worst 5 mb	II	ORNL (Blizard)	At low energies resonance parameters may suffice, ORNL, Gibbons, 5-100 keV.
507	Th	$\sigma_{n,n}(E; E')$	1-4 MeV	5%	II	AI (Cohen) ANL (Smith)	20% accuracy in dif. cross section ANL, Smith up to 1.6 MeV, LASL, Day has some $\sigma_{n,G}(E; E_\gamma, \theta)$ results AWRE Batchelor has results up to 5 MeV.
508	Th	$\sigma_{n,n}(E; \theta)$	1-5 MeV	10%, 15% useful	III	ANL (Loewenstein)	Error: average in $1-\cos\theta$ ANL, Smith up to 1.5 MeV.
509	Th^{232}	$\sigma_{n,n}(E; E')$	100 keV to 10 MeV	10%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors. No action in Euratom Community.
510	Th^{232}	$\sigma_{n,n}(E; E')$	100 keV to 10 MeV	10%	II	CNEN, Italy (F. Pierantoni)	For intermediate-fast reactors. No action in Euratom Community.
511	Th^{232}	$\sigma_{n,n}(E; E, \theta)$	Threshold-5 MeV	10%	II	U.K. : R.D. Smith	For fast reactors. Planned to 2 MeV; Ferguson, AERE. In progress; Batchelor et al., AWRE.
512	Th^{232}	$\sigma_{n,n}(E; E, \theta)$	5 - 8 MeV and 14 MeV	40%	II	U.K. : R.D. Smith	For fast reactors. Planned to 2 MeV; Ferguson, AERE. In progress; Batchelor et al., AWRE.
513	Th^{232}	$\sigma_{n,n}(E; E, \theta)$	8 MeV - 10 MeV	40%	III	U.K. : R.D. Smith	For fast reactors.
514	Th^{232}	$\sigma_{n,n}(E; \theta)$	100 keV to 10 MeV		II	CNEN, Italy (F. Pierantoni)	$1-\cos\theta$ to $\pm 10\%$. Measurements from 2 to 7 MeV : Batchelor, EAEDC (UK) "E" (1971). No action in Euratom Community.
515	Th^{232}	$\sigma_{n,2n}(E)$	Threshold to 10 MeV	10%	I	KFAJ, Germany (Gerwin)	Economy of Th-fuel cycles. No action in Euratom Community.
516	Th^{232}	$\sigma_{n,f}(E)$	Threshold-5 MeV	2%	III	U.K. : R.D. Smith	For fast reactors.
517	Th^{232}	$\sigma_{n,f}(E)$	Threshold to 10 MeV	$\pm 2\%$	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.

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513	Th^{232}	$\sigma_{n,\gamma}(E)$	up to 1 MeV.	5%	I	BBC/Krupp, Germany, (Gehrke)	Resonance analysis completed up to 100 eV at Harwell (average $\bar{\nu}$ obtained is less than that reported in BNL-325). Columbia has obtained $\bar{\nu}$ for resonances up to about 3.5 keV (values of $\bar{\nu}$ are assumed in the analysis but these are not critical). No action in Euratom Community.
519	Th^{232}	$\sigma_{n,\gamma}(E)$	20 eV-2 keV	10%	II	EIR, Switzerland	Resonance parameters desired.
520	Th^{232}	$\sigma_{n,\gamma}(E)$	500 eV-2 keV	5% or better	I II	ANL (Okrent) ORNL (Perry) Westinghouse (Harris) ANL (Okrent)	Garg, Columbia, res. par. to 4 keV Harwell, Utley, AERE-PR/NP-2 Harwell, Ferguson ANL 6792
521	Th^{232}	$\sigma_{n,\gamma}(E)$	2 keV-1 MeV	5%	I		Discrepancies below 40 keV, resonance parameters highly desirable, Garg, Columbia, res. par. to 4 MeV. Harwell, Utley, AERE-PR/NP-2, ANL, Smith, ANL 6792, Harwell, Ferguson ANL 6792
522	Th^{232}	$\sigma_{n,\gamma}(E)$	40 keV - 1 MeV	2%	II	U.K. : R.D. Smith	For fast reactors. Difficult to attain such high accuracy.
523	Th^{232}	$\sigma_{n,\gamma}(E)$	1 MeV-10 MeV	10%	I	KFAJ, Germany (Gerwin)	No action in Euratom Community.
524	Th^{232}	$\sigma_{n,\gamma}(E)$	1 MeV-10 MeV	10%	II	CNEN, Italy (F.Pierantoni)	No action in Euratom Community.
525	Th^{232}	$\sigma_{n,\gamma}(E)$	1 MeV - 10 MeV	10%	II	U.K. : R.D. Smith	For fast reactors
526	Pa^{231}	$\sigma_{n,f}(E)$	Threshold-5 MeV	5%	II	U.K. : R.D. Smith	Detector applications. Planned; White, AWRE. Geel making foils.
527	Pa^{231}	$\sigma_{n,f}(E)$	5 MeV - 10 MeV	20%	II	U.K. : R.D. Smith	Detector applications.
528	Pa^{233}	$\sigma_{n,D}$	up to 0.5 keV	10%	I II	BBC/Krupp, Germany (Gehrke) KEMA, Netherlands (Went)	No action in Euratom Community
529	Pa^{233}	$\sigma_{n,D}$	2200 m/s	5%	II	SRE, Germany (W. Oldekop)	Some measurements done at MTR. No action in Euratom Community.
530	Pa^{233}	$\sigma_{n,D}(E)$	1 keV to 1 MeV	\pm 20%	II	CEA, France (C.P. Zaleski)	No action in Euratom Community.
531	Pa^{233}	$\sigma_{n,\gamma}(E)$	0.01- 500 eV	5% (thermal) and 10% (res. int.)	II	C.H. Westcott (Canada)	Recent MTR and ORNL work almost satisfies this request.
532	Pa^{233}	$\sigma_{n,\gamma}(E)$	Thermal- 2 keV	10%	II	EIR, Switzerland	Thorium cycle
533	Pa^{233}	$\sigma_{n,\gamma}(E)$	500 eV-1 MeV	50%	II	AI(Cohen)	To within a factor of 2, Intrinsic sample radioactivity precludes measurements by means available now - Phillips, Simpson has $\sigma_{n,T}$ to 1 keV
534	Pa^{233}	$\sigma_{n,\gamma}(E)$	0.5 keV to 10 MeV	10%	I	CNEN, Italy (F.Pierantoni)	No action in Euratom Community.
535	Pa^{233}	Resonance integral		10%	I	SRE, Germany (W. Oldekop) BBC/Krupp, Germany (Gehrke)	No action in Euratom Community.

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536	Pu ²³³	Γ_n, Γ_γ	up to 100 eV	10%	II	KEMA, Netherlands (Went)	Preliminary results by Simpson and Schuman in Proc. of Symp. on neutron time-of-flight methods (p.85). No action in Euratom Community.
537	U	$\frac{1}{\eta} \frac{d\eta}{dt}$ as a function of	Thermal region	5% or better	I	CEA, France (O. Tretiakoff)	No action in Euratom Community.
538	UO ₂	$\sigma_{n,n}(E, E')$	thermal region		II	KFAJ, Germany (Gerwin)	For thermal reactors. Thermal elastic and inelastic scattering from 0 to 1000 °C. No action in Euratom Community.
539	UO ₂	$\sigma_{n,n}(E; E', \theta)$	Thermal region 20°C - 1500 °C	See comments	II	U.K. : G.H. Kinchin	Thermal scattering law. Measured 200°C to 1500°C but not analysed.
540	UO ₂	$\sigma_{n,n}(E; E', \theta)$	Thermal region 1500°C-2800°C	See comments	III	U.K. : G.H. Kinchin	Thermal scattering law. Theoretical extrapolations to 2800°C may be possible.
541	UC	$\sigma_{n,n}(E, E')$	Thermal region		II	EURATOM (Ispra) KFAJ, Germany (Gerwin)	For thermal reactors. No action in Euratom Community.
542	U ²³³	$\sigma_{n,\gamma}(E)$	15 eV-200 eV	$\pm 2\%$ (E - 2E)	TT	U.K. : G.H. Kinchin	For thermal reactors. Measurements complete; Brooks data being analysed by Sowerby, AERE. Repeat experiment planned. Requirement probably met by ORNL fast chopper data.
543	U ²³³	$\sigma_{n,\gamma}(E)$	60 eV-200 eV	$\pm 1\%$ (E-2E)	TT	U.K. : G.H. Kinchin	For thermal reactors. Planned 1 eV to 35 keV after Pu ²³⁹ and U ²³⁵ , James, AERE. Requirement probably met by ORNL fast chopper data.
544	U ²³³	$\sigma_{n,\gamma}(E)$	1 keV-2 keV	$\pm 3\%$ (E-2E)	II	U.K. : G.H. Kinchin	For thermal reactors. Planned; Utley. Requirement probably met by ORNL fast chopper data.
545	U ²³³	$(\eta_0 - 1)\sigma_{n,A}$ relative to σ_n	200 m/s	$\pm 2\%$	TT	U.K. : G.H. Kinchin	Oscillator ratio measurement needed.
546	U ²³³	$\sigma_{n,\gamma}(E)$	Thermal region	$\pm 1\%$	TTT	U.K. : G.H. Kinchin	For long term improvement of $\sigma_{n,A}$
547	U ²³³	$\sigma_{n,\gamma}(E)$	Thermal to 10 eV	1%	I	KFAJ, Germany (Gerwin) KEMA, Netherlands (Went)	For intermediate-fast reactors.
548	U ²³³	$\sigma_{n,\gamma}(E)$	Thermal-10 eV	1%	I	AEC(Hemmig) AI(Cohen) ANL(Spinrad) ORNL(Kasten) ORNL(Perry) KAPL(Francis) Bettis(Harris)	Alpha and η also desired with above error, ORNL, Harvey, Rensselaer Symposium 61, $\sigma_{n,T}(E)$ cross section to 30 eV, η good to 3 eV. Adler Trans. ANS 7, 86, res. par.; Saclay, Salzburg Conf. SM 60/16, Analysis to 25 eV (Niefenecker).
549	U ²³³	$\sigma_{n,\gamma}(E)$	Thermal- 2 keV	5%	II	EIR, Switzerland	Thorium cycle.
550	U ²³³	$\sigma_{n,\gamma}(E)$	10 eV to 1 keV	3%	I	KFAJ, Germany (Gerwin) KEMA, Netherlands (Went)	For intermediate-fast reactors.
551	U ²³³	$\sigma_{n,\gamma}(E)$	10 eV-1 keV	3%, at worst 5%	I	ORNL(Macpherson) West.(Harris) KAPL(Francis)	Alpha and η also desired. Adler, Trans. ANS 7, 86, res. par. Saclay, Niefenecker, Salzburg Conf. SM 60/16, to 25 eV.

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552	U α	$\sigma_{n\gamma}(E)$	1-30 keV	2% in T	I	ANL(Okrent) ORNL(Weinberg)	Either $\sigma_{n\gamma}(E)$ or α wanted, Saclay, Niefenecker, Salzburg Conf. SM 60/16 to 25 eV, LASL, Diven could do.
553	^{232}U	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	1 keV-40 keV	5%	II	U.K. : R. D. Smith	For fast reactors.
554	^{232}U	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	1 keV-10 MeV	2%	III	U.K. : R. D. Smith	For fast reactors.
555	^{233}U	$\sigma_{n,\gamma}(E)$	1 keV to 10 MeV	5%	I	KFAJ, Germany (Gerwin)	Uttley, Harwell, plans to measure σ_{nT} and study correction required to obtain σ_{nA} . Saclay is measuring σ_{nT} up to 20 keV.
556	^{233}U	$\sigma_{n,\gamma}(E)$	1 keV to 10 MeV	5%	II	CNEN, Italy (V. Benzi)	Uttley, Harwell, plans to measure σ_{nT} and study correction required to obtain σ_{nA} . Saclay is measuring σ_{nT} up to 20 keV.
557	^{233}U	$\sigma_{n\gamma}(E)$	30 keV-3 MeV	0.5% in T	I	AI(Cohen) ORNL(Weinberg)	Either $\sigma_{n\gamma}(E)$ or α wanted
558	^{233}U	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	40 keV - 100keV	5%	II	U.K. : R.D. Smith	For fast reactors.
559	^{233}U	$\sigma_{n\gamma}(E)$	3 - 7 MeV	2% in T	I	ANL(Okrent) ORNL(Weinberg)	Either $\sigma_{n\gamma}(E)$ or α wanted
560	^{233}U	$\sigma_{n\gamma}(E; E')$	MeV-7 MeV	10%	II	ANL(Okrent) ANL(Spinrad)	The relative inelastic spectrum above the ^{233}U threshold should be given to 5-10%. No action.
561	^{233}U	$\sigma_{n,n^*}(E; E')$	At 10 MeV	10%	II	CNEN, Italy (V. Benzi)	No action in Euratom Community.
562	^{233}U	$\sigma_{n,n^*}(E; E', Q)$	Threshold-5MeV	20%	II	U.K. : R.D. Smith	For fast reactors
563	^{233}U	Res. par.	Thermal-100 eV	10%	I	ANL(Avery) West.(Harris) KAPL(Francis)	Multilevel parameter where feasible, statistical distribution desirable in eV range. Adler, <u>Trans. A.I.N.S.</u> 2, 86, res. par.
564	^{233}U	$\Gamma_f, \Gamma_n, \Gamma_\gamma$	up to 300 eV	10%	I	BBC/Krupp, Ger- many (Gieszer) KEMA, Netherlands (Went)	Thermal breeding systems. No action in Euratom Community.
565	^{233}U	$\sigma_{n,n}(E, \theta)$	0.5 keV to 10 MeV	10%	II	CNEN, Italy (V. Benzi)	No action in Euratom Community.
566	^{233}U	$\sigma_{n,2n}(E)$	1 - 15 MeV	20%	II	LASL (Rosen)	No results.
567	^{233}U	$\sigma_{n,2n}(E)$	at 10 MeV	10%	II	CNEN, Italy (V. Benzi)	No action in Euratom Community.
568	^{233}U	$\sigma_{n,f}$	2200 m/e	10%	II	U.U. : C.U. Vinchin	For thermal reactors.
569	^{233}U	$\sigma_{nf}(E)$	Thermal	1% want 0.5 %	I	AEC(Hemmig)	Cross section wanted at 0.025 eV Niefenecker, Saclay, <u>J. Phys. Rad.</u> 24, 254.
570	^{233}U	$\sigma_{n,f}(E)$	Thermal - 2 keV	5%	II	EIR, Switzerland	Thorium cycle.
571	^{233}U	$\sigma_{n,f}(E)$	Thermal-30 keV	2%	II	ORNL(Kasten) ANL(Okrent) APD(Zweifel)	Above 700 eV, 3% error. Niefenecker, Saclay, <u>J. Phys. Rad.</u> 24, 254.

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572	U ²³³	$\sigma_{n,f}(E)$	Thermal to 10 MeV	2%	I	KFAJ, Germany (Gerwin)	Data available above 30 keV; Allen and Ferguson, Harwell. Measurements are in progress from 4 eV to 40 keV at Harwell (James) and are planned from 10 keV at AWRE (White). CEA Saclay measured between 1 and 35 eV : EANDC(E)57 "U" p. 115. No action in Euratom Community.
573	U ²³³	$\sigma_{n,f}(E)$	Thermal to 10 MeV	2%	II	CNEN, Italy (V. Benzi)	Data available above 30 keV; Allen and Ferguson, Harwell. Measurements are in progress from 4 eV to 40 keV at Harwell (James) and are planned from 10 keV at AWRE (White). CEA Saclay measured between 1 and 35 eV : EANDC(E)57 "U" p. 115. No action in Euratom Community.
574	U ²³³	$\sigma_{n,f}(E)$	1 eV - 5 eV	40% (F-2F)	II	U.K. : G.H. Kinchin	For thermal reactors. Data available up to 70 eV Brooks, AEREM 1670 (1966). See also Niefenecker SM 60/16.
575	U ²³³	$\sigma_{n,f}(E)$	5 eV - 15 eV	40% (F-2F)	I	U.K. : G.H. Kinchin	For thermal reactors. In progress, James AERE. Completion delayed due to increased priority on Pu ²³⁹ and U ²³⁵ . Provisional data available 5 eV-640 eV relative accuracy 2%.
576	U ²³³	$\sigma_{n,f}(E)$	15 eV - 60 eV	50% (F-2F)	I	U.K. : G.H. Kinchin	For thermal reactors. In progress, James AERE. Completion delayed due to increased priority on Pu ²³⁹ and U ²³⁵ . Provisional data available 5 eV-640 eV relative accuracy 2%.
577	U ²³³	$\sigma_{n,f}(E)$	60 eV-200 eV	70% (F-2F)	I	U.K. : G.H. Kinchin	For thermal reactors. In progress, James AERE. Completion delayed due to increased priority on Pu ²³⁹ and U ²³⁵ . Provisional data available 5 eV-640 eV relative accuracy 2%.
578	U ²³³	$\sigma_{n,f}(E)$	60 eV-40 keV	50%	II	U.K. : R.D. Smith	For fast reactors. In progress, James AERE. Completion delayed due to increased priority on Pu ²³⁹ and U ²³⁵ . Provisional data available 5 eV-640 eV relative accuracy 2%. Data 4% at 24 keV, Perkin et al JNE 12, 423 (1965).
579	U ²³³	$\sigma_{n,f}(E)$	200 eV-40 keV	130% (F-2F)	I	U.K. : G.H. Kinchin	For thermal reactors. In progress, James AERE. Completion delayed due to increased priority on Pu ²³⁹ and U ²³⁵ . Provisional data available 5 eV-640 eV relative accuracy 2%. Data 4% at 24 keV, Perkin et al JNE 19, 423 (1965).
580	U ²³³	$\sigma_{n,f}(E)$	40 keV - 1 MeV	1%	II	U.K. : R.D. Smith	For fast reactors. In progress, White AWRE. Data available to 500 keV; White, SM 60/14.
581	U ²³³	$\sigma_{n,f}(E)$	1 MeV - 5 MeV	1-10%	II	U.K. : R.D. Smith	For fast reactors. In progress, White, AWRE. Data available to 500 keV; White SM 60/14.
582	U ²³³	\bar{v}	Thermal region	1%	III	U.K. : G.H. Kinchin	For thermal reactors. Data available to ~ 1%; Sowerby, AERE, SM 60/44 and AERE-R-3941.
583	U ²³³	\bar{v} (E)	10 eV-1 keV	3% at worst 5% in η	I	AEG(Hemmig) AI(Cohen) ANL(Spinrad) ORNL(Kasten) ORNL(Perry)	IASL extrapolate Hopkins Nucl. Phys. 48, 433.
584	U ²³³	\bar{v} (E)	10 eV to 1 keV	3% in n	II	KFAJ, Germany (Gerwin) KEMA, Netherlands (Went)	For intermediate-fast reactors.

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585	U 233	$\bar{\nu}$ (E)	1-30 keV	2% in Γ	I	AEC(Hemmig) AI(Cohen) ANL(Spinrad) ORNL(Kasten) ORNL(Perry)	LASL, Hopkins has published data.
586	U ²³³	$\bar{\nu}$ (E)	1 keV to 30 keV	2% in Γ	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
587	U ²³³	$\bar{\nu}$ (E)	1 keV to 10 MeV	1%	II	CNEN, Italy (V. Benzi)	No action in Euratom Community.
588	U ²³³	$\bar{\nu}$ (E)	30 keV to 10 MeV	0.5% in Γ	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
589	U ²³³	$\bar{\nu}$ (E)	40 keV - 5 MeV	1%	II	U.K. : R.D. Smith	For fast reactors. Data available, Mather et al. Nucl. Phys. 66, 149 (1965). Accuracy of $\bar{\nu}$ (cf) unknown.
590	U 233	$\bar{\nu}$ (E)	2-7 MeV	2% in Γ	I	AEC(Hemmig) AI(Cohen) ANL(Spinrad) ORNL(Kasten) ORNL(Perry)	LASL, Diven, AWRE, Moat.
591	U ²³³	$\bar{\nu}$ (E)	7-14 MeV			LRL (Howerton)	Inconsistent results to date obscure energy dependence LASL, Diven, AWRE, Moat; data at 14 MeV good.
592	U ²³³	η	???	???	II	U.K. : G.H. Winchin	To check Macklin's value, NSE 8, (1960).
593	U ²³³	η (E)	Thermal-2 keV	2%	II	EIR, Switzerland	Thorium cycle
594	U ²³³	η (γ)	0.005 eV-1 eV	???	I	U.K. : G.H. Winchin	For thermal reactors. Brooks data satisfy request from 0.04 eV to 11 eV, further measurements planned, Sowerby, AERE.
595	U ²³³	η (γ)	1 eV - 100 eV	???	I	U.K. : G.H. Winchin	For thermal reactors. Brooks data satisfy request from 0.04 eV to 11 eV, further measurements planned, Sowerby, AERE.
596	U ²³⁴	σ_{nT} (E)	Thermal-1 keV	5% in Γ_n	III	BNL(Levine)	10% in Γ_γ (57) 21 resonances between 0 and 369 eV known, but not to detail desired.
597	U ²³⁴	σ_{nT} (E)	1-16 MeV	10%	II	UNG(Kalos) NDL(Donnert)	Use optical model to get σ_{nT}
598	U ²³⁴	$\sigma_{n\gamma}$ (E)	Thermal-1 keV	5% in Γ_γ	III	BNL(Levine)	Resonance between 0 and 369 eV known, but not to detail desired.
599	U ²³⁴	$\sigma_{n,\gamma}$ (E)	Thermal-2 keV	20%	II	EIR, Switzerland	Thorium cycle.
600	U ²³⁴	$\sigma_{n,\gamma}$ (E)	Thermal to 10 MeV	10%	II	CNEN, Italy (V. Benzi)	No action in Euratom Community.
601	U ²³⁴	$\sigma_{n,\gamma}$ (E)	Thermal to 10 MeV	\pm 30%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
602	U ²³⁴	$\sigma_{n,\gamma}$ (E)	1 eV-100 keV	30% or better	III	UNG (Kalos) NDL (Donnert)	Spectrum of capture gammas desired. No work in progress, Diven, LASL, could do.
603	U ²³⁴	$\sigma_{n\gamma}$ (E)	1 keV-10 MeV	15%	III	AI(Cohen) ANL (Loewenstein)	

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604	U^{234}	$\sigma_{n,\gamma}(E)$	100 keV-16 MeV	30% or better	II	UNC(Kalos) NDL(Donnert)	No work in progress.
605	U^{234}	$\sigma_{n,M}(E; E_\gamma, \theta)$	250 keV-16 MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif anisotr., angular resolution better than 10° .
606	U^{234}	$\sigma_{n,G}(E; E_\gamma, \theta)$	500 keV-16 MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle $5-10^\circ$, angular distribution only if signif. anisotr., $\sigma_{n,G}(E; E_\gamma)$ useful, Gamma energy higher than 500 keV
607	U^{234}	$\sigma_{n,n}(E; \theta)$	250 keV-16 MeV	10%, 20% accept.	III	UNC(Kalos) NDL(Donnert)	Resolution in E 0.5 MeV, resolution in angle $5-10^\circ$, ave. $1-\cos\theta$ to above error. Use optical model above 6 MeV.
608	U^{234}	$\sigma_{n,3n}(E)$	1 - 15 MeV	20 %	II	IASL (Rosen)	No results.
609	U^{234}	$\sigma_{n,f}(E)$	Threshold-6MeV	2%	III	U.K. : R.D. Smith	Detector applications. In progress, White, AERE. Data available to 500 keV, White, SM 60/14.
610	U^{234}	$\sigma_{n,f}(E)$	Threshold to 10 MeV	2%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
611	U^{234}	$\bar{\nu}(E)$	Threshold to 10 MeV	15%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
612	U^{234}	$\bar{\nu}$	100 keV	10%	III	AI (Cohen) ANL (Loewenstein)	One point above threshold wanted
613	U^{234}	$\bar{\nu}(E)$	500 keV-14 MeV			LRL(Howerton)	Inconsistent results to date obscure energy dependence
614	U^{235}	$\sigma_{n,A}(E)$	0.01 eV-1 eV	1.5% (E=1.5eV)	I	U.K. : G.H. Kinchin	For thermal reactors. Sowerby, AERE, has reassessed the data of Brooks - <u>AERE M1670</u> (1966) σ_{nT} above 5 eV, Rainwater et al, Conf. Antwerp. 95.
615	U^{235}	$\sigma_{n,A}(E)$	1 eV-15 eV	5%(E=2eV)	I	U.K. : G.H. Kinchin	For thermal reactors. Sowerby, AERE, has reassessed the data of Brooks - <u>AERE M1670</u> (1966) σ_{nT} above 5 eV, Rainwater et al, Conf. Antwerp. 95.
616	U^{235}	$\sigma_{n,A}(E)$	15 eV-100 eV	6%(E=2eV)	I	U.K. : G.H. Kinchin	For thermal reactors. Sowerby, AERE, has reassessed the data of Brooks - <u>AERE M1670</u> (1966) σ_{nT} above 5 eV, Rainwater et al, Conf. Antwerp. 95.
617	U^{235}	$\sigma_{n,S}(E)$	Thermal region	10%	III	U.K. : G.U. Kinchin	For long term improvement of $\sigma_{n,A}$
618	U^{235}	$N_g(E; E_\gamma)$	Thermal	10%	III	U.K. : R.D. Smith	For study of activation and heat release in core.
619	U^{235}	$\sigma_{n,\gamma}$	2200 m/s	0.5%	I	EURATOM, Ispra (V. Ralevski)	No action in Euratom Community.

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620	U^{235}	$\sigma_{n,\gamma}(E)$	Thermal to 10 eV	1%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
621	U^{235}	$\sigma_{n,\gamma}(E)$	Thermal - 2 keV	5%	I	EIR, Switzerland	Thermal reactor criticality
622	U^{235}	$\sigma_{n,\gamma}(E)$	Thermal-30 keV	3%	I	ANL(Okrent) ANL(Spinrad) APD(Zweifel) KAPL(Francis) West.(Harris)	Either $\sigma_{n,\gamma}(E)$ or α wanted, Michaudon, Saclay, Thesis U. Paris 1964, Uttley; Harwell <u>AERE-M-1272</u> (1963).
623	U^{235}	$\sigma_{n,\gamma}(E)$	10 eV to 1 keV	3%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
624	U^{235}	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	1 keV-40 keV	2%	III	U.K. : R. D. Smith	Better accuracy than 5% would be acceptable.
625	U^{235}	$\sigma_{n,\gamma}(E)$	1 keV to 10 MeV	5%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
626	U^{235}	$\sigma_{n,\gamma}(E)$	200 eV to 10 keV	5%	I	CEA, France (C.P. Zaleski)	Resolution of 10 ns/m needed. 5- 200 keV: KFK plans measurements. Brooks, Harwell, measured σ_f and η from 0.4 eV to 300 eV: EANDC(UK)35 "L". Smith, MTR, has data to 10 eV and de Saussure and Weston, ORNL, have α -measurements from 4 eV to 2 keV and 5 to 1000 keV. Hopkins, Diven (NSE, 12, 169, 1962) give α values from 30 to 1000 keV. No action in Euratom Community.
627	U^{235}	$\sigma_{n,\gamma}(E)$	30-150 keV	4% in $\sigma_{n,\gamma}(E)$	II	AI(Fillmore)	α desired too, Harwell, Uttley, <u>AERE-M-1272</u> (1963), ORNL, <u>WASH-1044</u> .
628	U^{235}	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	40 keV - 100keV	5%	I	U.K. : R.D. Smith	For fast reactors. Required accuracy difficult using current experimental techniques.
629	U^{235}	$\sigma_{n,\gamma}(E)$	150 keV- 7 MeV	5%, at worst 10%	II	ANL(Okrent) ANL(Spinrad) APD(Zweifel)	α desired too, ORNL, <u>WASH-1044</u>
630	U^{235}	$\sigma_{n,G}(E; E_\gamma, \theta)$	500 keV-16 MeV	10% at least 20%	III	NDL(Donnert) UNC(Kalos)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotro., $\sigma_{nG}(E; E_\gamma)$ use ful. Gamma energy higher than 500 keV
631	U^{235}	$\sigma_{nM}(E; E'_\gamma, \theta)$	1-2 MeV	10% at least 20%	III	NDL(Donnert)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if sig- nif. anisotro., angular resolu- tion better than 10°
632	U^{235}	$\sigma_{nM}(E; E'_\gamma, \theta)$	2-16 MeV	10% at least 20%	II	NDL(Donnert) UNC(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotro., angular resolution better than 10°
633	U^{235}	$\sigma_{n,n'}(E)$	From threshold	Less than 20%	I	H. Heggblom, Sweden	For fast reactor calculations
634	U^{235}	$\sigma_{n,n'}(E; E')$	Threshold to 1 MeV	5%	I	CEA, France (C.P. Zaleski) EDF, France	$\Delta E = 20$ to 50 keV & $\Delta E' \approx 50$ keV (de- pending on levels) required. Cranberg (<u>LA-2127</u> , 1959): data at 0.55, 1 and 2 MeV. A.B. Smith, ANL, is doing low energy region and work is underway at Harwell from threshold to 2.5 MeV. No action in Euratom Community.
635	U^{235}	$\sigma_{n,n'}(E; E')$	1 to 5 MeV	10%	II	CEA, France (C.P. Zaleski) EDF, France	$\Delta E = \Delta E' \approx 50$ keV required. Cranberg has data at 1 and 2 MeV (<u>LA-2127</u> , 1959) and Harwell is measuring up to 2.5 MeV. No action in Euratom Community.
636	U^{235}	$\sigma_{n,n'}(E; E')$	5 to 15 MeV	15%	II	CEA, France (C.P. Zaleski) EDF, France	$\Delta E \approx 100$ keV and $\Delta E' \approx 50$ keV required. No action in Euratom Community.

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637	U ²³⁵	$\sigma_{n,n}(E; E')$	6-14 MeV	5%	I	LASL(Goad) IRL(Howerton)	One measurement near 10 MeV would help.
638	U ²³⁵	$\sigma_{n,n}(E; E'; \theta)$	Threshold-4MeV	20%	I	U.K. : R.D. Smith	For fast reactors. In progress, to 1.5 MeV Ferguson, AERE. Planned, Batchelor, AERE.
639	U ²³⁵	Res. par.	Thermal-100 eV	10%	I	ANL(Avery) WBA(Harris) KAPL(Francis)	Multilevel parameter where feasible, statistical distribution desirable in keV range. Saclay, Michaudon, Thesis U. Paris, 1964; Adler, Trans. ANS 7, 86, res. par.
640	U ²³⁵	Resonance parameters $\Gamma_f, \Gamma_n, \Gamma_Y$	50 to 200 eV	better than 10%	II	KFK, Germany (J.J. Schmidt) BBC/Krupp, Germany (Gieszer)	Γ_n -values for all resolved resonances between 50 and 114 eV. Γ_f values for only part of these resonances evaluated by Michaudon-Saclay (to be published in Nucl. Phys.)
641	U ²³⁵	$\Gamma_f, \Gamma_n, \Gamma_Y$	100 to 200 eV	10%	I	CEA, France (C.P. Zaleski) EDF, France	Γ_n -values for all resolved resonances between 50 and 114 eV, Γ_Y and Γ_f values for only part of these resonances evaluated by Michaudon-Saclay (to be published in Nucl. Phys.)
642	U ²³⁵	Capture resonance integral		10%	II	Canada	AECL has epicadmium measurement in reactor spectrum. (EANDC(Can) 20). Somme confirmation is available (see Trans. Am. Soc. L, 78 (1964)).
643	U ²³⁵	$\sigma_{n,n}(E; E')$	100 keV-6 MeV	10%	II	ANL(Spinrad) ANL(Okrent) IRL(Howerton)	20% in initial and final energy resolution would be useful, relative scattered yield above U ₂₃₈ fission threshold of interest. ANL, Smith working below 1.5 MeV.
644	U ²³⁵	$\sigma_{n,n}(E; \theta)$	50 keV - 1 MeV	10%	I	U.K. : R.D. Smith	For fast reactors. In progress, Ferguson, AERE. Some data available 0.5 to 1.5 MeV, Smith <u>WASH 1052</u> , 1 (1964)
645	U ²³⁵	$\sigma_{n,n}(E; \theta)$	1-16 MeV	10%, 20% useful	II	ANL(Okrent) UNC(Kelso) NDI(Donnert) LASL(Rosen)	Cross section and ave. 1-cosθ wanted, energy resolution 1 MeV. ANL, Smith up to 1.5 MeV LASL desires $\sigma_{n,n}(E)$ only 1-7 MeV
646	U ²³⁵	$\sigma_{n,f}$	2200 m/s	0.5%	I	EURATOM, Ispra (V. Raievski)	Maslin, EANDC(UK)34 "L" (1964) has measured 574 ± 6 b. Fraysse, Euratom, has measured, too. No action in Euratom Community.
647	U ²³⁵	$\sigma_{n,f}$	Thermal-2 keV	5%	I	EIR, Switzerland	Thermal reactor criticality
648	U ²³⁵	$\sigma_{n,f}(E)$	Thermal to 100 keV	2%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
649	U ²³⁵	$\sigma_{n,f}(E)$	0.01 - 500 eV	1% (thermal) and 5-10% (res. int.)	II	G.H. Westcott (Canada)	Thermal value known to this accuracy σ_n and σ_f . Bowman data (UCRL-6926) casts doubt on accepted values at higher energies.
650	U ²³⁵	$\sigma_{n,f}(E)$	1 eV-40 keV	3% (?-?)	I	U.K. : G.H. Winchin R. D. Smith	For thermal and fast reactors. Data available 1-70 eV; Brooks, <u>AERE-M-1670</u> (1966) Data to 2.5% at 24 keV, Perkin et al., <u>JNE 19</u> , 423 (1965). In progress up to 35 keV, James, AERE; also in progress $\sigma_{n,f}$ 50 eV-30 keV, Patrick, AERE
651	U ²³⁵	$\sigma_{n,f}(E)$	10 keV-8 MeV	1 %	I	ORNL (Maienschein) LASL (Hansen)	Present uncertainty in $\sigma_{n,f}(E)$ of 4 % is reflected in multiplication factor, data is useful as secondary standard in MeV range, no work to requested accuracy.
652	U ²³⁵	$\sigma_{n,f}(E)$	40 keV-1 MeV	2 %	I	UK, R.D. Smith	For fast reactors. Some data available; White, <u>JNE 19</u> , 325 (1965).

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653	U^{235}	$\sigma_{n,f}(E)$	40 keV - 1 MeV	1%	III	U.K. : R.D. Smith	For fast reactors. 0.5% accuracy is desirable but currently unobtainable.
654	U^{235}	$\sigma_{n,f}(E)$	100 keV to 10 MeV	5%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
655	U^{235}	$\sigma_{n,f}(E)$	1 MeV - 5 MeV	2%	I	U.K. : R.D. Smith	For fast reactors. Data available relative to $\sigma_{n,n}[H]$; White, Proc. 3rd Geneva Conf. (1964).
656	U^{235}	$N_f(E; E')$	40 keV - 10 MeV	0.01/E' Up to 10 MeV	I	U.K. : R.D. Smith	For fast reactors. Data available, Barnard et al., Nucl. Phys. 71, 228 (1965)
657	U^{235}	$\bar{\nu}$	Thermal region	1/2%	III	U.K. : G.H. Kinchin	For thermal reactors. Data available to 0.6% Sowerby - SM 60/44 and <u>AERE-R-3941</u> .
658	U^{235}	η	2200 m/s	0.5%	I	EURATOM, Ispra (V. Ralevski)	No action in Euratom Community.
659	U^{235}	η_0	2200 m/s	1/2%	III	U.K. : G.H. Kinchin	To check Macklin is value <u>NSE 8</u> , (1960).
660	U^{235}	$\eta(E)$	Thermal-2 keV	2%	I	EIR, Switzerland	Thermal reactor criticality
661	U^{235}	η	Thermal-50 keV	2%	II	ANL(Spinrad)	ORNL, Weston, Trans. ANG, 7, 270 Harwell, Uttley, <u>AERE-M-1272</u> (1963)
662	U^{235}	$\eta(E)/\eta_0$	0.01eV-0.2 eV	1/2% (20 meV steps)	III	U.K. : G.H. Kinchin	For temperature coefficient work.
663	U^{235}	$\eta(E)/\eta_0$	0.01 - 2 eV	1%	II	EIR, Switzerland	Temperature coefficient
664	U^{235}	$\eta(E)/\eta_0$	0.2 eV-0.4 eV	1/2% (50 meV steps)	III	U.K. : G.H. Kinchin	For temperature coefficient work.
665	U^{235}	$\eta(E)$	60 eV-200 eV	8%(E-2E)	I	U.K. : G.H. Kinchin	For thermal reactors. Data available; Brooks et al. <u>AERE-M-1670</u> (1966); also in progress, ($\bar{\nu} \sigma_f$) 50 eV to 30 keV; Patrick, AERE.
666	U^{235}	$\eta(E)$	100 eV-40 keV	5%(E-2E)	I	U.K. : R. D. Smith	For fast reactors. Planned, Sowerby AERE. Data available above 10 keV LASL and ORNL.
667	U^{236}	$\sigma_{nT}(E)$	Thermal-1 keV	5% in $\bar{\nu}_n$	II	BNL(Levine) KAPL(Ehrlich)	10% in $\bar{\nu}_n$. ORNL Harvey, Progr. in Nucl. Eng. Ser I, 2, 51.14 resonances are known but not to detail desired
668	U^{236}	$\sigma_{nT}(E)$	700 keV-16 MeV	10%	II	UNC(Kalos) NDL(Dommert)	Use optical model
669	U^{236}	$\sigma_{nY}(E)$	Thermal-1 keV	5% in $\bar{\nu}_n$	II	BNL(Levine) KAPL(Ehrlich)	10% in $\bar{\nu}_n$. ORNL Harvey, Progr. in Nucl. Eng. Ser I, 2, 51.14 resonances are known but not to detail desired.
670	U^{236}	$\sigma_{n,Y}(E)$	Thermal to 10 MeV	30%	II	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.

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671	^{236}U	$\sigma_{n\gamma}^{\text{a}}(\text{E})$	1eV-100 keV	30% or better	III	UNC(Kalos) NDL(Donnert)	Capture gamma spectrum desired. No work in progress.
672	^{236}U	$\sigma_{n\gamma}^{\text{a}}(\text{E})$	100 keV-16 MeV	30% or better	II	UNC(Kalos) NDL(Donnert)	LASL, Diven could do.
673	^{236}U	$\sigma_{n,\gamma}^{\text{a}}(\text{E})$	1 to 10 MeV	10%	II	CNEN, Italy (P.Pierantoni)	No action in Euratom Community.
674	^{236}U	$\sigma_{n\gamma}^{\text{a}}(\text{E}; \text{E}_\gamma, \theta)$	500 keV- 16MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n\gamma}^{\text{a}}(\text{E}; \text{E}_\gamma)$ useful, Gamma energy higher than 500 keV
675	^{236}U	$\sigma_{n\gamma}^{\text{a}}(\text{E}; \text{E}, \theta)$	250 keV-16 MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr., $\sigma_{n\gamma}^{\text{a}}(\text{E}; \text{E})$, angular resolution better than 10°
676	^{236}U	$\sigma_{n,n}^{\text{a}}(\text{E}; \theta)$	250 keV-16 MeV	10%, 20% accept	III	UNC(Kalos) NDL(Donnert)	Resolution in $\text{E} > 0.5$ MeV, resolution in angle 5-10°, ave. $1-\cos\theta$ to above error. Use optical model above 6 MeV.
677	^{236}U	$\sigma_{n,f}^{\text{a}}(\text{E})$	Threshold-5MeV	5%	II	U.K. : R.D. Smith	Detector applications in progress. White AWRE. Some data available; White SM 60/14.
678	^{236}U	$\sigma_{n,f}^{\text{a}}(\text{E})$	Threshold-5MeV	2%	III	U.K. : R.D. Smith	Detector applications. In progress. White AWRE. Some data available; White SM 60/14.
679	^{236}U	$\sigma_{n,f}^{\text{a}}(\text{E})$	Threshold to 10 MeV	10%	III	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
680	^{236}U	$\bar{\nu}(\text{E})$	Threshold to 10 MeV	20%	III	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
681	^{236}U	$\bar{\nu}(\text{E})$	500 keV-14 MeV			LRL(Howerton)	Inconsistent results to date obscure energy dependence
682	^{237}U	$\sigma_{nT}^{\text{a}}(\text{E})$	eV-100 keV	10% in cross section	III	UNC(Kalos) NDL(Donnert)	No work in progress.
683	^{237}U	$\sigma_{nT}^{\text{a}}(\text{E})$	100 keV-16 MeV	10%	II	UNC(Kalos) NDL(Donnert)	Use optical model.
684	^{237}U	$\sigma_{n\gamma}^{\text{a}}(\text{E}; \text{E}_\gamma, \theta)$	500 kev-16 MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n\gamma}^{\text{a}}(\text{E}; \text{E}_\gamma)$ useful, Gamma energy higher than 500 keV
685	^{237}U	$\sigma_{n\gamma}^{\text{a}}(\text{E}; \text{E}, \theta)$	250 keV-16 MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr., angular resolution better than 10°
686	^{237}U	$\sigma_{n\gamma}^{\text{a}}(\text{E})$	eV-100 keV	30% or better	III	UNC(Kalos) NDL(Donnert)	Capture spectra desired.
687	^{237}U	$\sigma_{n\gamma}^{\text{a}}(\text{E})$	100 keV-16 MeV	30% or better	II	UNC(Kalos) NDL(Donnert)	No work in progress.
688	^{237}U	$\sigma_{n,n}^{\text{a}}(\text{E}; \theta)$	250 keV-16 MeV	10%, 20% accept.	III	UNC(Kalos) NDL(Donnert)	Resolution in $\text{E} > 0.5$ MeV, resolution in angle 5-10°, want average $1-\cos\theta$. Use optical model above 6 MeV.
689	^{237}U	$\sigma_{n\gamma}^{\text{a}}(\text{E})$	eV-16 MeV	10% in cross section	II	UNC(Kalos) NDL(Donnert) LASL (Rosen)	No measurements reported Rosen desires 5%.
690	^{237}U	$\bar{\nu}(\text{E})$	500 keV-14 MeV			LRL(Howerton)	Inconsistent results to date obscure energy dependence
691	^{238}U	$\sigma_{n,A}^{\text{a}}(\text{E})$	Thermal region	0.7%	III	U.K. : G.H. Kinchin	For thermal reactors.
692	^{238}U	$\sigma_{n,\gamma}^{\text{a}}$	Thermal	½ to 1%	II	C.H. Westcott (Canada)	Knowledge required for accurate a for natural U. Recent values agree tolerably well but older (1951) US values unexplained.

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693	U^{238}	$\sigma_{n,\gamma}(E)$	100 eV-40 keV	3%(E-2E)	I	U.K. : G.H. Kinchin	For fast reactors. Preliminary data available to 10%. Measurement on depleted sample planned; Moxon, AERE. Up to 3 keV, Garg et al, <i>Phys. Rev.</i> 134 B 985 (1964).
694	U^{238}	$\sigma_{n,\gamma}(E)$	1 keV to 10 MeV	5%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors. Measurements from 8 to 70 keV: <u>WASH-1046</u> (1964) p.88.
695	U^{238}	$\sigma_{n,\gamma}(E)$	500 eV-7 MeV	5% or at worst 10%	II	ANL(Spinrad)	More data with absolute normalisation needed, CEA, Saclay, Corge Saclay 61, up to 2 keV, Columbia, Garg up to 4 keV, Harwell, Ferguson Moxon, ANL 6792, LASL, glass bomb shot.
696	U^{238}	$\sigma_{n,\gamma}(E)$	10 keV to 1 MeV	5%	I	CEA, France (C.P. Zaleski) EDF, France	KFK will start measurements Measurements from 8 to 70 keV: <u>WASH - 1046</u> (1964) p.88.
697	U^{238}	$\sigma_{n,\gamma}(E)$	40 keV-1 MeV	1%	I	U.K. : R.D. Smith	For fast reactors. Data available. Barry et al. <i>JNE</i> 18 , 481 (1964).
698	U^{238}	$\sigma_{n,\gamma}(E)$	40 keV-1 MeV	1 %	III	UK, R.D. Smith	For fast reactors. 1 % accuracy is desirable but is currently unobtainable.
699	U^{238}	$\sigma_{n,\gamma}(E)$	100 keV to 2 MeV	5%	II	CEA, France (C.P. Zaleski)	
700	U^{238}	$\sigma_{n,\gamma}(E)$	1 MeV-5 MeV	0.005 E(MeV) barns	I	U.K. : R.D. Smith	For fast reactors.
701	U^{238}	$\sigma_{n,\gamma}(E)$	5 MeV-10 MeV	0.025 to 0.1 barn	I	U.K. : R.D. Smith	For fast reactors.
702	U^{238}	$N_G(E; E_\gamma)$	0.025eV-40 keV	20%	III	U.K. : J. Butler	Activation and heat release in core. At 30 keV, Bergqvist, Conf. Antwerp, <u>128</u> .
703	U^{238}	$N_G(E; E_\gamma)$	40 keV-14 MeV	20%	III	U.K. : R.D. Smith	For activation and heat release in core.
704	U^{238}	$\sigma_{n,G}(E; E_\gamma, \theta)$	500 keV - 16 MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos) GDF(Kidd)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n,G}(E; E_\gamma)$ useful, Gamma energy higher than 500 keV, LASL Unpubl. data supposedly available at 0.6-1.6 MeV
705	U^{238}	$\sigma_{nM}(E; E', \theta)$	1-2 MeV	10%, at least 20%	III	NDL(Donnert)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr., angular resolution better than 10° . No results 1.5-2 MeV.
706	U^{238}	$\sigma_{nM}(E; E')$	1-10 MeV	5%, 20% would help	II	ORNL(Gross) ANL(Spinrad) APD(Zweifel)	The number of emitted neut. is desired, ANL, Smith has to 1.5 MeV.
707	U^{238}	$\sigma_{nM}(E; E', \theta)$	5-16 MeV	10%, at least 20%	II	NDL(Donnert) UNC(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr., angular resolution better than 10° . AWRE, Towle and Batchelor have data. No active work.
708	U^{238}	$\sigma_{n,n'}(E, E')$	Threshold to 1 MeV	5%	I	CEA, France (C.P. Zaleski) EDF, France	$\Delta E \approx 50$ keV; $\Delta E'$ allowing evaluation of nuclear temperature to about $\pm 10\%$, in the range of validity of this hypothesis.
709	U^{238}	$\sigma_{n,n'}(E, E')$	1 to 15 MeV	10%	I	CEA, France (C.P. Zaleski) EDF, France	$\Delta E \approx 100$ keV; $\Delta E'$ allowing evaluation of nuclear temperature to about $\pm 10\%$, in the range of validity of this hypothesis.
710	U^{238}	$\sigma_{n,n'}(E, E')$	6-14 MeV	5%	I	LASL(Goad)	One point near 10 MeV would help, LASL Thomson will meas. temp at 7 MeV

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711	U^{238}	$\sigma_{n,n}(E)$ $\sigma_{n,n}(E;E'), T$	7 to 10 MeV	5%	II	KFK, Germany (J.J. Schmidt)	In addition to formerly reported σ_{nx} measurements at 2.5, 4, 6 and 7 MeV (Hughes, Geneva Conf. 1958, p/2485, Bester, LA-2092, 1957) $\sigma_{n,n}(E;E')$ measurements and T assignments at 2.45 MeV (Cranberg et al., Phys. Rev. 103, 343, 1956) and at 2.5 and 3.5 MeV (Fetisov, "Soviet Research on the Lanthanide and Actinide Elements" 1949-1957, part III, Nuclear Chemistry and Nuclear Properties)(see also Mandeville, Karanagh, CWR-4028, 1958) now measurements of $\sigma_{n,n}(E)$, $\sigma_{n,n}(E;E')$ and T available from Batchelor et al. (EANDC(UK)48'S" 1964) at 2,3,4 and 7 MeV and from Buccino et al. (EANDC(US)38, 1963) at 4, 5, 6 and 6.5 MeV. Finally $\sigma_{n,n}(E;E')$ measurements at 3 and 14 MeV at Studsvik in progress (During Jansson, EANDC(OR)33""). No measurements available from 7 to 10 MeV. BCMM will measure some points.
712	U^{238}	$\sigma_{n,n}(E;E',\theta)$	Threshold-8MeV	3%	II	U.K. : R.D. Smith	For fast reactors. Data available, 75 keV to 1.6 MeV; Barnard et al. Conf. Antwerp 26, Batchelor et al. Nucl. Phys. 65, 236 (1965).
713	U^{238}	Resonance parameters Γ_h, Γ_Y	2 to 10 keV	10%	I	EDF, France CEA, France (C.P. Zaleski) BBC/Krupp, Germany (Gieszer)	Columbia obtained resonance parameters up to 10 keV (WASH - 1046). No action in Euratom Community
714	U^{238}	$\sigma_{n,n}(E; \theta)$	2-16 MeV	10% 20% useful	II	AI(Cohen) UNC(Kalos) NDL(Donnert) GDF(Kidd)	Both in cross section and ave. l-cos θ desired, energy resolution better than 1 MeV. Use optical model above 6MeV. No active work in progress.
715	U^{238}	$\sigma_{n,2n}(E)$	Threshold to 15 MeV	10%	II	CEA, France (C.P. Zaleski)	
716	U^{238}	$\sigma_{n,f}(E)$	Threshold-2MeV	1%	I	U.K. : R.D. Smith	For fast reactors. In progress, White; AWRE. Some data available, White, SM 60/14.
717	U^{238}	$\sigma_{n,f}(E)$	Threshold to 10 MeV	3%	I	KFAJ, Germany (Gerwin)	For intermediate-fast reactors.
718	U^{238}	$\sigma_{n,f}(E)$	2 MeV - 5 MeV	1% - 4%	I	U.K. : R.D. Smith	For fast reactors. In progress, White; AWRE. Some data available, White, SM 60/14.
719	U^{238}	$v(E)$	Threshold-5MeV	0.5%	II	U.K. : R.D. Smith	For fast reactors. Some data available. Mather et al., Nucl. Phys. 66 149 (1965) Condé et al. SM 60/46.
720	U^{238}	$\bar{v}(E)$	500 keV-14MeV			LRL (Howerton)	Inconsistent results to date obscure energy dependence. Sweden Asplund Nilsson at 1.5 and 15 MeV, ANL, Smith, ANL 6792.
721	U^{238}	$\bar{v}(E)$	7 to 15 MeV	2%	I	EDF, France	
722	U^{239}	$\sigma_{nT}(E)$	eV-100 keV	10% in cross section	III	UNC(Kalos) NDL(Donnert)	Use optical model.
723	U^{239}	$\sigma_{nT}(E)$	100 keV-16 MeV	10%	II	UNC(Kalos) NDL(Donnert)	Use optical model.
724	U^{239}	$\sigma_{nf}(E)$	eV-16 MeV	10% in cross section	II	UNC(Kalos) NDL(Donnert)	No active work.
725	U^{239}	$\bar{v}(E)$	500 keV-14 MeV			LRL (Howerton)	Inconsistent results to date obscure energy dependence
726	Np^{237}	$\sigma_{n,f}(E)$	Threshold-5MeV	5%	I	U.K. : R.D. Smith	Detector applications. In progress, White, AWRE. Some data available, White, SM 60/14.

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727	Np ²³⁷	$\sigma_{n,f}(E)$	Threshold-5 MeV	2%	III	U.K. : R.D. Smith	Detector applications. In progress, White, AWRE. Some data available, White, SM 60/14.
728	Np ²³⁷	$\sigma_{n,f}(E)$	5 MeV-10 MeV	20%	I	U.K. : R.D. Smith	Detector applications. In progress, White, AWRE. Some data available, White, SM 60/14.
729	Np ²³⁷	$\sigma_{n,f}(E)$	5 MeV-10 MeV	5%	III	U.K. : R.D. Smith	Detector applications. In progress, White, AWRE. Some data available, White, SM 60/14.
730	Pu 238	$\sigma_{n,f}(E)$	100 keV-2 MeV	5% or at worst 10%	I	LRL (Howerton)	ANL, Butler, WASH-1039 (62) 0.2-1.7 MeV
731	Pu 238	$\bar{\nu}(E)$	100 keV-10 MeV	5% or at worst 10%	I	LRL (Howerton)	One point below 10 MeV wanted
732	Pu 238	$\bar{\nu}(E)$	500 keV-14 MeV			LRL (Howerton)	Inconsistent results to date obscure energy dependence
733	Pu ²³⁹	σ_{nT}	500 eV to 10 keV	5% 10 ns/m resolution	I	CEA, France (C.P. Zaleski) EDF, France	KFK will start measurements between 5 and 200 keV. Uttley (AERE-M1272) measured σ_{nT} from 0.1 to 130 keV and analyzed it in terms of $(\bar{\nu}_n / \bar{D})_1 = 0$, $(\bar{\nu}_n / \bar{D})_1 = 1$ and R'. Allen and Ferguson, Harwell, have data above 40 keV and James, Harwell, is measuring to 40 keV. White, AWRE, plans measurements in range 2 to 40 keV and Uttley, Harwell, plans to measure $\sigma_{nT}(E)$ above 100 eV.
734	Pu ²³⁹	σ_{nA}	2200 m/s	To check current value.	II	U.K. : G.H. Kinchin	
735	Pu ²³⁹	$\sigma_{nA}(E)$	0.01 eV-1 eV	1%(E-1.5E)	I	U.K. : G.H. Kinchin	For thermal reactors. Brooks data unreliable. Assessment of available $\sigma_{nA}(E)$ data below 100 eV planned by Uttley, AERE.
736	Pu ²³⁹	$\sigma_{nA}(E)$	1 eV-15 eV	3%(E-2E)	I	U.K. : G.H. Kinchin	For thermal reactors. Brooks data unreliable, assessment of available $\sigma_{nA}(E)$ data below 100 eV planned by Uttley, AERE.
737	Pu ²³⁹	$\sigma_{nA}(E)$	15 eV-300 eV	4%(E-2E)	I	U.K. : G.H. Kinchin	For thermal reactors. Repeat experiment in progress, 11 eV to 2 keV; Sowerby, AERE. σ_T data available 0.1 keV to 70 keV, Uttley, EANDC(UK)40 "L" and Conf. Antw. 98.
738	Pu ²³⁹	$\sigma_{nA}(E)$	300 eV-2 keV	10%(E-2E)	I	U.K. : G.H. Kinchin	For thermal reactors. Repeat experiment in progress, 11 eV to 2 keV; Sowerby, AERE. σ_T data available 0.1 keV to 70 keV, Uttley, EANDC(UK)40 "L" and Conf. Antw. 98.
739	Pu ²³⁹	$\sigma_{n,\gamma}(E)$	Thermal region	10%	III	U.K. : G.H. Kinchin	For long term improvement of σ_{nA}
740	Pu ²³⁹	$\sigma_{n,\gamma}$	2200 m/s	0.5%	I	CEA, France (O. Tretiakoff) EURATOM, Ispra (V. Raievskii)	Ratio $\sigma_{n,\gamma}(\text{Pu}^{239})/\sigma_{n,\gamma}(\text{U}^{235})$ to $\pm 0.5\%$ would already be welcomed. No action in Euratom Community.
741	Pu ²³⁹	$\sigma_{n,\gamma}(E)$	Thermal-2 keV	5%	I	EIR, Switzerland	Thermal reactor criticality

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742	Pu 239	$\sigma_{n\gamma}(E)$	500 eV-150 keV	4%	I	ANL(Okrent) APD(Zweifel) Bettis (Harris) KAPL(Francis)	Either $\sigma_{n\gamma}(E)$ or α wanted RPT data being processed, will run up to 5 keV.
743	Pu 239	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	1 keV-40 keV	2% (E-2E)	III	U.K. : G.H. Kinchin	For fast reactors.
744	Pu 239	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	10 keV to 1 MeV	5%	I	CEA, France (C.P. Zaleski) EDF, France	No measurements available in $1 \leq E \leq 10$ MeV, $10 \leq E \leq 70$ keV. In 70 keV $\leq E \leq 1$ MeV only careful measurements of Hopkins and Diven (Nucl.Sci.Eng. 12,169 1962) available. Confirmation desired particularly in 50 $\leq E \leq 200$ keV of anomalous α and consequently Γ_f behaviour observed in these experiments. de Saussure, Weston (ORNL-3499, 1963) plan to do α -measurements.
745	Pu 239	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	10 keV to 10 MeV	5%	II	KPK, Germany (J.J. Schmidt)	No measurements available in $1 \leq E \leq 10$ MeV, $10 \leq E \leq 70$ keV. In 70 keV $\leq E \leq 1$ MeV only careful measurements of Hopkins and Diven (Nucl.Sci.Eng. 12,169, 1962) available. Confirmation desired particularly in 50 $\leq E \leq 200$ keV of anomalous α and consequently Γ_f behaviour observed in these experiments. de Saussure, Weston (ORNL-3499, 1963) plan to do α -measurements.
746	Pu 239	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	40 keV-100 keV	5%	I	U.K. : R.D. Smith	For fast reactors. No work planned.
747	Pu 239	$\sigma_{n\gamma}(E)$	150 keV-1 MeV	3% in T	I	ANL(Okrent) APD(Zweifel) ORNL(Kasten)	Or at worst 5%, near resonances, either $\sigma_{n\gamma}(E)$ or alfa wanted. Existing data, no requested accuracy.
748	Pu 239	$\sigma_{n\gamma}(E)$	1-3 MeV	5% in T	II	ANL(Okrent) APD(Zweifel) ORNL(Kasten)	Either $\sigma_{n\gamma}(E)$ or α useful
749	Pu 239	$N_g(E; E_\gamma)$	Thermal	20%	III	U.K. : R.D. Smith	For study of activation and heat release in core.
750	Pu 239	$\sigma_{n\gamma}(E; E_\gamma, \theta)$	500 keV-16 MeV	10%, at least 20%	III	NDL(Donnert) UNC(Kalos)	Resolution in neutron and gamma energy > 5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotr., $\sigma_{n\gamma}(E; E_\gamma)$ useful, Gamma energy higher than 500 keV
751	Pu 239	$\sigma_{n\gamma}(E; E^*\theta)$	1-16 MeV	10%, at least 20%	II	NDL(Donnert) UNC(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisotr. angular resolution better than 10°
752	Pu 239	$\sigma_{n,n'}(E; E')$	Threshold to 5 MeV	10%	I	CEA, France (B. Lemaire)	$\Delta E = \Delta E' \approx 50$ keV required. No action in Euratom Community.
753	Pu 239	$\sigma_{n,n'}(E; E')$	1 - 7 MeV	5 - 10 %	II	LASL (Rosen)	No results. EANDC request.
754	Pu 239	$\sigma_{n,n'}(E; E')$	5 to 14 MeV	15%	II	CEA, France (B. Lemaire)	$\Delta E \approx 100$ keV and $\Delta E' \approx 50$ keV required. No action in Euratom Community.
755	Pu 239	$\sigma_{n,n'}(E; E', \theta)$	Threshold-4 MeV	20%	I	U.K. : R.D. Smith	For fast reactors. Planned, Bachelor, AWRE.
756	Pu 239	Res. Par.	Thermal-100 eV	10%	I	ANL(Avery) West,(Harris) KAPL(Francis)	Multilevel parameter wanted, Beilinger, Geneva Conf. 2, 15, 27.
757	Pu 239	Resonance Parameters	High resolution 40 - 250 eV	10 %	I	UK, R.D. Smith	For fast reactors. Data available above 100 eV; Uttley, Conf. Antwerp '68. In progress below 100 eV; James, AERE. Also in progress below 400 eV; Patrick, AERE. See also Blons et al. Conf. Antwerp '68.

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758	Pu ²³⁹	Resonance parameters $\Gamma_f, \Gamma_n, \Gamma_\gamma$	60 to 500 eV	10%	I	KFK, Germany (J.J. Schmidt) CEA, France (C.P. Zaleski) BBC/Krupp, Germany (Oels) EDF, France BN, Belgium (G. Tavernier)	For some of the resonances between 50 and 100 eV $\Gamma_n, \Gamma_\gamma, \Gamma_f$ available from work of Ignat'ev et al. (J. Nucl. En. A/B, React. Sc. Techn. 18, 523, 719, 1964). Uttley is analyzing his transmission work (EANDC (UK) 40(L), 1964) in terms of Γ_n up to 400 eV. Spin assignments urgently needed, because Γ_f from work of Bollerger (Geneva, Conf. 1958, P/687) and Ignat'ev supposed to be strongly spin dependent. No action in Euratom Community.
759	Pu ²³⁹	Resonance parameters	100 eV-5 keV	10 %	I	ANL (Avery)	Needed for fast breeder calculation. No work to requested accuracy.
760	Pu ²³⁹	$\sigma_{n,n}(E;\theta)$	50 keV-1 MeV	10%	I	U.K. : R.D. Smith	For fast reactors. In progress; Cavanagh, AERE.
761	Pu ²³⁹	$\sigma_{n,n}(E; \theta)$	50 keV-16 MeV	10%, 20% useful	II	ANL (Spinrad) UNC (Kalos) NDL (Donnett) LASL (Rosen)	Both cross section and ave. 1-cosθ wanted, energy resolution better than 1 MeV. Use optical model above 6 MeV. LASL desires $\sigma_{n,n}(E)$ only 2-7 MeV.
762	Pu ²³⁹	$\sigma_{n,2n}(E)$	Threshold to 14 MeV	10%	II	CEA, France (B. Lemaire)	
763	Pu ²³⁹	$\sigma_{n,2n^+}(E)$	1 - 15 MeV	20 %	II	LASL (Rosen)	No results.
764	Pu ²³⁹	$\sigma_{n,3n^+}(E)$	1 - 15 MeV	20 %	II	LASL (Rosen)	No results.
765	Pu ²³⁹	$\sigma_{n,f}$	2200 m/s	0.5%	I	CEA, France (O. Tretiakoff)	Ratio $\sigma_{nf}(Pu^{239})/\sigma_{nf}(U^{235})$ to + 0.5% would already be welcomed. Fraysse, Euratom, has measured.
766	Pu ²³⁹	$\sigma_{n,f}$	2200 m/s	1%	I	U.K. : G.H. Kinchin	For thermal reactors. In progress (relative to U ²³⁵) with spot checks to 0.5 eV, White, AWRE. See also De Saussure et al. SM 60/13 and Fraysse et al. SM 60/17.
767	Pu ²³⁹	$\sigma_{nf}(E)$	Thermal	1%	I	BNL (Chernick) Bettis (Harris)	At 0.025 eV wanted
768	Pu ²³⁹	$\sigma_{n,f}$		1% (thermal) and 5-10% (res.int.)	II	C.H. Westcott (Canada)	Widespread of original values (BNL-325, 2nd edition, supplement p.4).
769	Pu ²³⁹	$\sigma_{n,f}(E)$	Thermal-2 keV	5%	I	EIR Switzerland	Thermal reactor criticality
770	Pu ²³⁹	$\sigma_{n,f}(E)$	0.01 eV-1 eV	1% (E-1.5E)	I	U.K. : G.H. Kinchin	For thermal reactors. In progress, James, AERE. See also De Saussure et al. SM 60/13 and Fraysse et al. SM 60/17.
771	Pu ²³⁹	$\sigma_{n,f}(E)$	1 eV-40 keV	3% (E-2E)	I	UK, G.H. Kinchin & R.D. Smith	For thermal and fast reactors. Data available to + 4%; James, SM 60/15. Also in progress 11 eV to 2 keV; Sowerby, AERE; and 50 eV to 30 keV; Patrick, AERE. At 24 keV, Perkin et al. JNE 19, 423 (1965). See also De Saussure et al. SM 60/13 and Fraysse et al. SM 60/17. Note reduced priority.
772	Pu ²³⁹	$\sigma_{n,f}(E)$	1-40 keV	3% at 1 keV to 1/2% at 40 keV (E-2E)	III	UK, R.D. Smith	For fast reactors. Data available to + 4%; James, SM 60/15. Also in progress 11 eV to 2 keV; Sowerby, AERE; and 50 eV to 30 keV; Patrick, AERE. At 24 keV, Perkin et al. JNE 19, 423 (1965). See also De Saussure et al. SM 60/13 and Fraysse et al. SM 60/17. Note reduced priority.
773	Pu ²³⁹	$\sigma_{nf}(E)$	500 eV to 10 keV	5% 10 ns/m resolution	I	CEA, France (C.P. Zaleski) EDF, France	KFK will start measurements between 5 and 200 keV. Uttley (AERE-M1272) measured σ_f from 0.1 to 150 keV and analyzed it in terms of $(\bar{\Gamma}_n^0/\bar{\Gamma})_f = 0$, $(\bar{\Gamma}_n^0/\bar{\Gamma})_f = 1$ and R' . Allen and Ferguson, Harwell, have data above 40 keV and James, Harwell, is measuring to 40 keV. White, AWRE, plans measurements in range 2 to 40 keV and Uttley, Harwell, plans to measure $\sigma_{nf}(E)$ above 100 eV.

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774	Pu ²³⁹	$\sigma_{n,f}(E)$	500 eV-50 keV	3%	II	ANL(Okrent) Bettis (Harris)	Harwell, James, <u>ANL 6792</u>
775	Pu ²³⁹	$\sigma_{n,f}(E)$	40 keV- 1 MeV	2%	I	U.K. : R.D. Smith	For fast reactors. Measurements in progress, White AWRE. Some data available, White, SM 60/14.
776	Pu ²³⁹	$\sigma_{n,f}(E)$	40 keV-1 MeV	1/2 %	III	UK, R.D. Smith	For fast reactors. 1/2 % accuracy is desirable but is currently unobtainable. Measurements in progress White, AWRE. Some data available; White SM 60/14.
777	Pu ²³⁹	$\sigma_{n,f}(E)$	1 MeV-5 MeV	2% - 5%	I	U.K. : R.D. Smith	For fast reactors. Measurements in progress, White AWRE. Some data available, White, SM 60/14.
778	Pu ²³⁹	$\sigma_{n,f}(E)$	1 - 5 MeV	1/2 - 5 %	III	UK, R.D. Smith	For fast reactors. 1/2 accuracy is desirable but is currently unobtainable. Measurements in progress; White, AWRE. Some data available; White, SM 60/14
779	Pu ²³⁹	$N_f(E;E')$	40 keV-10 MeV Up to 10MeV	0.01/E' Up to 10MeV	I	U.K. : R.D. Smith	For fast reactors. Data available, Barnard et al. Nucl. Phys. <u>71</u> , 228 (1965).
780	Pu ²³⁹	\bar{v}	Thermal region	1%	III	U.K. : G.H. Kinchin	For thermal reactors. Data available; Sowerby, SM 60/14 and AERE-R-3941.
781	Pu ²³⁹	$\bar{v}(E)$	40 keV-4 MeV	1/2 %	II	U.K. : R.D. Smith	For fast reactors. Data available, Mather et al. Nucl. Phys. <u>66</u> , 149 (1965).
782	Pu ²³⁹	$\bar{v}(E)$	5-14 MeV			LRL (Bowerton)	Inconsistent results to date obscure energy dependence, LASL, has results at 14 MeV.
783	Pu ²³⁹	$\bar{v}(E)$	5 MeV to 15 MeV	10 %	I	EDF, France	Measurements in progress at LASL and Aldermaston.
784	Pu ²³⁹	$\bar{v}(E)$	5 MeV to 15 MeV	2 %	II	CEA, France (C.P. Zaleski)	Measurements in progress at LASL and Aldermaston.
785	Pu ²³⁹	η	2200 m/s	0.5%	I	CEA, France (O. Tretiakoff) EURATOM, Ispra (V. Raievskii)	Ratio $\sigma_{n,f}(Pu^{239})/\sigma_{n,f}(U^{235})$ to $\pm 0.5\%$ would already be welcomed. Macklin has measured. In progress: WASH-1048, p.83. No action in Euratom Community.
786	Pu ²³⁹	η_0	2200 m/s	1%	I	U.K. : G.H. Kinchin	To check Macklin's value NSE, <u>8</u> (1960). Data available, Smith and Reader, <u>BAPS 10</u> , 1099 (1965).
787	Pu ²³⁹	η	Thermal	1% desire 0.5%	II	BNL(Kouts)	Desired energy 0.025 eV. MTR, Smith, has data.
788	Pu ²³⁹	η or $\alpha(\text{or } \sigma_Y)$		$\eta : 1\% (\text{ther-} \text{mal}) \text{ and } 3-5\% (\text{res. int.})$ $\alpha : 1\% (\text{ther-} \text{mal}) \text{ and } 5-10\% (\text{res. int.})$	II	C.H. Westcott, (Canada)	Recent measurement of α (SANDC(UK)27) and (Can) 17 agree but capture resonance integral needs confirmation. ORNL η measurement has important uncertainty associated with neutron spectrum
789	Pu ²³⁹	$\eta(E)$	Thermal-10 eV	3%	I	ORNL(Kasten)	Or at worst 5%, near resonances HW, Leonard, <u>Kensselaer Symposium</u> , data up to 0.45 eV, AWRE, Brooks has values.
790	Pu ²³⁹	$\eta(E)$	Thermal-2 keV	5%	I	EIR, Switzerland	Thermal reactor criticality
791	Pu ²³⁹	$\eta(E)$	11 eV - 300 eV	4% (E-2E)	I	U.K. : G.H. Kinchin	For thermal reactors. Repeat experiment in progress; Sowerby, AERE. Also in progress above 50 eV; Patrick, AERE.

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792	Pu^{239}	$\eta(E)/\eta_0$	0.01 eV-0.2 eV	3% (20 meV steps)	III	U.K. : G.H. Kinchin	For temperature coefficient determinations. Preliminary data available, repeat measurements, in progress, Sowerby, AERE.
793	Pu^{239}	$\eta(E)/\eta_0$	0.2 - 0.4 eV	3% (30 meV steps)	III	U.K. : G.H. Kinchin	For temperature coefficient determinations
794	Pu^{239}	$\eta(E)/\eta_0$	0.01 - 2 eV	2 %	II	EIR, Switzerland	Temperature coefficient
795	Pu^{239}	$\alpha(E)$	100 eV-40 keV	5%(E-2E)	I	U.K. : R.D. Smith	For fast reactors. In progress, up to 30 keV, Sowerby, AERE.
796	Pu^{240}	$\sigma_{nT}(E)$	10 keV to 10 MeV	10% or better	I	CEA, France (C.P. Zaleski) EDF, France	BGMN is preparing measurements.
797	Pu^{240}	$\sigma_{nT}(E)$	10 keV to 10 MeV	10%	I	KFK, Germany (J.J. Schmidt)	Between 10 and 100 keV at 1 ns/m resolution. BGMN is preparing measurements.
798	Pu^{240}	$\sigma_{nT}(E)$	1 to 15 MeV	20%	II	CEA, France (C.P. Zaleski) EDF, France	
799	Pu^{240}	$\sigma_{n,\gamma}(E)$	Thermal-2 keV	10 %	I	EIR, Switzerland	Resonance parameters desired.
800	Pu^{240}	$\sigma_{n,\gamma}(E)$	100 eV-40 keV	8%(E-2E)	I	U.K. : R. D. Smith	For fast reactors. Preliminary data available; measurements in progress on new sample, Moxon, AERE. Diven, LASL.
801	Pu^{240}	$\sigma_{n,\gamma}(E)$	1 keV to 1 MeV	10 %	II	BN, Belgium (G. Tavernier)	For fast reactors.
802	Pu^{240}	$\sigma_{n,\gamma}(E)$	500 eV-500 keV	5 %	I	ANL (Avery)	Needed for breeding ratio and Na void coefficient calculation in fast systems. No data.
803	Pu^{240}	$\sigma_{n,\gamma}(E)$	10 keV to 100 keV	10%	I	CEA, France (C.P. Zaleski) EDF, France	
804	Pu^{240}	$\sigma_{n,\gamma}(E)$	10 to 200 keV	10 %	I	KFK, Germany (J.J. Schmidt)	1 ns/m resolution needed. Rae plane measurement in resonance region. Diven will probably attempt measurements using nuclear explosion technique. No action in Euratom Community.
805	Pu^{240}	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	40 keV-1 MeV	10%	I	U.K. : R.D. Smith	For fast reactors. No work planned. In progress, Diven, LASL.
806	Pu^{240}	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	1 MeV-5 MeV	0.1 E(MeV) barns	I	U.K. : R.D. Smith	For fast reactors. No work planned.
807	Pu^{240}	$N_g(\gamma; E_\gamma)$	Thermal	20%	III	U.K. : G.H. Kinchin	For study of activation and heat release in core.
808	Pu^{240}	$\sigma_{n,G}(E; E_\gamma, \theta)$	500 keV- 16 MeV	10%, at least 20%	III	NDL(Donnert) UNG(Kalos)	Resolution in neutron and gamma energy 0.5 MeV, resolution in angle 5-10°, angular distribution only if signif. anisotro. $\sigma_{n,G}(E; E_\gamma)$ useful. Gamma energy higher than 500 keV.
809	Pu^{240}	$\sigma_{nM}(E; E')$	MeV-7 MeV	20%	III	APD(Zweifel)	Spectrum of emitted neutrons is desired

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810	Pu 240	$\sigma_{n\gamma}^{\text{f}}(E; E'\theta)$	250 keV-16 MeV	10%, at least 20%	II	NDL(Donnert) UNC(Kalos)	Cross section and $1-\cos\theta$ wanted, energy resolution 0.5 MeV in and out, angular dist. only if signif. anisot., angular resolution better than 10°
811	Pu 240	$\sigma_{n\gamma}^{\text{f}}(E; E')$	6-14 MeV	20%	II	IASL(Goad)	
812	Pu 240	$\sigma_{n,n^*}(E; E'\theta)$	Threshold-4 MeV	40%	II	U.K. : R.D. Smith	For fast reactors. Planned awaiting sample, Hooton, AERE.
813	Pu 240	Γ_n, Γ_Y	50 eV to 10 keV	10% or better	I	CEA, France (C.P. Zaleski) BN, Belgium (G. Tavernier) EDF, France	Brooks, EANDC(UK) 41 "L" (1964), gives positive indication of Γ_f in the neutron energy range 20 eV to 120 eV. Available resonance measurements not sufficient to fix statistical s-wave parameters to reasonable accuracy. No action in Euratom Community.
814	Pu 240	Γ_Y, Γ_n	50 eV to 10 keV	10% or better	I	KFK, Germany (J.J. Schmidt) BBC/Krupp Germany (Oels)	Brooks, EANDC(UK) 41 "L" (1964), gives positive indication of Γ_f in the neutron energy range 20 eV to 120 eV. Available resonance measurements not sufficient to fix statistical s-wave parameters to reasonable accuracy. No action in Euratom Community.
815	Pu 240	Resonance parameters	100 eV-5 keV	10%	I	ANL (Avery)	Needed for doppler coefficient. Resonance parameters known to 119 eV, resonance energy known to 320 eV. RPI will try.
816	Pu 240	$\sigma_{n,n^*}(E; \theta)$	250 keV-16 MeV	10%, 20% accept	II	UNC(Kalos) NDL(Donnert)	Resolution in E 0.5 MeV, resolution in angle 5-10°, ave. $1-\cos\theta$ wanted. Use optical model above 6 MeV. Batchelor, AWRE, requests sample for measurement.
817	Pu 240	$\sigma_{n,f}(E)$	1 keV to 24 keV	10%	I	KFK, Germany (J.J. Schmidt)	Above 24 keV old measurements of Nesterov, Smirenkin (At. Energ. 9, 16, 1960) now confirmed by Aldermaston precision measurements at 24 keV, Harwell measurements in 30 keV $\leq E \leq$ 240 keV (EANDC(UK) 50 "S", 1965), Aldermaston measurements in 55 keV $\leq E \leq$ 150 keV (JNE, A/B, RST 18, 561, 1964). All measurements combined show increasing slope to lower energies. Therefore particularly below 24 keV measurements needed. KFK plans to take data between 1 and 30 keV using "white source" methods.
818	Pu 240	$\sigma_{n,f}(E)$	100 eV - 40 keV	10 mb	I	U.K. : R.D. Smith	Fast spectral indicator. Planned; James, AERE. To 18 mb at 24 keV, Perkin et al. JNE 19, 423 (1965)
819	Pu 240	$\sigma_{n,f}(E)$	1 keV to 1 MeV	10%	I	EDF, France	Above 24 keV old measurements of Nesterov, Smirenkin (At. Energ. 9, 16, 1960) now confirmed by Aldermaston precision measurements at 24 keV, Harwell measurements in 30 keV $\leq E \leq$ 240 keV (EANDC(UK) 50 "S", 1965), Aldermaston measurements in 55 keV $\leq E \leq$ 150 keV (JNE, A/B, RST 18, 561, 1964). All measurements combined show increasing slope to lower energies. Therefore particularly below 24 keV measurements needed. KFK plans to take data between 1 and 30 keV using "white source" methods. AWRE 64 give results for 60 and 600 keV to $\pm 15\%$.
820	Pu 240	$\sigma_{n,f}(E)$	1 keV to 1 MeV	10%	II	BN, Belgium (G. Tavernier)	Above 24 keV old measurements of Nesterov, Smirenkin (At. Energ. 9, 16, 1960) now confirmed by Aldermaston precision measurements at 24 keV, Harwell measurements in 30 keV $\leq E \leq$ 240 keV (EANDC(UK) 50 "S", 1965), Aldermaston measurements in 55 keV $\leq E \leq$ 150 keV (JNE, A/B, RST 18, 561, 1964). All measurements combined show increasing slope to lower energies. Therefore particularly below 24 keV measurements needed. KFK plans to take data between 1 and 30 keV using "white source" methods. AWRE 64 give results for 60 and 600 keV to $\pm 15\%$.
821	Pu 240	$\sigma_{n,f}(E)$	4 MeV-10 MeV	5% - 50%	I	U.K. : R.D. Smith	For fast reactors. In progress, White, AWRE.

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822	Pu^{240}	$\bar{\nu}$ (E)	Threshold-5 MeV	2%	I	U.K. : R.D. Smith	For fast reactors. In progress (to 6%) Ferguson, AERE.
823	Pu^{240}	$\bar{\nu}$ (E)	Thermal-14 MeV	3%	I	LASL(Goad) ANL(Spinrad)	A few points would help, Harwell, Sowerby, Ferguson, ANL 6792.
824	Pu^{240}	$\bar{\nu}$ (E)	1 keV to 1 MeV	10 %	II	BN, Belgium (G. Tavernier)	For fast reactors.
825	Pu^{240}	$\bar{\nu}$ (E)	100 keV to 15 MeV	5%	I	CEA, France (C.P. Zaleski) EDF, France	Starfelt and Ferguson obtained 6% values at 0.1, 1.0 and 1.6 MeV. Measurement at 2 MeV underway at Harwell (Starfelt, EANDC-37 "L", 1964).
826	Pu^{240}	$\bar{\nu}$ (E)	100 keV to 15 MeV	5%	II	KPK, Germany (J.J. Schmidt)	Starfelt and Ferguson obtained 6% values at 0.1, 1.0 and 1.6 MeV. Measurement at 2 MeV underway at Harwell (Starfelt, EANDC-37 "L" 1964).
827	Pu^{240}	α (E)	150 keV-7 MeV	5% 10% use- ful	II	ANL(Okrent) ORNL(Kasten) LLNL(Fultz)	Either α (E) or $\sigma_{n,\gamma}$ (E) wanted. Spontaneous fission makes presently contemplated methods of measure- ment inadequate.
828	Pu^{241}	σ_{nT} (E)	0.01- 100 eV	1% (ther- mal) and 5% (res. int.)	II	C. H. Westcott (Canada)	Fissile nuclide. AECL is repeating measurements made at MTR, who also wish to do further work.
829	Pu^{241}	σ_{nT} (E)	0.5 to 4 eV	5 %	I	EURATOM (Ispra)	Craig + Westcott, AECL-1948 (1964) Pattenden, ANL-6797 (1963), p. 369 + EANDC(UK)35 "L" (1963). No action in Euratom Community.
830	Pu^{241}	σ_{nT} (E)	1 keV to 1 MeV	10 %	I	CEA, France (C.P. Zaleski) EDF, France	
831	Pu^{241}	σ_{nT} (E)	Average values from 2 keV to 10 MeV	10% or better	I	KPK, Germany (J.J. Schmidt)	Simpson et al., MTR, have com- pleted measurements.
832	Pu^{241}	σ_{nT} (E)	1 MeV to 15 MeV	20 %	II	CEA, France (C.P. Zaleski) EDF, France	
833	Pu^{241}	σ_{nA} (E)	1 keV - 2 keV	20% (E-2E)	I	U.K. : G.H. Kinchin	For thermal reactors. Current data 150-300 eV accurate to 10% or worse, and 1 keV-2 keV may be a little worse than 20% due to error on σ_s (E), Pattenden, AERE. No further work planned.
834	Pu^{241}	σ_{nA} (E)	150 eV - 300 eV	8% (E-2E)	I	U.K. : G.H. Kinchin	For thermal reactors. Current data 150-300 eV accurate to 10% or worse, and 1 keV-2 keV may be a little worse than 20% due to error on σ_s (E), Pattenden, AERE. No further work planned.
835	Pu^{241}	η_0	2200 m/s	2 %	II	U.K. : G.H. Kinchin	For thermal reactors. Large sample needed. Data available Smith et al. BAPS 10 , 1099 (1965).
836	Pu^{241}	η (E)	100 eV-7 MeV	5 %	III	ANL (Spinrad)	
837	Pu^{242}	σ_{nA}^o	2200 m/s	5%	III	U.K. : G.H. Kinchin	To correct measurements of α for Pu^{239} and Pu^{241}
838	Pu^{241}	$\sigma_{n,\gamma}$	2200 m/s	3%	I	EURATOM, Ispra (V. Railevskii)	Thermal reactor calculations. No action in Euratom Community.
839	Pu^{241}	$\sigma_{n,\gamma}$	2200 m/s	3%	II	BN, Belgium (G. Tavernier)	Thermal reactor calculations. No action in Euratom Community.
840	Pu^{241}	$\sigma_{n,\gamma}$ (E)	Thermal-2 keV	10%	I	EIR, Switzerland	Resonance parameters desired.

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841	Pu ²⁴¹	$\sigma_{n,\gamma}$ or $\alpha(E)$	0.1 eV to 4 eV	10%	I	EURATOM (Ispra)	$d\alpha(E)/dE$ to $\pm 10\%$. No action in Euratom Community.
842	Pu ²⁴¹	$\sigma_{n,\gamma}(E)$	0.1 to 10 MeV	20%	II	BN, Belgium (G. Tavernier)	Fast reactor calculations.
843	Pu ²⁴¹	$\sigma_{n,\gamma}(E)$	1 to 100 eV	5%	II	BN, Belgium (G. Tavernier)	Thermal reactor calculations.
844	Pu ²⁴¹	$\sigma_{n,\gamma}(E)$ or $\gamma(E)$ $\alpha(E)$	200 eV to 200 keV	10% (10 ns/m resolution)	I	EDF, France CEA, France (C.P. Zaleski)	No measurements available. No action in Euratom Community.
845	Pu ²⁴¹	$\sigma_{n,\gamma}(E)$ or $\gamma(E)$	200 eV to 200 keV	10% (10 ns/m resolution)	II	KFK, Germany (J.J. Schmidt)	No measurements available. No action in Euratom Community.
846	Pu ²⁴¹	$\sigma_{n,\gamma}(E)$	500 eV-14 MeV	20%	III	ANL(Spinrad)	Resonance parameters highly desirable
847	Pu ²⁴¹	$\sigma_{n,\gamma}(E)$ or $\alpha(E)$	40 keV- 1 MeV	10%	II	U.K. : R.D. Smith	For fast reactors.
848	Pu ²⁴¹	$\Sigma_G(E; E_\gamma)$	Thermal	20%	III	U.K. : R. D. Smith.	For study of activation and heat release in core.
849	Pu ²⁴¹	$\Gamma_\gamma, \Gamma_n, \Gamma_f$	20 to 200 eV	10%	I	BN, Belgium (G. Tavernier) CEA, France (C.P. Zaleski) EDF, France	$\Gamma_\gamma, \Gamma_n, \Gamma_f$ available up to 35 eV from Moore et al. (Phys. Rev. B 175 945, 1964), preliminary Γ_n between 10 and 50 eV from Pattenden, Bardsley (EANDC(UK)35 "L", 1964); Γ_n between 17 and 31 eV from Craig, Westcott (AECL-1948, 1964). No action in Euratom Community.
850	Pu ²⁴¹	$\Gamma_\gamma, \Gamma_n, \Gamma_f$	35 to 200 eV	10%	II	KFK, Germany (J.J. Schmidt) BBC/Krupp, Germany (Oels)	$\Gamma_\gamma, \Gamma_n, \Gamma_f$ available up to 35 eV from Moore et al. (Phys. Rev. B 175, 945 1964), preliminary Γ_n between 10 and 50 eV from Pattenden, Bardsley (EANDC(UK) 35 "L", 1964); Γ_n between 17 and 31 eV from Craig, Westcott (AECL-1948, 1964). No action in Euratom Community.
851	Pu ²⁴¹	$\sigma_{n,f}$	2200 m/s	20%	I	U.K. : G.H. Kinchin	For thermal reactors. Planned, White, AWRE.
852	Pu ²⁴¹	$\sigma_{n,f}(E)$	Thermal-2 keV	10%	I	EIR, Switzerland	Resonance parameters desired.
853	Pu ²⁴¹	$\sigma_{n,f}(E)$	1-100 eV	10%	II	AEC(Radkovsky) ORNL(Kasten)	Resonance parameters desirable. James, AER-E-R-4597, Leonard HW-52727 (59) 0-20 eV.
854	Pu ²⁴¹	$\sigma_{n,f}(E)$	100 eV - 40 keV	5% (0-20)	I	U.K. : R. D. Smith	For fast reactors. Data Available up to 30 keV, James, Nucl. Phys. 65, 353 (1965) to 7% at 24 keV, Perkin et al., JNE, 19, 423 (1965).
855	Pu ²⁴¹	$\sigma_{n,f}(E)$	40 keV-150 keV	5%	II	U.K. : R.D. Smith	For fast reactors. Some data available, White, SM 60/14; but further measurements desirable.
856	Pu ²⁴¹	$\bar{\nu}(E)$	1 keV to 14 MeV	5%	I	CEA, France (C.P. Zaleski) BN, Belgium (G. Tavernier)	+ 10% would already be welcomed. Except different measurements at thermal energies (Prosdocimi, EANDC(E) 17 "U", 1961), no measurements available, Studsvik will measure, if good Pu ²⁴¹ sample available (Starfelt, EANDC-37 "L", 1964). No action in Euratom Community.
857	Pu ²⁴¹	$\bar{\nu}(E)$	1 keV to 14 MeV	5%	II	KFK, Germany (J.J. Schmidt)	+ 10% would already be welcomed. Except different measurements at thermal energies (Prosdocimi, EANDC(E) 17 "U", 1961), no measurements available, Studsvik will measure, if good Pu ²⁴¹ sample available (Starfelt, EANDC-37 "L", 1964). No action in Euratom Community.

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858	Pu ²⁴¹	$\bar{\nu}$ (E)	40 keV-4 MeV	5 %	II	U.K. : R.D. Smith	For fast reactors.
859	Pu ²⁴¹	$\bar{\nu}$ (E)	500 keV-14 MeV			LRL(Fultz)	Inconsistent results to date obscure energy dependence
860	Pu ²⁴¹	$\bar{\nu}$ (E)	Thermal-100 eV	3% to 5%	II	ANL(Spinrad)	Harwell, James, AERE-R 4597, Pattenden, ANL, 6792.
861	Pu ²⁴¹	$\eta(E)$	Thermal-2keV	10%	I	EIR, Switzerland	Resonance parameters desired.
862	Pu ²⁴¹	$\eta(E)/\eta_0$	0.01 - 2 eV	5 %	II	EIR, Switzerland	Temperature coefficient
863	Pu ²⁴¹	$\eta(E)/\eta_0$	Below 0.05 eV	6 %	II	U.K. : G.H. Kinchin	For thermal reactors. Large sample needed.
864	Pu ²⁴¹	$\eta(E)/\eta_0$	0.05 eV - 1 eV	2 %	II	U.K. : G.H. Kinchin	For thermal reactors. Large sample needed.
865	Pu ²⁴¹	$\eta(E)/\eta_0$	1 eV - 15 eV	6 %	II	U.K. : G.H. Kinchin	For thermal reactors. Large sample needed.
866	Pu ²⁴¹	$\tau(\beta)/\tau_0$	15 eV - 300 eV	8 %	II	U.K. : G.H. Kinchin	For thermal reactors. Large sample needed.
867	Pu ²⁴¹	$\eta(E)/\eta_0$	300 eV-2 keV	20 %	II	U.K. : G.H. Kinchin	For thermal reactors. Large sample needed.
868	Pu ²⁴¹	$\alpha(\beta)$	100 eV-40 keV	20.0(2-2.0)	I	U.K. : R. D. Smith	For fast reactors. Feasibility study planned after Pu ²³⁹ data is complete, Sowerby AERE.
869	Pu ²⁴²	$\sigma_{n,\gamma}(E)$	50 eV to 300 keV	10%	III	CEA, France (C.P. Zaleski) EDF, France	No action in Euratom Community.
870	Pu ²⁴²	$\sigma_{n,f}(E)$	5 keV-7 MeV	15%	III	ANL(Spinrad)	Or at worst 20%
871	Pu ²⁴²	$\sigma_{n,f}(E)$	1-7 MeV	15%	II	ANL(Spinrad)	LASL, Diven could do.
872	Pu ²⁴²	$\bar{\nu}$ (E)	500 keV-14 MeV			LRL(Fultz)	Inconsistent results to date obscure energy dependence
873	Pu ²⁴²	$\eta(E)$	500 keV-10 MeV	5%	III	ANL(Okrent)	
874	Pu ²⁴²	R.I. γ	0.55 eV - 2 MeV	10%	III	U.K. : G.H. Kinchin	To correct measurements of α^0 for Pu ²³⁹ and Pu ²⁴¹ . Some res. par. available, Pattenden Conf. Antwerp, 93.
875	Cf	$\bar{\nu}$	Spontaneous fission	1/4 %	II	U.K., R.D. Smith	Existing data are discrepant. Planned; Fieldhouse, AWRE.
876	Fission products	$\sigma_{nA}(E)$	Thermal cross section and resonance integral.	5%	II	U.K. : G.H. Kinchin	To check for systematic errors on cross-section determinations.
877	Fission products	$\sigma_{nA}(E)$	Thermal cross section and resonance integral.	2%	III	U.K. : G.H. Kinchin	To check for systematic errors on cross-section determinations.
878	Fission products	Heavy fragment yields from fission in U ²³⁵ , U ²³⁵ , Pu ²³⁹ and Pu ²⁴¹ .	Reactor spectrum	3%	III	U.K. : G.H. Kinchin	To resolve discrepancies in existing data (see e.g. AECL 1054). Data available; Crocoll, AERE-R-4723.
879	Organic liquids	λ_{tr}		1%	I	EURATOM, Ispra (V. Raievskii)	CNEN, Casaccia, is measuring. EANDC (E) 57 "U" (p. 79)
880	C ₆ H ₆ Diphenyl Terphenyl Polyphe nyls	$\sigma_{nS}(E)$ (per H-atom)	0.001 eV to 1 eV	5 %	I	EURATOM Ispra (V. Raievskii)	Between 300 and 600° K. CNEN, Casaccia is measuring : EANDC (E) 57 "U" p.79.)