EXFOR News (October 2023)

New experimental data available from Nuclear Reaction Data Centres

EXFOR [1] is a world-wide data library for experimental neutron, charged-particle and photon induced reaction data compiled by the International Network of the Nuclear Reaction Data Centres (NRDC)[a] co-ordinated by the IAEA Nuclear Data Section. Regularly updated web retrieval databases are available at IAEA-NDS as well as NNDC, NEADB, JCPRG and CDFE.

This News lists newly created EXFOR entries as well as revised EXFOR entries where new data subentries are added. Entries from articles pubslished in past 10 years are flagged by asterisks (*). Please send an email to the NRDC Coordinator (n.otsuka@iaea.org) for inclusion in the EXFOR News distribution list as well as any question on EXFOR.

[1] N. Otuka, E. Dupont, V. Semkova, B. Pritychenko et al., Nucl.Data.Sheets **120**(2014)272.

Quantity codes

ALF	α-value ($\sigma_{\rm capt}/\sigma_{\rm fis}$)	KE	Kinetic energy
AMP	Scattering length	INT	Cross section integral over incident energy
CHG	Fragment charge	KER	Kerma factor
CS	Cross section	MAS	Fragment mass
CSP	Partial cross section	MFQ	Differential fission neutron multiplicity
CST	Temperature dependent cross section	MLT	Multiplicity
D3A	Triple differential $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2/\mathrm{d}E'$	NQ	Nuclear quantity
D3E	Triple differential $\mathrm{d}\Omega/\mathrm{d}E'_1/\mathrm{d}E'_2$	NU	Fission neutron multiplicity $\bar{\nu}$
D4A	Quadruple diff. $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2/\mathrm{d}E'_1/\mathrm{d}E'_2$	NUD	Delayed fission neutron multiplicity $\bar{\nu_d}$
DA	Differential $\mathrm{d}/\mathrm{d}\Omega$	POL	Polarization
DAA	Double differential $\mathrm{d}\Omega_1/\mathrm{d}\Omega_2$	POD	Differential polarization
DAE	Double differential $\mathrm{d}\Omega/\mathrm{d}E'$	PY	Product yield (other than fission)
DAP	Partial differential $\mathrm{d}/\mathrm{d}\Omega$	RI	Resonance integral
DAT	Temperature-dependent Legendre coefficient	RP	Resonance parameter
DE	Differential $\mathrm{d}/\mathrm{d}E'$	RR	Reaction rate
DEP	Energy spectrum for specific group	SIF	Self indication
DP	Diff. by linear momentum of outgoing part.	SPC	Gamma spectrum
DT	Diff. by 4-momentum transfer squared	TSL	Thermal scattering
ETA	η-value = $\bar{\nu}\sigma_{\rm fis}/(\sigma_{\rm capt}+\sigma_{\rm fis})$	TT	Thick target yield
EVL	Evaluation	TTD	Differential thick target yield, $\mathrm{d}/\mathrm{d}\Omega$
FY	Fission product yield	TTP	Partial thick target yield

Special codes in outgoing particle field

abs	Absorption	fus	Fusion	sct	Scattering	tot	Total
el	Elastic	inel	Inelastic	tcx	Total charge changing		
fis	Fission	non	Nonelastic	ths	Thermal scattering		

Special codes in incident energy field

Fast	Fast reactor spectrum average	Maxw	Maxwellian spectrum average
Fiss	Fission spectrum average	Spont	Spontaneous (for fission)

[a] NNDC (USA), NEADB (France), NDS (Austria), CJD (Russia), CNDC (China), ATOMKI (Hungary), NDPCI (India), JAEA (Japan), JCPRG (Japan), KAERI (Korea), CDFE (Russia), CNPD (Russia), UkrNDC (Ukraine)

1 Hydrogen 1

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{15}C,non		?	2JPNIRS	6.7+08	1.4+09	Jour	APP/B,48,473	17	H.Du+	E2720
*	^{16}C,non		?	2JPNIRS	7.2+08	1.9+09	Jour	APP/B,48,473	17	H.Du+	E2720
*	^{14}O,x	^{13}N	DP	2JPNIPC	1.3+09	1.3+09	Jour	PRL,130,172501	23	T.Pohl+	E2750
*	^{14}O,x	^{13}N	?	2JPNIPC	1.3+09	1.3+09	Jour	PRL,130,172501	23	T.Pohl+	E2750
*	^{14}O,x	^{13}O	DP	2JPNIPC	1.3+09	1.3+09	Jour	PRL,130,172501	23	T.Pohl+	E2750
*	^{14}O,x	^{13}O	?	2JPNIPC	1.3+09	1.3+09	Jour	PRL,130,172501	23	T.Pohl+	E2750

2 Helium 3

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	p,el	^{3}He	POD	2JPNOSA	1.0+08	1.0+08	Jour	PR/C,106,054002	22	A.Watanabe+	E2744

2 Helium 4

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{15}N,el	^{4}He	?	2JPNIPC	2.8+06	3.8+06	Jour	KPS,73,265	18	D.Kim+	E2747

4 Berylium 9

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{15}C,non		CS	2JPNIRS	6.6+08	1.9+09	Jour	APP/B,48,473	17	H.Du+	E2720
*	^{16}C,non		CS	2JPNIRS	7.0+08	1.9+09	Jour	APP/B,48,473	17	H.Du+	E2720
*	^{48}Ca,x	Many	CS	2JPNIPC	1.7+10	1.7+10	Jour	PRL,129,212502	22	D.S.Ahn+	E2743

6 Carbon

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{15}C,non		CS	2JPNIRS	6.8+08	1.9+09	Jour	APP/B,48,473	17	H.Du+	E2720
*	^{16}C,non		CS	2JPNIRS	7.2+08	1.9+09	Jour	APP/B,48,473	17	H.Du+	E2720

13 Aluminium 27

	Reaction	Product	Quant.	Lab.	Energy (eV) Min	Energy (eV) Max	Type	Documentation Ref Vol Page	Date	Author	Data #
*	^{15}C,non		CS	2JPNIRS	6.7+08	1.9+09	Jour	APP/B,48,473	17	H.Du+	E2720

*	^{16}C,non		CS	2JPNIRS	7.0+08	1.9+09	Jour	APP/B,48,473	17	H.Du+	E2720

25 Manganese 55

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	p,x	^{51}Cr	CS	2JPNIPC	1.7+07	3.0+07	Jour	NIM/B,540,210	23	H.Huang+	E2748
*	p,x	^{54}Mn	CS	2JPNIPC	1.2+07	3.0+07	Jour	NIM/B,540,210	23	H.Huang+	E2748

40 Zirconium 96

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	α,x	^{99}Mo	CS	2JPNIRS	1.1+07	2.3+07	Jour	JRN,318,569	18	M.Hagiwara+	E2751

74 Tungsten

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	^{3}He,x	^{184}Re	CS	2JPNIRS	1.6+07	5.4+07	Jour	NIM/B,536,11	23	M.U.Khandaker+	E2742
*	^{3}He,x	^{184}Re	TT	2JPNIRS	1.6+07	5.4+07	Jour	NIM/B,536,11	23	M.U.Khandaker+	E2742

83 Bismuth 209

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max		Ref Vol Page			
*	p,x	^{24}Na	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{48}Sc	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{48}V	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{59}Fe	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{58}Co	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{65}Zn	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{74}As	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{75}Se	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{83}Rb	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{85}Sr	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{88}Y	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{88}Zr	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{89}Zr	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{96}Tc	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{97}Ru	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{105}Rh	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{106}Ag	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{120}Sb	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{124}Sb	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{119}Te	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{121}Te	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{127}Xe	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749

*	p,x	^{131}Ba	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{139}Ce	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{145}Eu	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{147}Eu	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{147}Gd	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{149}Gd	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{153}Tb	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{169}Yb	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{169}Lu	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{170}Lu	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{171}Lu	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{170}Hf	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{176}Ta	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{178}Ta	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{181}Re	CS	2JPNJAE	1.5+09	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{183}Re	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{185}Os	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{196}Au	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{203}Hg	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{202}Tl	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{202}Pb	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{205}Bi	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{206}Po	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749
*	p,x	^{207}Po	CS	2JPNJAE	4.0+08	3.0+09	Jour	EPJ/CS,284,01033	23	H.Iwamoto+	E2749