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**Memo CP-D/725**

**Date:** 22 December 2011  
**To:** Distribution  
**From:** N. Otsuka, V. Semkova

**Subject: Comparison between Landolt-Börnstein and EXFOR (proton)**

Volume 13 of Landolt-Börnstein (LB) New Series (Springer Verlag) is known as a comprehensive compilation of charged-particle induced radioisotope production cross sections. Each subvolume is very expensive (1,000 - 3,000 EUR!), and a limited number of researchers can use this compilation. We would like to include all experimental works in this LB compilation to our EXFOR library so that all EXFOR users have access to them.

As the first trial, Hideki Murakami (JCPRG, Sapporo) checked EXFOR for the 651 articles cited in LB subvolume A to D (proton-induced reaction), and identified articles missing in EXFOR. Then NDS collected and analysed all missing 173 articles, of which

- 123 articles must be compiled (Category A of the Protocol App. A)
- 25 articles can be compiled (Category B of the Protocol App. A,  $E_p > 1$  GeV)
- 16 articles are not available (e.g., lab. report, book, private communication)
- 9 articles are not relevant to EXFOR compilation (theory, review etc.)

About 20% of the articles in LD Subvolume A to D are missing EXFOR.

We invite ATOMKI, CAJaD, JCPRG, NEA DB and NNDC to the list to check if there are cross section data (in barn or its derivative) from your area. Please inform entry numbers to Semkova for registration to the article list (<http://www-nds.iaea.org/nrdc/alloc/>) with a copy to Otsuka. There could be mistakes in the list (e.g., no data for compilation in the article), and your comments on the list are also appreciated.

At the same, Season's Greetings and best wishes from Vienna to all Centres!

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## 1. Articles must be compiled in EXFOR

LBVol	LBKey	1st Author	Type	Journal	Vol	Page	Year	LAB	Centre	Remark
13d	Jun87	P.Jung	J	JNM	144	43	1987	2GERJUL	ATOMKI	All data compiled in D4058?
13d	Zai91a	N.G.Zaitseva	C	91JUELIC		613	1991	4RUSFVE	CAJaD	
13d	Kal57	S.P.Kalinin	J	AE	2	171	1957	4RUSKUR	CAJaD	=J,SJA,2,193,1957
13c	Kra66	N.N.Krasnov	J	AE	20	154	1966	4RUSFEI	CAJaD	=J,SJA,20,189,1966
13a	Lev90	V.N.Levkovskiy	J	AE	69	180	1990	4KASKAZ	CAJaD	=J,SJA,69,773,1990
13c	Min85	D.V.Min	J	(no code)	2	261	1985	4RUSRUS?	CaJaD	Journal name: Geokhimiya
13c	Bel63	B.I.Beljaev	J	IZV	27	923	1963	4ZZZDUB	CAJaD	=J,BAS,27,907,1963
13c	Bel88	B.N.Beljaev	J	IZV	52	991	1988	4RUSLIN	CAJaD	=J.BAS,52,(5),152,1988
13d	Ale90a	Yu.V.Aleksandrov	J	IZV	54	2249	1990	4RUSLIN	CAJaD	=J,BAS,54,(11),161,1990
13d	Nik70	L.N.Nikitiuk	X	JINR-P6-5248			1970	4ZZZDUB	CAJaD	
13b	Lev66	I.Levenberg	J	NP	81	81	1966	4ZZZDUB?	CAJaD	
13d	Mir77	Yu.T.Mironov	J	PJS	7	211	1977	4RUSLIN	CAJaD	
13d	Ryb65	B.N.Rybakov	J	RAK	7	90	1965	4ZZZDUB	CAJaD	=J,SRA,7,89,1965
13b	Ale84	E.G.Alekseev	J	RAK	26	667	1984	4RUSLIN	CAJaD	=J,SRA,26,632,1984
13a	Shu86	A.Yu.Shukolukov	J	RAK	28	142	1986	4RUSFVE	CAJaD	=J,SRA,28,126,1986
13c	Zai87	N.G.Zaitseva	J	RAK	29	391	1987	4RUSFVE	CAJaD	=J,SRA,29,376,1987
13d	Zai91	N.G.Zaitseva	J	RCA	54	57	1991	4RUSFVE	CAJaD	
13b	Lev84	V.N.Levkovskiy	J	RE	80	223	1984	4KASKAZ	CAJaD	
13b	Klu70	A.P.Klusharev	J	YF	11	953	1970	4UKRKFT	CAJaD	=SNP,11,530,1970
13d	Kuz58	M.Ya.Kuznetsova	J	ZET	34	1096	1958	4ZZZDUB?	CAJaD	=JET,7,759,1958
13a	Koz60	N.S.Kozodaev	J	ZET	38	708	1960	4ZZZDUB?	CAJaD	=JET,11,511,1960
13d	Kuz62	M.Ya.Kuznetsova	J	ZET	42	1451	1962	4ZZZDUB?	CAJaD	=JET,15,1006,1962
13c	Lav62	A.K.Lavrukhina	J	ZET	43	3	1962	4ZZZDUB	CAJaD	=JET,16,1,1963
13b	Zai62	N.G.Zaitseva	J	ZET	43	1672	1962	4ZZZDUB?	CAJaD	=JET,16,1180,1963

13b	Izu91	M.Izumo	J	ARI	42	297	1991	2JPNJAE	JCPRG	
13a	Noz81	T.Nozaki	J	RCA	29	57	1981	2JPNIPC	JCPRG	
13a	Suz85	K.Suzuki	J	RI	34	537	1985	2JPNIRS	JCPRG	
13d	Mit83	L.W.Mitchell	J	AUJ	36	1	1983	3AULAML	NDS	
13a	Ken80	S.R.Kennett	J	NP/A	344	351	1980	3AULAML	NDS	
13a	Ken80a	S.R.Kennett	J	NP/A	346	523	1980	3AULAML	NDS	
13a	Ken81a	S.R.Kennett	J	NP/A	363	233	1981	3AULAML	NDS	
13a	Ken81	S.R.Kennett	J	NP/A	368	337	1981	3AULAML	NDS	
13d	Rai77	G.M.Raisbeck	C	(no code)	2	203	1977	2FR CSN	NEA DB	Proc. 15th Int. Conf., Plovdiv, Bulgaria, 13-26 August 1977, Vol.2, p. 203
13c	Bon84	M.Bonardi	J	ARI	35	564	1984	2ITYMIL	NEA DB	
13a	Cla85	C.G.Clayton	J	ARI	36	13	1985	2UK HAR	NEA DB	
13c	Bou60	G.Bouissieres	J	CR/B	251	2155	1960	2FR PAR?	NEA DB	
13a	Tam61	M.A.Tamers	J	CR/B	253	1202	1961	2FR PAR	NEA DB	
13c	Lef61	M.M.Lefort	J	CR/B	253	2221	1961	2FR PAR?	NEA DB	
13a	Ngu61	L.D.Nguyen	J	CR/B	253	2919	1961	2FR PAR	NEA DB	
13c	Lig64	M.Ligonniere	J	CR/B	259	1406	1964	2FR PAR+	NEA DB	
13a	Gau66	H.Gauvin	J	CR/B	263	752	1966	2FR PAR	NEA DB	
13a	Skl66	L.Sklauenitis	J	CR/B	263	833	1966	2FR PAR	NEA DB	
13a	Jun68	M.Jung	J	CR/B	266	1154	1968	2FR PAR	NEA DB	
13a	Bim71	R.Bimbot	J	CR/B	273	505	1971	2FR PAR	NEA DB	
13a	Boe52	F.Boehm	J	HPA	25	599	1952	2SWTETH	NEA DB	
13a	Yio69	F.Yiou	J	JGR	74	2447	1969	2ZZZCER+	NEA DB	Revision of C0395?
13d	Rea58	P.Reasbeck	J	JIN	7	343	1958	2UK BIR?	NEA DB	
13d	Rud61	G.Rudstam	J	JIN	23	161	1961	2ZZZCER	NEA DB	
13c	Bru64	C.Brun	J	JIN	26	1633	1964	2FR PAR?	NEA DB	
13d	Deb68	R.Debuyst	J	JIN	30	691	1968	2BLGLVN?	NEA DB	

13c	Olk60	J.Olkowsky	J	JPR	21	405	1960	2FR SAC?	NEA DB	
13c	Rie61	C.Riehl	J	JPR	22	770	1961	2FR PAR	NEA DB	
13c	Tar62	X.Tarrago	J	JPR	23	1	1962	2FR PAR	NEA DB	
13c	Lef62	M.Lefort	J	JPR	23	123	1962	2FR PAR?	NEA DB	
13a	Mak62	H.Makram	J	JPR	23	1000	1962	2FR PAR	NEA DB	
13d	Alb63	M.G.Albouy	J	JPR	24	67	1963	2FR PAR	NEA DB	
13a	Coh65	J.P.Cohen	J	JPR	26	427	1965	2FR PAR	NEA DB	
13c	Bim66	R.Bimbot	J	JPR	27	385	1966	2FR PAR	NEA DB	
13d	Bar84	F.Baros	J	JPR	45	855	1984	2FR PAR+	NEA DB	
13b	Lav84	B.Lavielle	J	JPR	45	981	1984	2FR PAR+	NEA DB	
13a	Dic50	J.M.Dickson	J	NAT	166	235	1950	2UK HAR	NEA DB	
13d	Kla67	R.Klapisch	J	NIM	53	216	1967	2FR PAR?	NEA DB	All data compiled in O1545?
13c	Fel83	P.De Felice	J	NIM	212	359	1983	2ZZZCER	NEA DB	
13c	Olk61	J.Olkowsky	J	NP	23	164	1961	2FR SAC	NEA DB	
13c	Olk61a	J.Olkowsky	J	NP	24	84	1961	2FR SAC	NEA DB	
13b	Del63	J.Delaunay-Olkowsky	J	NP	47	266	1963	2FR SAC	NEA DB	
13c	Bjo67	S.Bjornholm	J	NP/A	95	513	1967	2DENNBI	NEA DB	
13a	Mic85	R.Michel	J	NP/A	441	617	1985	2FR PAR+	NEA DB	All data compiled in A0100?
13a	Ran51	T.C.Randle	J	PM	42	665	1951	2UK HAR	NEA DB	
13a	Rud53	G.Rudstam	J	PM	44	1131	1953	2SWDUPP	NEA DB	
13a	Sal53	D.C.Salter	J	PM	44	1305	1953	2UK HAR	NEA DB	
13a	Cle61	A.B.Clegg	J	PPS	78	681	1961	2UK HAR	NEA DB	
13a	Dic51	J.M.Dickson	J	PPS/A	64	902	1951	2UK HAR	NEA DB	
13a	Bur55	W.E.Burcham	J	PPS/A	68	1001	1955	2UK BIR?	NEA DB	
13a	Cas56	J.M.Cassels	J	PPS/A	69	495	1956	2UK HAR?	NEA DB	
13a	Sym57	J.Symonds	J	PPS/A	70	824	1957	2UK BIR?	NEA DB	

13a	Jun70	M.Jung	J	PR/C	1	435	1970	2FR PAR?	NEA DB	
13a	Rai74	G.M.Raisbeck	J	PR/C	9	1385	1974	2ZZZCER+	NEA DB	
13a	Mar56	S.S.Markowitz	J	BAP	1	224	1956	1USABNL+	NNDC	
13a,d	Hud56	J.Hudis	J	BAP	1	224	1956	1USABNL	NNDC	
13c	Pat58	B.D.Pate	J	CJC	36	1691	1958	1CANMCG	NNDC	
13a	Hon63	S.Hontzeas	J	CJC	41	2194	1963	1CANMCG	NNDC	
13c	Sah71	G.B.Saha	J	CJC	49	2205	1971	1CANMCG	NNDC	
13c	Dau80	H.Dautet	J	CJP	58	891	1980	1CANTMF	NNDC	
13c	May64	M.May	J	JIN	26	479	1964	1CANMCG	NNDC	
13b	Pan66	J.A.Panontin	J	JIN	28	1795	1966	1USACAR	NNDC	
13b	Hog73	J.J.Hogan	J	JIN	35	705	1973	1CANMCG	NNDC	All data compiled in B0025?
13d	Bro76	J.C.Brodovitch	J	JIN	38	1581	1976	1CANMCG	NNDC	
13c	Vin81	J.S.Vincent	J	JRC	65	17	1981	1CANTMF	NNDC	
13a	Mil88	D.A.Miller	J	JRN	123	643	1988	1USALAS	NNDC	
13c	Bir86	O.Birgul	J	JRN/L	103	153	1986	1CANMCG	NNDC	
13d	Cum81	J.B.Cumming	J	NIM	180	37	1981	1USABNL	NNDC	
13a	Wat83	J.W.Watson	J	NIM	215	413	1983	1USAINU	NNDC	
13b	Chu71	L.B.Church	J	NP/A	162	643	1971	1USACAR	NNDC	All data compiled in B0024?
13a	Pan48	W.K.H.Panofsky	J	PR	74	1732	1948	1USABRK?	NNDC	All data compiled in B0077?
13a	Bat51	R.E.Batzel	J	PR	82	607	1951	1USABRK?	NNDC	
13a	Bar51	F.O.Bartell	J	PR	84	463	1951	1USABRK?	NNDC	
13b	For53	C.W.Forsthoff	J	PR	90	1004	1953	1USAPTN	NNDC	
13b	Jam54	R.A.James	J	PR	93	288	1954	1USACLA?	NNDC	
13c	Fin54	R.W.Fink	J	PR	94	1357	1954	1USAROC	NNDC	
13a	War54	S.D.Warshaw	J	PR	95	649	1954	1USACHI	NNDC	Not on PROLA
13c	Fin54a	R.W.Fink	J	PR	96	185	1954	1USAROC	NNDC	

13a	Coh54b	B.L.Cohen	J	PR	96	1617	1954	1USAORL	NNDC	
13a	Mis55	J.A.Miskel	J	PR	98	1197(X2)	1955	1USABNL?	NNDC	No data on the article?
13a	Wic57	A.F.Wickersham	J	PR	107	1050	1957	1USABRK?	NNDC	
13c	Car58a	A.A.Caretto	J	PR	110	1169	1958	1USACOL+	NNDC	
13c	Van60	R.Vandenbosch	J	PR	120	1313	1960	1USAANL	NNDC	Neutron data in 12212
13c	War61	W.R.Ware	J	PR	122	1837	1961	1USAROC	NNDC	
13d	Pos68	A.M.Poskanzer	J	PR	168	1331	1968	1USABNL	NNDC	
13d	Bro70	R.L.Brodzinski	J	PR/C	1	1955	1970	1USASRE	NNDC	
13a	Umb70	C.J.Umbager	J	PR/C	2	1378	1970	1USAFSU	NNDC	
13a	Gar73	C.K.Garrett	J	PR/C	8	594	1973	1USACHI	NNDC	
13a	Kit75	P.Kitching	J	PR/C	11	420	1975	1USASRE	NNDC	
13d	Jac75a	N.P.Jacob	J	PR/C	11	541	1975	1USABRK	NNDC	
13d	Lin75	D.A.Lind	J	PR/C	11	2099	1975	1USA?	NNDC	
13a	Hog76	K.R.Hogstrom	J	PR/C	14	753	1976	1USALAS	NNDC	
13c	Mol77	M.A.Molecke	J	PR/C	15	719	1977	1USASRE	NNDC	
13c	Bis79	S.Biswas	J	PR/C	20	1467	1979	1USAANL	NNDC	
13b	Fly79	D.S.Flynn	J	PR/C	20	1700	1979	1USAKTY	NNDC	
13c	Cla82	J.L.Clark	J	PR/C	26	2073	1982	1USABNL	NNDC	
13c	Dom85	M.Dombsky	J	PR/C	32	253	1985	1USAINU+	NNDC	
13a	Jac75b	H.E.Jackson	J	PRL	35	641	1975	1USALAS	NNDC	
13a	Sah60	L.C.Sah	X	UCRL-9394			1960	1USABRK	NNDC	

## 2. Articles can be compiled in EXFOR (High energy data etc.)

LBVol	LBKey	1st Author	Type	Journal	Vol	Page	Year	LAB	Centre	Remark
13c	Koz88a	P.Kozma	J	CZJ/B	38	973	1988	4ZZZDUB	CAJaD	High energy
13a	Koz88	P.Kozma	J	CZJ/B	38	1317	1988	4ZZZDUB	CAJaD	High energy

13a	Koz86	P.Kozma	X	JINR-E1-86-607			1986	4ZZZDUB	CAJaD	(=J,JP/G,16,45,1990, High energy)
13c	Koz89a	P.Kozma	X	JINR-E1-89-252			1989	4ZZZDUB	CAJaD	High energy
13d	Koz89	P.Kozma	X	JINR-E1-89-745			1989	4ZZZDUB	CAJaD	(=J,NIM/A,291,662,1990, High energy)
13d	Koz90	P.Kozma	J	JP/G	16	45	1990	4ZZZDUB	CAJaD	High energy
13a	Mos70	L.P.Moskalev	J	YF	12	871	1970	4RUSFVE	CAJaD	=SNP,12,472,1970, High energy
13a	Cum56	J.B.Cumming	J	BAP	1	225	1956	1USABNL	NNDC	High energy
13a	Hor56	N.Horwitz	J	BAP	1	225	1956	1USABRK?	NNDC	High Energy
13d	Ste68	A.F.Stehney	J	NP/B	5	188	1968	1USAANL	NNDC	High energy
13c	Chu72	Y.Y.Chu	J	NP/B	40	428	1972	1USABNL	NNDC	High energy
13a	Rai75	G.M.Raisbeck	J	PL/B	57	186	1975	1USANAL	NNDC	High energy
13a	Hud54	J.Hudis	J	PR	94	775	1954	1USABNL?	NNDC	High energy, not on PROLA
13c	Fra71	E.M.Franz	J	PR/C	4	1671	1971	1USABNL	NNDC	High Energy
13a	Hus73	L.Husain	J	PR/C	7	2452	1973	1USABNL	NNDC	High Energy
13c	Chu74	Y.Y.Chu	J	PR/C	10	156	1974	1USABNL	NNDC	High Energy
13b	Eng74	G.English	J	PR/C	10	2268	1974	1USAANL	NNDC	High Energy
13b	Eng74a	G.English	J	PR/C	10	2281	1974	1USA?	NNDC	High Energy
13a	Cum76	J.B.Cumming	J	PR/C	14	1554	1976	1USABRK	NNDC	High Energy
13a	Kau79	S.B.Kaufman	J	PR/C	19	962	1979	1USANAL	NNDC	High Energy
13b	Por79	N.T.Porile	J	PR/C	19	2288	1979	1USABRK	NNDC	High Energy
13d	Col81	G.D.Cole	J	PR/C	24	2038	1981	1USANAL	NNDC	High Energy
13c	Ohk83	Y.Ohkubo	J	PR/C	27	1146	1983	1USALAS	NNDC	Meson induced reaction
13b	Wan86	C.F.Wang	J	PR/C	33	2183	1986	1USANAL	NNDC	High Energy
13d	Kat73	S.Katcoff	J	PRL	30	1221	1973	1USANAL+	NNDC	High Energy



### 3. Articles not available at NDS

LBVol	LBKey	1st Author	Type	Journal	Vol	Page	Year	LAB	Centre	Remark
13d	Bat80	L.H.Batist	X	LINP-606			1980	4RUSLIN?		
13d	Bat82	L.H.Batist	X	LINP-746			1982	4RUSLIN?		
13a	Geo62	R.George	T	IPNO-TH-			1962	2FR PAR?		
13a	Val64	L.Valentin	T	IPNO-TH-			1964	2FR PAR?		
13a	Ste62	C.M.Steams	X	CU-34-63			1962	1USACOL?		
13c	Kel50	E.L.Kelly	X	UCRL-1044			1950	1USABRK		
13c	Ale91	V.N.Aleksandrov	A	(no code)		36	1991	?		Abstract. Nucl.Transmut. of Nucl.Power Long-Lived Waste, Obninsk, 1-5 July 1991
13c	Gus62	M.Gusakow	J	AP	7	67	1962			No such an article. Probably compiled in P0032.
13a	Gib60	J.H.Gibbons	B	FAST N.PH.	1		1960			
13b	Ilj91	A.S.Iljinov	B	LANDOLT	I/13A		1991			??
13b	Gar76	D.I.Garber	B	NEUT.CS 2			1976			
13d	Ort74	C.J.Orth	W	ORTH						Cited in Phys. Rev. C 18 (1978) 1426
13a	Rud56	G.Rudstam	T	RUDSTAM			1956			
13b	Sem91	V.G.Semenov	W	SEMENOV			1991			
13d	Lan89	R.G.Lanier	R	UCAR-10062-89		71	1989			
13d	Wes89	H.I.West jr.	R	UCAR-10062-89			1989			A0433?