

**Memo issued on behalf of
National Nuclear Data Center
Brookhaven National Laboratory
USA**

Memo CP-C/464

Date: 29 November 2018
To: Distribution
From: O. Schwerer, B. Pritychenko
Subject: **Completeness check EXFOR vs. NSR: Spontaneous Fission Yields**

We performed a cross-check between NSR and EXFOR for references containing fission yield data. The results for spontaneous fission are listed in the Appendix. The responsible centres are asked to go through the respective parts of the list and compile/update the appropriate entries with priority. The results for photon- and neutron-induced fission will be submitted separately.

- ⤴ The last column in the list contains a proposed action, such as „New entry“ or „Add reference to entry xxxxx“. While this was written to the best of our knowledge, centres are requested to check the respective references in detail and take the final decision on the appropriate action.
- ⤴ While the purpose of this cross-check was to find additional data for fission yields, other related data (such as fission cross sections or delayed neutron data) occasionally also appeared and were kept in the list.
- ⤴ Some potentially relevant references found in NSR turned out to be not relevant for EXFOR. We collected them in a separate part of the list to keep this information on record.
- ⤴ Articles which already appear in EXFOR (e.g. as second or third item under REFERENCE) are not included as they are not new to EXFOR.

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APPENDIX

Area 1 references

NSR Key#	First Author	Publication	Vol	Issue	Page	Year	Lab	Area	Action
2010TEZZ	G.M.Ter-Akopian	R,AIP-	1175			2010	1USABRK	1	Compare/update 14331
2008WA15	J.G.Wang	J,PR/C	78		14313	2008	1USABRK	1	ok (Fig.4 could be compiled, all the rest is structure data)
2007GO21	C.Goodin	J,NP/A	787		231c	2007	1USABRK	1	Compare/update 14331
2006DA21	A.V.Daniel	J,PAN	69		1405	2006	1USAANL	1	Compare/update 14331
2006FO10	D.Fong	J,PAN	69		1161	2006	1USABRK	1	Compare/update 14331, 41464
2006GO20	C.Goodin	J,PR/C	74		17309	2006	1USABRK	1	Partly similar to 2006FO10
2005RE06	E.L.Reber	J,JRN	264		243	2005	1USAINL	1	NewEntry
2004DA13	A.V.Daniel	J,PR/C	69		41305	2004	1USABRK	1	Add to 41464
2004GE01	R.J.Gehrke	J,NIM/B	213		10	2004	1USAINL	1	Add ref.to 2005RE06
2003HW08	J.K.Hwang	J,AHP/N	18		383	2003	1USABRK	1	Add to 41464
2002WU03	S.-C.Wu	J,NIM/A	480		776	2002	1USABRK	1	Add ref.to 13807
2001HA67	J.H.Hamilton	J,AHP/N	14		161	2001	1USABRK	1	Add ref.to 13807
2001RA20	A.V.Ramayya	J,PNP	46		221	2001	1USABRK	1	Add to 13807
2000RAZZ	A.V.Ramayya	C,99ST.AND			246	2000	1USAANL	1	NewEntry, He-5
1999HA10	J.H.Hamilton	J,ASL	49		31	1999	1USAVBT	1	Combine with 2000RAZZ
1997HA64	J.H.Hamilton	J,PNP	38		273	1997	1USABRK	1	NewEntry, Xe-140
1997RA39	A.V.Ramayya	J,NC/A	110		1073	1997	1USABRK	1	Compare 1997HA64
1997SA72	A.Sandulescu	J,NC/A	110		1079	1997	1USAVBT	1	Compare 1997RA39
1996DA16	Y.X.Dardenne	J,PR/C	54		206	1996	1USABRK	1	Compare 13747 (Some authors overlap)
1996TE04	G.M.Ter-Akopian	J,PRL	77		32	1996	1USAVBT	1	Similar to many later Gammasphere publications, detailed comparison needed
1995TEZW	G.M.Ter-Akopyan	C,95PETRBG			224	1995	1USAORL	1?	Abstract only, in Russian.
1991LUZX	S.J.Luke	J,BAP	36	4	1348, J10 2	1991	1USAWAU	1	Brief abstract only, to 1990GOZW
1990GOZW	C.A.Gossett	P,A-WAU-1990			7	1990	1USAWAU	1	NewEntry, 1991LUZX
1982WEZV	J.Weber	P,LA-9381-PR			92	1982	1USALAS	1	Update 12709 which has no data points
1977AD05	J.A.Adams	J,NSE	63		41	1977	1USAASU	1	NewEntry
1977LI03	R.J.Lipinski	J,PL/B	66		326	1977	1USAUI	1	NewEntry
1976BEYF	C.E.Bemis	J,BAP	21	8	970, AE10	1976	1USAORL	1	New entry (abstract only, 1 number for compilation)
1976BO40	C.A.Bolig	J,NSE	61		366	1977	1USAASU	1	NewEntry
1974KA13	S.B.Kaufman	J,NIM	115		47	1974	1USAANL	1	NewEntry
1974NIZY	H.Nifenecker	C,73ROCH	2		435	1974	1USABRK	1	NewEntry
1973EIZT	M.E.Eichor	J,DA/B	34B		1034	1973	1USAMIS	1	Ba data only for U233(n,f) which are in 13280. The Cf252-SFY data are in 13278 which should be updated with the Cf249 data
1973FLZQ	K.F.Flynn	R,ANL-	7996		8	1973	1USAANL	1	Add ref.to 13340
1973PLZX	F.Pleasanton	J,BAP	18		628, EK14	1973	1USAORL	1	Only 1 of 4 authors overlaps. Could be combined with 10605 May be added to 14298 (but abstracts without any additional info need not be added to existing entry). No data
1973UNZZ	J.P.Unik	J,BAP	18		627, EK5	1973	1USAANL	1	
1971JO13	W.John	J,PRL	27		45	1971	1USALRL	1	NewEntry
No action for EXFOR									
2016ME10	A.P.Meshik	J,PR/C	93		44614	2016	1USAWAS	1	Chemically fractionated fission in U ore, not for EXFOR
2014LU07	Y.X.Luo	J,PR/C	89		44326	2014	1USABRK	1	Structure data for Nb106, not for EXFOR
2011LI25	S.H.Liu	J,PR/C	83		64310	2011	1USABRK	1	Structure data for Rh114, not for EXFOR
2009LU04	Y.X.Luo	J,NP/A	818		121	2009	1USABRK	1	Structure data for La143,144, not for EXFOR
2002SAZS	G.Savard	R,ANL-02/15				2002	1USAANL	1	No data, nothing for EXFOR
1999HW04	J.K.Hwang	J,PR/C	60		44616	1999	1USAVBT	1	Not for EXFOR
1998SIZW	M.W.Simon	C,97SANIB			270	1998	1USABRK	1	No data for EXFOR
1984BEZU	C.S.Bendall	J,DA/B	45B		1224	1984	1USAASU	1	Abstract only, decay data for Ba isotopes, not for EXFOR
1981BA09	J.D.Baker	J,RCA	28		51	1981	1USAINL	1	No data for EXFOR
1979AT01	M.Attrep	J,JIN	41		1	1979	1USAETS	1	No data for EXFOR
1979GI04	J.Gindler	J,PR/C	19		1806	1979	1USAANL	1	Deduced data, no experiment described → No orig.experiment, not for EXFOR
1973CLZY	A.T.Clem	J,BAP	18		626, EK3	1973	1USAFLA	1	Abstract with no data, found no relation to other publication

Area 2 references

NSR Key#	First Author	Publication	Vol	Issue	Page	Year	Lab	Area	Action
2013EL08	J.Elseviars	J,PR/C	88		44321	2013	2ZZZCER	2	NewEntry. β -delayed fission of Tl-180
2005KOZV	Yu N.Kopatch	R,AIP-	798		115	2005	2FR ILL	2	Add ref.to 22938
2005KRZW	L.Krupa	Int.Symp.Exotic Nuclei, Peterhof, Russia,2004	343			2005	2SF JYV	2	NewEntry Emphasis on demonstrating technique, mass distr.measured
2005VAZW	N.Varapai	R,AIP-	798			2005	2ZZZGEL	2	As example
2004ZEZZ	Sh.Zeynalov	12.Intern.Sem.on Int.of Neutrons with Nuclei, Dubna 2004			371	2004	2ZZZGEL	2	Add ref.to 22746
2000BI05	D.C.Biswas	J,EPJ/A	7		189	2000	2ITYPAD	2	NewEntry
2000MUZY	M.Mutterer	C,99ST.AND			316	2000	2GERMPH	2	Add to 23099
1999SMZX	A.G.Smith	R,AIP-	283		481	1999	2FR STR	2	NewEntry
1997GO36	F.Gonnenwein	J,NC/A	110		1089	1997	2FR ILL	2	NewEntry
1997MUZU	M.Mutterer	5.Intern.Sem.on Int.of Neutrons with Nuclei, Dubna 1997			331	1997	2GERMPH	2	2 nd ref.of 22461
1997SEZW	O.Serot	C,97TRIEST	1		476	1997	2FR ILL	2	Small graph on Pu(n,f). More data published elsewhere?
1988AF01	H.Afarideh	J,ANE	15		201	1988	2UK BIR	2	Add ref./data to 22118
1986BU08	C.Budtz-Jorgensen	J,RE	93		5	1986	2ZZZGEL	2	Add ref.to 23175
1986BA24	G.Barreau	J,RE	93		73	1986	2FR GRA	2	NewEntry
1986CA14	F.Caitucoli	J,RE	92		333	1986	2FR GRE	2	NewEntry
1985BA01	G.Barreau	J,NP/A	432		411	1985	2FR GRA	2	NewEntry
1983STZZ	Ch.Straede	P,NEANDC(E)-242	III		36	1983	2ZZZGEL	2	NewEntry
1983TO15	L.Toppare	J,CJC	61		649	1983	2TUKANK	2	Add ref.to 21700
1982ALZW	E.Allaert	P,NEANDC(E)-232	III		4	1982	2ZZZGEL	2	Add ref.to 21788
1981MA03	G.Mariolopoulos	J,NIM	180		141	1981	2FR GRE	2	Add data and ref.to 21743
1980AS05	M.Asghar	J,NP/A	341		388	1980	2FR ILL	2	NewEntry
1980SK02	K.Skarsvag	J,PR/C	22		638	1980	2NORKJL	2	NewEntry
1978ER01	H.N.Erten	J,JIN	40		183	1978	2TUKANK	2	NewEntry
1978JU01	M.Just	J,NIM	283		148	1978	2GERMPH	2	Mainly on detector. Figs.9,10 with rel.data on Pu239(d,pf)
1976YA03	H.Yamamoto	J,NIM	134		119	1976	2JPNKYU	2	NewEntry
1975GO24	H.Gokturk	J.Inorg.Nucl.Chem.	37		2237	1977	2TUKANK	2	NewEntry
1972CA39	M.Cambiaghi	J,NC/A	11		716	1972	2ITYPAV	2	Tern.fiss.U,Pu(n,f), Cf-252-sf
1967RA38	M.N.Rao	J,JIN	29		863	1967	2GERKLN	2	NewEntry

No action for EXFOR

2008TS03	I.Tsekhanovich	J,PRC	78		11301	2008	2FR ILL	2	Structure data of Rb94, not for EXFOR
2000UR01	W.Urban	J,PR/C	61		41301	2000	2FR STR	2	Structure of Te137, nothing for EXFOR
2000UR06	W.Urban	J,PR/C	62		44315	2000	2FR STR	2	Structure of Te139, nothing for EXFOR
1986KA50	I.Kanno	J,NIM/A	251		108	1986	2JAPKTO	2	No data for EXFOR
1986KI03	T.Kimura	J,ARI	37		121	1986	2JAPJAE	2	No data for EXFOR
1975SC21	K.-H.Schmidt	J,PL/B	56		250	1975	2GERTHD	2	Sec.electrons from fission, not for EXFOR
1974BO57	W.Bogi	J,RCA	21		33	1975	2GERTHD	2	Chem.handling of FP, nothing for EXFOR

Area 3 references

NSR Key#	First Author	Publication	Vol	Issue	Page	Year	Lab	Area	Action
2017WA32	T.Wang	J,PR/C	96		34611	2017	3CPRBHN	3	NewEntry
2016WA03	T.Wang	J,PR/C	93		14606	2016	3CHPAEP	3	NewEntry
1993DLZZ	Z.Dlouhy	Inst.Phys.Conf.Ser.132,Sect.4			481	1993	3CZRUJF	3	NewEntry
1991RA24	A.Ramaswami	J,RCA	54		163	1991	3INDTRM	3	NewEntry
1990NA27	A.G.C.Nair	J,JRN	140		215	1990	3INDTRM	3	Add ref.to 33062
1990RA17	M.N.Rao	J,NIM/B	51		102	1990	3INDTRM	3	New entry
1988SE05	D.Seeliger	J,SNP	47		403	1988	3DDRTUD	3	Add ref.and data to 30969, or new entry
1985KO14	A.J.Kordyasz	J,NP/A	439		28	1985	3POLIBJ	3	NewEntry
1981SEZW	H.A.Selic	P,JUEL-SPEZ-	99		69	1981	3ISLWZI	3	Mainly gamma data of FF. Possibly Fig.7 for compilation, See also 1981SEZV
1980BAYJ	R.Baier	C,8OKIEV	3		20	1980	3CSRUF	3	New entry (in Russian)
1979SEZV	H.A.Selic	Inst.Phys.Conf.Ser.51,Chapter 5			316	1979	3ISLWZI	3	NewEntry
1970KAZN	S.S.Kapoor	C,70MADURAI	2		349	1970	3INDTRM	3	Add ref.to 33071
No action for EXFOR									
1977GOZI	N.Golczar	P,INDC(SEC)-61			190	1977	3ISLHFA	3	Abstract with no data
1977RAYS	M.N.Rao	C,77PUNE	20B		253	1977	3INDIND	3	Abstract with no data

Area 4 references

NSR Key#	First Author	Publication	Vol	Issue Page	Year	Lab	Area	Action
2012PY01	Yu.V.Pyatkov	J,EPJ A	48	94	2012	4ZZZDUB	4	Complex experiment, complex graphs, possibly neutron multiplicities for compilation
2005PYZX	Yu.V.Pyatkov	Int.Symp.Exotic Nuclei, Peterhof, Russia,2004	351		2005	4ZZZDUB	4	Complex graphs, no tables, probably not for Exfor
2005PYZY	Yu.V.Pyatkov	P,JINR-E15-2005-54th Ann.Conf.Nucl.Spectrosc.At.Nuclei, Dubna 2004		99	2005	4ZZZDUB	4	Similar to 2005PYZX
2004GAZZ	Yu.P.Gangrsky	P,JINR-E15-		80	2004	4ZZZDUB	4	Short note in Russian with table, possibly new entry
2004PYZZ	Yu.V.Pyatkov	J,PAN	66	631	2003	4ZZZDUB	4	Similar to 2005PYZX
2003PY01	Yu.V.Pyatkov	C,99ST.AND		227	2000	4RUSRI	4	Add ref.to 41425
2000SHZY	V.I.Shpakov	P,JINR-P15-96-		206	1996	4ZZZDUB	4	Add ref.to 41310
1996IVZY	M.P.Ivanov	P,JINR-E7-95-		148	1995	4ZZZDUB	4	NewEntry
1995ANZT	M.Andrassy	C,99TASHKE		570	1989	4RUSKUR	4	Abstract only, in Russian, probably no data
1989ALZU	D.V.Aleksandrov	J,SNP	48	420	1988	4RUSRI	4	NewEntry
1988AL39	I.D.Alkhazov	J,YF	36	1351	1982	4RUSKUR	4	Probably new entry (in Russian, short Engl.abstract)
1982AL33	D.V.Aleksandrov	C,82KIEV		368	1982	4RUSKUR	4	Abstract only, in Russian, not sure about data
1982ALZJ	D.V.Aleksandrov	C,82KIEV		367	1982	4RUSKUR	4	Abstract only, in Russian, not sure about data
1982ALZK	D.V.Aleksandrov	J,JP/G	5	723	1979	4RUSKUR	4	New entry (upper limit for some LCP)
1979BO14	A.A.Borovoy	J,SJA	46	282	1979	4RUSNIR	4	Add ref.and some data (Pu239(n,f)) to 40420
1979BA53	B.G.Basova	J,YF	29	595	1979	4RUSNIR	4	Add ref.to 40479
1979ZA02	Y.S.Zamyatnin	J,YF	25	723	1977	4RUSFEI	4	In Russian. Possible relation to 40450 needs further checking
1977PI04	V.M.Piksaikin	J,SNP	17	489	1973	4RUSRI	4	Add ref.to 40459
1973DO11	A.G.Donichkin	J,SNP	18	369	1973	4RUSLIN	4	Add to 40423
1973GR39	A.P.Graevskii	J,SNP	15	620	1972	4RUSNIR	4	NewEntry
1972IV01	O.I.Ivanov							
No action for Exfor								
2005VOZX	A.S.Vorobyev	R,AIP-	769		2005	4RUSLIN	4	Same as 2 nd ref.of 41425.
1990AL40	D.V.Aleksandrov	J,SNP	52	593	1990	4RUSKUR	4	Search for multineutrons in spont.fiss. Nothing for Exfor