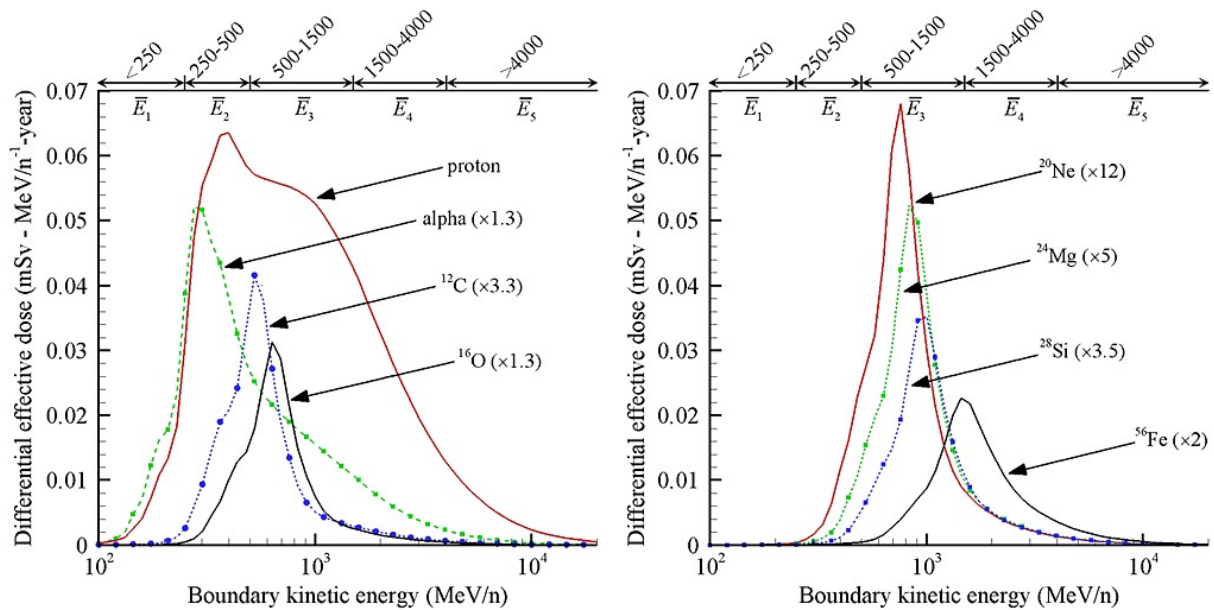


EXFOR completeness for cross section data for space radiation protection

(N. Otsuka, 2023-11-09, CP-D/1095)

A recent publication by M.S. Smith et al. [1] discusses databases, dissemination, and compilation of nuclear reaction data in the relation with radiation protection of astronauts and electronic devices exposed by galactic cosmic rays (GCR). The following figure (reproduced from T.C.Slaba et al. [2]) shows fraction of doses caused by various ions up to $Z\sim 26$ accelerated up to ~ 10 GeV/u.



Collection of experimental cross sections helps validation of transport codes (e.g., Geant4, PHITS) applied to space radiation protection as well as heavy-ion therapy. Smith et al. introduce the following two compilations of cross sections for space research:

1. GSI-ESA-NASA database [3] (1,786 cross section data from 103 publications): This is an excellent compilation of angular and energy integrated cross sections such as total reaction cross sections (SF3=NON) and total charge changing cross sections (SF3=TCC). Not only the reaction and cross section but also data description (e.g., doi, sample thickness, facility, uncertainty type) are nicely tabulated in a simple form. The website (<https://bioapp.gsi.de/cross-section-db/>) provides retrieval function, but one can also download the whole database in EXCEL, CSV etc.
2. NUCDAT database [4] (~50,000 entries): This covers partial cross sections and differential cross sections including those expressed by relativistic kinematic variables such as rapidity and transverse mass. An index (e.g., projectile, incident energy, target, fragment nuclide, quantity) of this database is shown in the full description of the database [5]. I cannot find this database on the internet, and it is not clear for me if this database provides numerical data or index only.

Many datasets compiled in these databases are for projectile heavier than $A=13$ or projectile energy higher than 1 GeV (category B defined in the NRDC Protocol), and we do not guarantee their completeness in EXFOR. However, all CPND centres (other than NEA DB) compile the newly published heavy-ion induced reaction data, and it would be of our interest to see to what extent EXFOR is complete for space application. In the analysis discussed in this memo,

- An article reporting both categories A and B data was treated as a category A article.

- The upper boundary energy for the category A was set to 1 GeV/u rather than to 1 GeV).
- The quantity involving a independent or dependent variable undefined in the dictionary (e.g., transverse mass, invariant cross section) is not for EXFOR compilation. (i.e., not EXFORable).

The following summary tables show the EXFOR coverage is 47% for the GSI-ESA-NASA database and 68% for the NUCDAT database.

Table 1. EXFOR coverage of articles compiled in the GSI-ESA-NASA database (“EUR A/B” means experiments performed in area 2 countries other than Japan under category A/B)

	Total	USA	JPN	EUR (A)	EUR (B)	Rest
GSI-ESA-NASA DB	103	38	22	20	14	9
in X4	48	14	16	7	6	5
missing in X4	55	24	6	13	8	4
X4 coverage	47%	37%	73%	35%	43%	56%

Table 2. EXFOR coverage of articles compiled in NUCDAT database (See the table 1 caption for EUR A/B. “Total” means “EXFORable total”.

	Total	USA	JPN	EUR (A)	EUR (B)	Rest
NUCDAT	398	178	53	123		44
in X4	270	102	47	84		38
missing in X4	128	76	6	17	22	6
X4 coverage	68%	57%	89%	66%		84%

These tables are based on the full summary of my analysis summarized in the tables appended to this memo. (In these appendices, category “N” means not for EXFOR compilation.)

Table 3. Number of articles for compilation by each centre

	Category A		Category B	
	GSI-ESA-NASA	NUCDAT	GSI-ESA-NASA	NUCDAT
NNDC	8	27	16	49
NEA DB	13	17	-	-
JCPRG	1	3	2	3
CNDC	1	0	3	0
CNPD	1	0	1	7
NDPCI	0	0	1	0
Any	-	-	8	22
Total	24	47	31	81

References

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- [2] T.C. Slaba, S.R. Blattinig, “GCR environmental models I: Sensitivity analysis for GCR environments”, *Space Weather* **12** (2014) 217 (doi: 10.1002/2013SW001025).
- [3] F. Luoni et al., “Total nuclear reaction cross-section database for radiation protection in space and heavy-ion therapy applications”, *New J. Phys.* **23** (2021) 101201 (doi:10.1088/1367-2630/ac27e1).
- [4] J.W. Norbury et al., “Nuclear data for space radiation”, *Radiat. Meas.* **47** (2012) 315 (doi: 10.1016/j.radmeas.2012.03.004)
- [5] J.W. Norbury et al., “Review of nuclear physics experiments for space radiation”, Report NASA/TP-2011-217179, 2011.

Appendix 1: Comparison of GSI-ESA-NASA database with EXFOR

Author	Year	doi	EXFOR reference code	X4#	Lab	Cat.	Aprj,min	E,min (GeV/A)	Quantity
Aksinenko	1980	10.1016/0375-9474(80)90269-9	J,NP/A,348,518,1980	O0779	4ZZZDUB	A	4	7.2E-02	TMC
Alcantara-Nunez	2015	10.1103/PhysRevC.92.024607	J,PR/C,92,024607,2015	O1889	2GERGSI	B	136	5.0E-01	TMC
Alpat	2013	10.1109/TNS.2013.2284855	J,IRE,60,4673,2013		2GERGSI	A	12	5.0E-01	TCC
Auce	1996	10.1103/PhysRevC.53.2919	J,PR/C,53,2919,1996	A0604	2SWDUPP	A	2	1.9E-02	NON
Bilaniuk	1981	10.1088/0305-4616/7/12/020	J,JP/G,7,1699,1981	D5003	4UKRIJD	A	2	6.8E-03	TCC
Binns	1987	10.1103/PhysRevC.36.1870	J,PR/C,36,1870,1987		1USABRK	B	84	9.3E-01	TCC
Bisheva	1967	10.1016/0370-2693(67)90420-0	J,PL/B,24,533,1967		4RUSITE	A	2	3.6E-01	TCC
Blank	1997	10.1016/S0375-9474(97)81837-4	J,NP/A,624,242,1997		2GERGSI	A	7	1.4E-01	TMC
Bochkarev	1998	10.1007/s100500050026	J,EPJ/A,8,197,2000		2GERGSI	B	20	9.5E-01	TCC,TMC
Brechtmann	1988	10.1016/0168-583X(88)90475-2	J,NIM/B,29,675,1988	O1273	1USABRK	B	32	7.2E-01	TCC
Brechtmann	1988	10.1007/BF01290126	J,ZP/A,330,407,1988		2ZZZCER	B	16	6.0E+01	TCC
Brechtmann	1988	10.1007/BF01291905	J,ZP/A,331,463,1988		2ZZZCER+	B	32	7.0E-01	TCC
Brechtmann	1989	10.1103/PhysRevC.39.2222	J,PR/C,39,2222,1989		1USABNL	B	28	1.5E+01	TCC
Brohm	1995	10.1016/0375-9474(94)00507-J	J,NP/A,585,565,1995		2GERGSI	B	46	5.0E-01	TCC
Budzanowski	1968	10.1016/0375-9474(67)90825-1	J,NP/A,106,21,1967	D0530	3POLIFJ	A	4	6.2E-03	NON
Cai	2002	10.1103/PhysRevC.65.024610	J,PR/C,65,024610,2002	D0546	3CPRIMP	B	19	2.5E-02	NON
Cecchini	2008	10.1016/j.nuclphysa.2008.03.017	J,NP/A,807,206,2008	D0946	2JPNIRS+	A	12	2.9E-01	TCC
Chen	1994	10.1103/PhysRevC.49.3200	J,PR/C,49,3200,1994		1USABRK	B	22	3.4E-01	TCC
Cheng	2012	10.1088/1674-1137/36/1/006	J,CPH/C,36,37,2012		2JPNIRS	B	20	4.0E-01	TCC
Cheshire	1974	10.1103/PhysRevD.10.25	J,PR/D,10,25,1974		1USABRK	B	12	2.1E+00	TCC
Christie	1993	10.1103/PhysRevC.48.2973	J,PR/C,48,2973,1993		1USABRK	B	139	1.2E+00	TCC
Chulkov	2000	10.1016/S0375-9474(00)00168-8	J,NP/A,674,330,2000		2GERGSI	A	10	7.2E-01	TCC
DeVries	1982	10.1103/PhysRevC.26.301	J,PR/C,26,301,1982		1USABRK	A	4	8.7E-02	TMC
Fang	2000	10.1103/PhysRevC.61.064311	J,PR/C,61,064311,2000		3CPRIMP	A	12	2.1E-02	TMC
Fang	2001	10.1007/s100500170011	J,EPJ/A,12,335,2001		3CPRIMP	B	19	1.8E-02	NON

Ferrando	1988	10.1103/PhysRevC.37.1490	J,PR/C,37,1490,1988		1USABRK	A	12	4.3E-01	TCC
Flesh	2001	10.1016/S1350-4487(01)00158-5	J,RM,34,237,2001	O0971	2JPNIRS	B	28	4.3E-01	TCC
Fukuda	1991	10.1016/0370-2693(91)91587-L	J,PL/B,268,339,1991	E1468	2JPNIPC	A	11	3.3E-02	TMC
Fukuda	1999	10.1016/S0375-9474(99)00308-5	J,NP/A,656,209,1999	E1903	2JPNIPC	A	6	3.2E-02	ABS,NON
Giot	2013	10.1016/j.nuclphysa.2012.12.119	J,NP/A,899,116,2013	O2143	2GERGSI	B	136	5.0E-01	TMC
Goekmen	1984	10.1103/PhysRevC.29.1595	J,PR/C,29,1595,1984		1USAMRY	A	4	1.2E-02	TMC
Golovchenko	2001	10.1016/S1350-4487(01)00171-8	J,RM,34,297,2001		2JPNIRS	A	12	3.2E-02	TCC
Golovchenko	2002	10.1103/PhysRevC.66.014609	J,PR/C,66,014609,2002	O1044	2JPNIRS	A	12	1.1E-01	TCC
Greiner	1985	10.1103/PhysRevC.31.416	J,PR/C,31,416,1985		1USABRK	B	238	9.0E-01	TCC,CENT,F
Gupta	2012	10.1016/j.radmeas.2012.07.007	J,RM,47,1023,2012		1USABNL	B	56	3.0E-01	TCC
Gupta	2013	10.1140/epja/i2013-13098-3	J,EPJ/A,49,98,2013		2JPNIRS	B	28	6.0E-01	TCC
Gupta	2013	10.1016/j.radphyschem.2013.07.012	J,RPC,92,8,2013		1USABNL	B	28	5.0E+00	TCC
He	1994	10.1007/BF01289597	J,ZP/A,348,105,1994		1USABNL	B	197	1.1E+01	TCC
Hirzebruch	1992	10.1103/PhysRevC.46.1487	J,PR/C,46,1487,1992		1USABNL	B	16	9.0E-01	TCC
Hirzebruch	1993	10.1016/0168-583X(93)95950-A	J,NIM/B,74,519,1993		1USABNL	B	197	1.1E+01	TCC
Hirzebruch	1995	10.1103/PhysRevC.51.2085	J,PR/C,51,2085,1995		1USABNL	B	197	1.0E+01	TCC
Horst	2017	10.1103/PhysRevC.96.024624	J,PR/C,96,024624,2017	O2435	2GERHEI	A	4	8.4E-02	TCC,TMC
Horst	2019	10.1103/PhysRevC.99.014603	J,PR/C,99,014603,2019	O2441	2GERHEI	A	4	7.1E-02	TCC,TMC
Horst	2021	10.1088/1361-6560/abef88	J,PMB,66,095009,2021		2GERGSI	A	3	2.0E-01	NON
Hostachy	1987	10.1016/0370-2693(87)90557-0	J,PL/B,184,139,1987		2FR SAT	A	12	1.2E-01	TMC
Iancu	2005	10.1016/j.radmeas.2004.10.011	J,RM,39,525,2005	O1271	2GERGSI	B	36	3.2E-01	TCC
Igo	1963	10.1103/PhysRev.131.1251	J,PR,131,1251,1963		1USABRK	A	4	1.0E-02	TMC
Ingemarsson	2000	10.1016/S0375-9474(00)00200-1	J,NP/A,676,3,2000	D0186	2SWDUPP	A	4	1.7E-02	TMC
Ingemarsson	2001	10.1016/S0375-9474(01)01116-2	J,NP/A,696,3,2001	D0185	2SWDUPP	A	3	3.2E-02	NON
Jaros	1978	10.1103/PhysRevC.18.2273	J,PR/C,18,2273,1978	O0744	1USABRK	A	2	8.7E-01	TMC
Jun-Sheng Li	2016	10.1016/j.cjph.2016.05.003	J,CHP,54,314,2016	E2541	2JPNIRS	B	28	7.9E-01	TCC
Kobayashi	1992	10.1016/0375-9474(92)90784-H	J,NP/A,538,343,1992		1USABRK	A	11	4.0E-01	TMC
Kox	1984	10.1016/0375-9474(84)90663-8	J,NP/A,420,162,1984	O0776	2ZZZCER+	A	12	3.0E-02	TCC
Kox	1987	10.1103/PhysRevC.35.1678	J,PR/C,35,1678,1987		2FR SAT+	A	12	9.3E-03	TMC

Labie	1973	10.1016/0375-9474(73)90121-8	J,NP/A,205,81,1973		2BLGLVN	A	4	3.9E-03	TMC
Matsuoka	1980	10.1016/0375-9474(80)90409-1	J,NP/A,345,1,1980	E1970	2JPNOSA	A	2	2.8E-02	TMC
Mayo	1965	10.1016/0029-5582(65)90487-6	J,NP,62,393,1965	D0223	3ARGCNE	A	2	1.2E-02	NON
Millburn	1954	10.1103/PhysRev.95.1268	J,PR,95,1268,1954	C1218	1USABNL	A	2	6.0E-02	TCC
Napolitani	2007	10.1103/PhysRevC.76.064609	J,PR/C,76,064609,2007	O1589	2GERGSI	B	136	1.0E+00	TMC
Neumaier	2002	10.1016/S0375-9474(02)01274-5	J,NP/A,712,247,2002	A0493	2GERGSI	A	4	6.7E-01	TMC
Nilsen	1995	10.1103/PhysRevC.52.3277	J,PR/C,52,3277,1995		1USABRK	B	84	4.4E-01	TCC
Obuti	1996	10.1016/0375-9474(96)00267-9	J,NP/A,609,74,1996	E2016	1USABRK	A	8	7.9E-01	TMC
Ozawa	1994	10.1016/0370-2693(94)90585-1	J,PL/B,334,18,1994	E2013	1USABRK	B	17	6.2E-01	TMC
Ozawa	1995	10.1016/0375-9474(94)00763-D	J,NP/A,583,807,1995	E2014	1USABRK	A	11	6.7E-01	TMC
Ozawa	1996	10.1016/0375-9474(96)00241-2	J,NP/A,608,63,1996	E2015	1USABRK	A	9	6.5E-01	TMC
Ozawa	2001	10.1016/S0375-9474(01)00563-2	J,NP/A,691,599,2001		2GERGSI	A	10	9.1E-01	TMC
Ozawa	2014	10.1103/PhysRevC.89.044602	J,PR/C,89,044602,2014	E2455	2JPNIPC	B	30	2.3E-01	TCC
Paradela	2017	10.1103/PhysRevC.95.044606	J,PR/C,95,044606,2017	O2407	2GERGSI	B	136	2.0E-01	TMC
Perrin	1982	10.1103/PhysRevLett.49.1905	J,PRL,49,1905,1982		2ZZZCER	A	12	9.3E-03	TMC
Powers	1966	10.1103/PhysRev.152.1096	J,PR,152,1096,1966	C2324	1USAANL	A	4	5.0E-03	TMC
Price	1991	10.1103/PhysRevC.43.835	J,PR/C,43,835,1991		1USABNL	B	28	1.5E+01	TCC
Saint Laurent	1989	10.1007/BF01292431	J,ZP/A,332,457,1989		2FR GRE	A	4	1.6E-02	TMC
Sampsonidis	1995	10.1103/PhysRevC.51.3304	J,PR/C,51,3304,1995		4ZZZDUB	B	16	3.7E+00	TCC
Schall	1996	10.1016/0168-583X(96)00325-4	J,NIM/B,117,221,1996		2GERGSI	A	10	1.9E-01	TCC
Shapira	1982	10.1103/PhysRevC.26.2470	J,PR/C,26,2470,1982		1USAORL	B	20	3.0E-03	NON
Singh	1992	10.1007/BF01291023	J,ZP/A,344,73,1992		2ZZZCER+	B	16	1.5E+01	TCC
Suzuki	1995	10.1103/PhysRevLett.75.3241	J,PRL,75,3241,1995		2GERGSI	B	20	9.5E-01	TMC
Suzuki	1999	10.1063/1.57311	S,AIP-455,84,1998		2GERGSI	B	14	7.4E-01	TMC
Takechi	2009	10.1103/PhysRevC.79.061601	J,PR/C,79,061601,2009	E2149	2JPNIRS	A	12	3.3E-02	TMC
Tanihata	1985	10.1007/BF02061988	J,HI,21,251,1985		1USABRK	A	4	7.9E-01	TMC
Tanihata	1985	10.1016/0370-2693(85)90005-X	J,PL/B,160,380,1985	E2011	1USABRK	A	3	7.9E-01	TMC
Tanihata	1985	10.1103/PhysRevLett.55.2676	J,PRL,55,2676,1985	E1174	1USABRK	A	6	7.9E-01	TMC
Tanihata	1988	10.1016/0370-2693(88)90702-2	J,PL/B,206,592,1988	E1262	1USABRK	A	8	7.9E-01	TMC

Tanihata	1992	10.1016/0370-2693(92)90988-G	J,PL/B,287,307,1992	E2012	1USABRK	A	11	4.0E-01	TMC
Togo	2007	10.1016/j.nima.2007.05.017	J,NIM/A,580,58,2007		2ZZZCER+	B	28	4.1E-01	TCC
Toshito	2007	10.1103/PhysRevC.75.054606	J,PR/C,75,054606,2007	E2053	2JPNIRS	A	12	2.1E-01	TCC
Tran	2016	10.1103/PhysRevC.94.064604	J,PR/C,94,064604,2016	E2526	2JPNOSA	A	12	3.8E-02	TCC
Wang	2019	10.1007/s41365-019-0704-1	J,CNST,30,186,2019		2JPNIRS	B	56	4.6E-01	TCC
Warner	1996	10.1103/PhysRevC.54.1700	J,PR/C,54,1700,1996	C0919	1USAMSU	A	4	1.2E-02	TMC
Webber	1982	10.1086/160308	J,AJ,260,894,1982		1USABRK	B	56	6.5E-01	TCC
Webber	1990	10.1103/PhysRevC.41.520	J,PR/C,41,520,1990		1USABRK	A	12	3.0E-01	TCC,TMC
Webber	1998	10.1086/306445	J,AJ,508,940,1998		2FR SAT	A	7	3.5E-01	TCC
Webber	1998	10.1103/PhysRevC.58.3539	J,PR/C,58,3539,1998		2FR SAT	A	6	5.0E-01	TCC
Westfall	1979	10.1103/PhysRevC.19.1309	J,PR/C,19,1309,1979	C0407	2GERGSI	B	56	1.9E+00	TCC,TMC
Wilkins	1962	http://escholarship.org/uc/item/23x9v996	R,UCRL-10500,1962		1USABRK	A	2	1.1E-02	NON
Yamaguchi	2010	10.1103/PhysRevC.82.014609	J,PR/C,82,014609,2010	E2283	2JPNIRS	B	28	9.0E-02	TCC
Yamaguchi	2011	10.1103/PhysRevLett.107.032502	J,PRL,107,032502,2011	E2349	2JPNIRS	A	9	2.8E-01	TCC
Zeitlin	2001	10.1103/PhysRevC.64.024902	J,PR/C,64,024902,2001		2JPNIRS	B	20	5.5E-01	TCC
Zeitlin	2007	10.1016/j.nuclphysa.2006.10.088	J,NP/A,784,341,2007	E2010	2JPNIRS+	B	28	2.7E-01	TCC
Zeitlin	2007	10.1103/PhysRevC.76.014911	J,PR/C,76,014911,2007	C1581	2JPNIRS	A	12	2.9E-01	TCC
Zeitlin	2008	10.1103/PhysRevC.77.034605	J,PR/C,77,034605,2008	C1609	1USABNL+	B	35	2.9E-01	TCC
Zeitlin	2011	10.1103/PhysRevC.83.034909	J,PR/C,83,034909,2011		2JPNIRS+	B	14	2.9E-01	TCC
Zhang	2012	10.1016/j.nimb.2012.01.058	J,NIM/B,286,238,2012	E2386	2JPNIRS	B	20	3.9E-01	TCC

Appendix 2: Comparison of NUCDAT database with EXFOR

Author	Year	doi	EXFOR reference code	X4#	Lab	Cat.	Status	Remark
Abdurakhimov	1981	10.1016/0375-9474(81)90500-5	J,NP/A,362,376,1981		4ZZZDUB	B	Table	Projectile fragmentation cross section
Abe	1987	10.1016/0375-9474(87)90552-5	J,NP/A,462,358,1987	E1366	2JPNTOH+			
Abe	1987	10.1016/0375-9474(87)90347-2	J,NP/A,466,109,1987	E1364	2JPNTOH			
Abramov	2010	10.3103/S1062873810040301	J,BAS,74,564,2010			N		Invariant cross section in arbitrary units

Aksinenko	1980	10.1016/0375-9474(80)90269-9	J,NP/A,348,518,1980	O0779	4ZZZDUB			
Aladashvili	1981		J,ASL,31,29,1981		4ZZZDUB?	N	Table	Exclusive cross sections from $4\text{He}+p$ for many channels
Alard	1975	10.1007/BF02730175	J,NC/A,30,320,1975	O0046	2ZZZCER			
Alexakhin	2000	10.1134/1.1320136	J,PAN,63,1673,2000	F0776	4ZZZDUB			
Alexander	1963	10.1103/PhysRev.129.1826	J,PR,129,1826,1963	C0374	1USABRK			
Alvarez-Pol	2010	10.1103/PhysRevC.82.041602	J,PR/C,82,041602,2010	D0607	2GERGSI			
Anderson	1983	10.1103/PhysRevC.28.1224	J,PR/C,28,1224,1983		1USABRK	N	Curve	Invariant spectrum
Anikina	1983		J,SNP,38,88,1983		4ZZZDUB	B	Table	
Apollonio	2010	10.1103/PhysRevC.82.045208	J,PR/C,82,045208,2010		2ZZZCER	B	Table	
Armbruster	2004	10.1103/PhysRevLett.93.212701	J,PRL,93,212701,2004		2GERGSI			Review
Asano	1985	10.1143/JPSJ.54.3734	J,JPJ,54,3734,1985	E1241	2JPNLEP			
Asano	1988	10.1143/JPSJ.57.2995	J,JPJ,57,2995,1988	E1240	2JPNKEK			
Auble	1983	10.1103/PhysRevC.28.1552	J,PR/C,28,1552,1983		1USABRK	B	Curve	
Audouin	2006	10.1016/j.nuclphysa.2006.01.006	J,NP/A,768,1,2006	O1304	2GERGSI			
Austrin	1962	10.1088/0370-1328/80/2/305	J,PPS,80,383,1962		2UK HAR	A	Table	
Avan	1984	10.1103/PhysRevC.30.521	J,PR/C,30,521,1984	O0145	2FR PAR			
Avdeyev	2002	10.1016/S0375-9474(02)01028-X	J,NP/A,709,392,2002		4ZZZDUB	N	Curve	Yield in arbitrary units
Awes	1979	10.1016/0370-2693(79)90013-3	J,PL/B,87,43,1979		1USABRK	N	Curve	Energy spectrum in arbitrary units
Awes	1980	10.1103/PhysRevLett.45.513	J,PRL,45,513,1980		1USABRK	N	Curve	Double differential spectrum per fission event
Awes	1981	10.1103/PhysRevC.24.89	J,PR/C,24,89,1981		1USABRK	N	Curve	Double differential spectrum per fission event
Badalà	1993	10.1103/PhysRevC.48.633	J,PR/C,48,633,1993		2FR GAN	N	Curve	Energy and angular distribution in arbitrary units
Badran	2001	10.1007/s100500170009	J,EPJ/A,12,317,2001	O1612	2UK HAR			
Baker	1958	10.1103/PhysRev.112.1319	J,PR,112,1319,1958	C0255	1USABNL			FACILITY: Must be (SYNCH,1USABNL).
Banaigs	1987	10.1103/PhysRevC.35.1416	J,PR/C,35,1416,1987		2FR SAT	B	Table	Numerical data available as PAPS PRVCA-35-1416-101
Bandyopadhyay	2002	10.1140/epja/iepja1269	J,EPJ/A,14,53,2002	D0205	3INDTRM			

Barrette	1995	10.1103/PhysRevC.52.956	J,PR/C,52,956,1995	1USABNL	B	Table	
Barrette	2000	10.1103/PhysRevC.61.044906	J,PR/C,61,044906,2000	1USABNL	N	Curve	Transverse momentum distribution
Bastid	1990	10.1016/0375-9474(90)90207-3	J,NP/A,506,637,1990	2FR SAT	B	Curve	$d\sigma/d\Omega/d(p/A)$
Basu	2007	10.1103/PhysRevC.76.034609	J,PR/C,76,034609,2007	D6055	3INDNSD		
Batzel	1954	10.1103/PhysRev.93.280	J,PR,93,280,1954	D4101	1USABRK		
Bazin	1990	10.1016/0375-9474(90)90372-S	J,NP/A,515,349,1990	2FR GAN	N	Curve	Production cross section in arbitrary units
Beck	1976		R,NASA-TN-D-8119,1976	O0664	1USASRE		
Beene	1981	10.1103/PhysRevC.23.2463	J,PR/C,23,2463,1981	1USAORL	B	Table	
Benenson	1967	10.1016/0375-9474(67)90516-7	J,NP/A,97,510,1967	O0241	1USAMSU		
Benioff	1960	10.1103/PhysRev.119.316	J,PR,119,316,1960	C0220	1USABRK		
Benlliure	1998	10.1007/s100500050108	J,EPJ/A,2,193,1998	A0084	2GERGSI		
Benlliure	1999	10.1016/S0375-9474(99)00386-3	J,NP/A,660,87,1999	A0102	2GERGSI		
Benlliure	2001	10.1016/S0375-9474(00)00472-3	J,NP/A,683,513,2001	O0783	2GERGSI		
Benlliure	2002	10.1016/S0375-9474(01)01331-8	J,NP/A,700,469,2002	2GERGSI	B	Curve	
Benlliure	2010	10.48550/arXiv.1004.0265	X,ARXIV.1004.0265,2010	2GERGSI	N		No original measured data given
Bernas	1965	10.1016/0031-9163(65)91317-X	J,PL/B,15,147,1965	2FR PAR+	A	Table	
Bernas	1967	10.1016/0003-4916(67)90100-5	J,AP,44,426,1967		N		Review
Bernas	1997	10.1016/S0370-2693(97)01216-1	J,PL/B,415,111,1997	O1014	2GERGSI		
Bernas	2003	10.1016/S0375-9474(03)01576-8	J,NP/A,725,213,2003	O1069	2GERGSI		
Bernas	2006	10.1016/j.nuclphysa.2005.10.009	J,NP/A,765,197,2006	O1303	2GERGSI		
Bertrand	1973	10.1103/PhysRevC.8.1045	J,PR/C,8,1045,1973	C0925	1USAORL		
Bertrand	1974	10.1103/PhysRevC.10.1028	J,PR/C,10,1028,1974	C0814	1USAORL		
Bhattacharya	1991	10.1103/PhysRevC.44.1049	J,PR/C,44,1049,1991	D6166	3INDVEC		
Bhattacharya	1995	10.1103/PhysRevC.52.798	J,PR/C,52,798,1995	D6149	3INDTRM		
Bhattacharya	1996	10.1103/PhysRevC.54.3099	J,PR/C,54,3099,1996	D6153	3INDTAT		
Billerey	1981	10.1103/PhysRevLett.47.639	J,PRL,47,639,1981	2FR GRE	B	Curve	
Binns	1987	10.1103/PhysRevC.36.1870	J,PR/C,36,1870,1987	1USABRK	B	Table	
Birnbaum	1952	10.1103/PhysRev.86.86	J,PR,86,86,1952		N		Cosmic ray measurement

Bizard	1977	10.1016/0375-9474(77)90645-5	J,NP/A,285,461,1977		2FR SAT	B	Curve	
Blank	1994	10.1103/PhysRevC.50.2398	J,PR/C,50,2398,1994	O0736	2GERGSI			
Bloch	1988	10.1103/PhysRevC.37.2469	J,PR/C,37,2469,1988		1USAMSU	B	Curve	
Bobchenko	1979		J,SNP,30,805,1979		4RUSITE	B	Table	"inelastic" means non-elastic?
Bogatin	1976	10.1016/0375-9474(76)90056-7	J,NP/A,260,446,1976	O0154	4ZZZDUB			
Boger	1994	10.1103/PhysRevC.49.1597	J,PR/C,49,1597,1994		1USABRK	B	Curve	
Bolshakova	2009	10.1140/epjc/s10052-009-1053-8	J,EPJ/C,62,293,2009		2ZZZCER	N	Table	Transverse momentum differential cross section
Bolshakova	2009	10.1140/epjc/s10052-009-1092-1	J,EPJ/C,62,697,2009		2ZZZCER	N	Table	Transverse momentum differential cross section
Bolshakova	2009	10.1140/epjc/s10052-009-1114-z	J,EPJ/C,63,549,2009		2ZZZCER	N	Table	Transverse momentum differential cross section
Bolshakova	2009	10.1140/epjc/s10052-009-1144-6	J,EPJ/C,64,181,2009		2ZZZCER	N	Table	Transverse momentum differential cross section
Bolshakova	2010	10.1140/epjc/s10052-010-1249-y	J,EPJ/C,66,57,2010		2ZZZCER	N	Table	Transverse momentum differential cross section
Brechtmann	1986	10.1016/1359-0189(86)90609-6			1USABRK	B	Table	C.Brechtmann et al., Int. J. Radiat. Appl. Instrum., Part D, Nuclear Tracks 12 (1986) 361.
Brechtmann	1988	10.1016/0168-583X(88)90475-2	J,NIM/B,29,675,1988	O1273	1USABRK			FACILITY: Add (LINAC,1USABRK).
Brechtmann	1988	10.1007/BF01290126	J,ZP/A,330,407,1988		2ZZZCER	B	Table	
Brechtmann	1988	10.1007/BF01291905	J,ZP/A,331,463,1988		2ZZZCER+	A	Table	
Brechtmann	1989	10.1103/PhysRevC.39.2222	J,PR/C,39,2222,1989		1USABNL	B	Table	
Britt	1961	10.1103/PhysRev.124.877	J,PR,124,877,1961		1USAYAL?	A	Curve	
Brohm	1995	10.1016/0375-9474(94)00507-J	J,NP/A,585,565,1995		2GERGSI	B	Table	
Bubak	2007	10.1103/PhysRevC.76.014618	J,PR/C,76,014618,2007	D0514	2GERJUL			
Budzanowski	2008	10.1103/PhysRevC.78.024603	J,PR/C,78,024603,2008	D0512	2GERJUL			
Budzanowski	2009	10.48550/arXiv.0909.1436	X,ARXIV.0909.1436,2009	C1763	2GERJUL			Published as J,PR/C,80,054604,2009.
Budzanowski	2009	10.48550/arXiv.0910.1872	X,ARXIV.0910.1872,2009			N		No original measured data given
Budzanowski	2010	10.1103/PhysRevC.82.034605	J,PR/C,82,034605,2010	O1865	2GERJUL			
Caamaño	2004	10.1016/j.nuclphysa.2004.01.070	J,NP/A,733,187,2004	A0672	2GERGSI			

Caretto	1958	10.1103/PhysRev.110.1130	J,PR,110,1130,1958	C0286	1USABNL+				FACILITY: Must be (SYNCH,1USABNL) and (SYNCH,1USABRK).
Casarejos	2006	10.1103/PhysRevC.74.044612	J,PR/C,74,044612,2006	O1441	2GERGSI				
Caskey	1988	10.1103/PhysRevC.37.969	J,PR/C,37,969,1988		1USABRK	B	Curve		
Charvet	1987	10.1016/0370-2693(87)90646-0	J,PL/B,189,388,1987		2FR GAN	N	Curve	Energy spectrum in arbitrary units	
Chen	1994	10.1103/PhysRevC.49.3200	J,PR/C,49,3200,1994		1USABRK	B	Table		
Cheshire	1974	10.1103/PhysRevD.10.25	J,PR/D,10,25,1974		1USABRK	B	Table		
Chiba	1991	10.1103/PhysRevLett.67.1982	J,PRL,67,1982,1991	E1460	2JPNLEP				
Chrien	1980	10.1103/PhysRevC.21.1014	J,PR/C,21,1014,1980	C0665	1USALAS				
Christie	1993	10.1103/PhysRevC.48.2973	J,PR/C,48,2973,1993		1USABRK	B	Table		
Chulkov	2000	10.1016/S0375-9474(00)00168-8	J,NP/A,674,330,2000		2GERGSI	B	Table		
Clerc	1995	10.1016/0375-9474(95)00215-M	J,NP/A,590,785,1995	O0956	2GERGSI				
Cline	1971	10.1016/0375-9474(71)90897-9	J,NP/A,169,437,1971	B0085	1USASRE				
Cocconi	1961	10.1103/PhysRevLett.6.231	J,PRL,6,231,1961		2ZZZCER	N	Curve	Momentum spectrum of CP without further specification	
Cordell	1981	10.1016/0375-9474(81)90425-5	J,NP/A,352,485,1981	T0061	1USASRL				
Cowley	1980	10.1103/PhysRevC.22.2633	J,PR/C,22,2633,1980	O0130	1USAMRY?				
Cowley	1998	10.1103/PhysRevC.57.3185	J,PR/C,57,3185,1998	E1707	2JPNOSA				
Cowley	2000	10.1103/PhysRevC.62.064604	J,PR/C,62,064604,2000	E1736	2JPNOSA				
Crandall	1956	10.1103/PhysRev.101.329	J,PR,101,329,1956	B0101	1USABRK				
Cumming	1958	10.1103/PhysRev.111.1386	J,PR,111,1386,1958	C0216	1USABNL				
Cumming	1962	10.1103/PhysRev.125.2078	J,PR,125,2078,1962	C0231	1USABNL				
Cumming	1962	10.1103/PhysRev.127.950	J,PR,127,950,1962	C0261	1USABNL				
Cumming	1963	10.1146/annurev.ns.13.120163.001401	J,ARN,13,261,1963	B0022		N	Eval		
Cumming	1976	10.1103/PhysRevC.14.1554	J,PR/C,14,1554,1976	C1875	1USABRK				
Cumming	1978	10.1103/PhysRevC.17.1632	J,PR/C,17,1632,1978	C0238	1USABRK				
Cummings	1990	10.1103/PhysRevC.42.2508	J,PR/C,42,2508,1990	C1874	1USABRK				
Currie	1956	10.1103/PhysRev.101.1557	J,PR,101,1557,1956	C0836	1USABNL+				
Currie	1959	10.1103/PhysRev.114.878	J,PR,114,878,1959	O0305	1USABRK				

D'Auria	1968	10.1103/PhysRev.168.1224	J,PR,168,1224,1968	C1432	1USAYAL			
de Jong	1998	10.1016/S0375-9474(97)00608-8	J,NP/A,628,479,1998	A0106	2GERGSI			
De Lellis	2011	10.1016/j.nuclphysa.2011.01.019	J,NP/A,853,124,2011		2JPNIRS	A	Table	
Deák	1990	10.1103/PhysRevC.42.1029	J,PR/C,42,1029,1990		1USAMSU	B	Curve	
Dewins	1969	10.1016/0375-9474(69)90465-5	J,NP/A,126,261,1969		1USAUSC	A	Curve	
Dey	2009	10.1140/epja/i2009-10772-y	J,EPJ/A,41,39,2009	D6078	3INDVEC			
Dittrich	1990	10.1016/0168-583X(90)90481-9	J,NIM/B,52,588,1990	O0281	2ZZZCER+			
Doering	1978	10.1103/PhysRevLett.40.1433	J,PRL,40,1433,1978		1USASRE	A	Curve	
Dostrovsky	1961	10.1103/PhysRev.123.1452	J,PR,123,1452,1961	C0294	1USABNL			
Dostrovsky	1965	10.1103/PhysRev.139.B1513	J,PR,139,B1513,1965	C0236	1USABNL			
Dudkin	1990	10.1016/0375-9474(90)90254-J	J,NP/A,509,783,1990		1USABRK	B	Table	
Dufauquez	2006	10.1016/j.nuclphysa.2006.04.005	J,NP/A,773,24,2006	O1417	2BLGLVN			
Duisebayev	2003	10.1103/PhysRevC.67.044608	J,PR/C,67,044608,2003	O1060	4KASKAZ			
Duisebayev	2005	10.1103/PhysRevC.72.054604	J,PR/C,72,054604,2005	O1307	4KASKAZ			
Edge	1969	10.1103/PhysRev.183.849	J,PR,183,849,1969	O0740	1USABNL			
El Nadi	1964	10.1016/0029-5582(64)90190-7	J,NP,50,33,1964			N		No original measured data given
Ellegaard	1985	10.1016/0370-2693(85)90568-4	J,PL/B,154,110,1985		2FR SAT	N	Curve	Delta resonance produciton cross section
El-Nadi	2002	10.1088/0954-3899/28/6/308	J,JP/G,28,1251,2002		1USABNL	B	Table	
Engelage	1986	10.1016/0370-2693(86)91225-6	J,PL/B,173,34,1986		1USABRK	N	Curve	3alpha system excitation energy spectrum
English	1973	10.1103/PhysRevLett.31.244	J,PRL,31,244,1973		1USANAL	B	Table	
English	1974	10.1103/PhysRevC.10.2268	J,PR/C,10,2268,1974	C2351	1USAANL			
English	1974	10.1103/PhysRevC.10.2281	J,PR/C,10,2281,1974	C2340	1USANAL			
Enke	1999	10.1016/S0375-9474(99)00345-0	J,NP/A,657,317,1999	O0678	2GERJUL			
Enqvist	1999	10.1016/S0375-9474(99)00299-7	J,NP/A,658,47,1999	A0099	2GERGSI			
Enqvist	2001	10.1016/S0375-9474(00)00563-7	J,NP/A,686,481,2001	O0833	2GERGSI			
Enqvist	2002	10.1016/S0375-9474(01)01340-9	J,NP/A,703,435,2002	O0921	2GERGSI			
Erb	1976	10.1103/PhysRevLett.37.670	J,PRL,37,670,1976		1USAYAL?	A	Curve	
Eyal	1973	10.1103/PhysRevC.8.1109	J,PR/C,8,1109,1973	B0021	1USAYAL			

Fernández-Domínguez	2005	10.1016/j.nuclphysa.2004.10.013	J,NP/A,747,227,2005	O1228	2GERGSI			
Fink	1987	10.1016/0168-583X(87)90249-7	J,NIM/B,29,275,1987	O0104	2FR PAR+			
Fink	1990	10.1016/0168-583X(90)90483-B	J,NIM/B,52,601,1990	C0430	1USAHRV			
Fink	2000	10.1016/S0168-583X(00)00200-7	J,NIM/B,172,861,2000	O1233	1USAHRV			
Fireman	1955	10.1103/PhysRev.97.780	J,PR,97,780,1955	C1812	1USABNL			
Flesch	1999	10.1016/S1350-4487(99)00140-7	J,RM,31,533,1999	O0968	2GERGSI			
Flesch	2001	10.1016/S1350-4487(01)00158-5	J,RM,34,237,2001	O0971	2GERGSI			
Fohr	2011	10.1103/PhysRevC.84.054605	J,PR/C,84,054605,2011	A0908	2GERGSI			
Fontes	1971	10.1016/0375-9474(71)90769-X	J,NP/A,165,405,1971	C0228	2FR PAR+			Add (SYNCY,2FR PAR) and (SYNCY,2ZZZCER).
Fontes	1977	10.1103/PhysRevC.15.2159	J,PR/C,15,2159,1977	B0092	2FR PAR+			
Fortney	1980	10.1103/PhysRevC.21.2511	J,PR/C,21,2511,1980		1USANAL+	A	Curve	
Fortney	1980	10.1103/PhysRevC.22.670	J,PR/C,22,670,1980		1USANAL	N	Curve	Energy and angular distribution in arbitrary units
Förtsch	1988	10.1016/0375-9474(88)90101-7	J,NP/A,485,258,1988	O0534	3SAFNAC			
Förtsch	1991	10.1103/PhysRevC.43.691	J,PR/C,43,691,1991	O0173	3SAFNAC			
Förtsch	2007	10.1016/j.nuclphysa.2007.09.007	J,NP/A,797,1,2007	D0358	3SAFITH			
Frankel	1981	10.1103/PhysRevC.23.1511	J,PR/C,23,1511,1981		1USABRK	B	Curve	
Frascaria	1975	10.1103/PhysRevC.12.243	J,PR/C,12,243,1975		2FR PAR	A	Curve	
Friedlander	1954	10.1103/PhysRev.94.727	J,PR,94,727,1954	C0287	1USABRK			
Friedlander	1955	10.1103/PhysRev.99.263	J,PR,99,263,1955	C0264	1USABNL			
Friese	1993	10.1016/0375-9474(93)90693-R	J,NP/A,553,753,1993		2GERGSI	B	Table	
Fukuda	1984	10.1016/0375-9474(84)90023-X	J,NP/A,425,548,1984	E1192	2JPNOSA			
Fukuda	1984	10.1016/0375-9474(84)90155-6	J,NP/A,429,193,1984	E1181	2JPNOSA			
Fulmer	1981	10.1016/0370-2693(81)90092-7	J,PL/B,100,305,1981		1USAORL	B	Curve	
Furukawa	1971	10.1016/0375-9474(71)90401-5	J,NP/A,174,539,1971	O0972	2JPNTOK+			
Galín	1974	10.1103/PhysRevC.9.1113	J,PR/C,9,1113,1974		2FR PAR?	B	Curve	
Galín	1974	10.1103/PhysRevC.9.1126	J,PR/C,9,1126,1974		2FR PAR?	B	Curve	
Gazzaly	1978	10.1016/0370-2693(78)90255-1	J,PL/B,79,325,1978		1USABRK	N	Curve	Invariant cross section

Geaga	1980	10.1103/PhysRevLett.45.1993	J,PRL,45,1993,1980	1USABRK	N	Curve	Invariant cross section
Geer	1995	10.1103/PhysRevC.52.334	J,PR/C,52,334,1995	1USABNL	B	Table	
Goldhaber	1978	10.1146/annurev.ns.28.120178.001113	J,ARN,28,161,1978		N		Review
Golovchenko	2001	10.1016/S1350-4487(01)00171-8	J,RM,34,297,2001	2JPNIRS	A	Table	
Golovchenko	2002	10.1103/PhysRevC.66.014609	J,PR/C,66,014609,2002	O1044	2JPNIRS		
Gonthier	1980	10.1103/PhysRevLett.44.1387	J,PRL,44,1387,1980	1USATAM	B	Curve	
Gooding	1960	10.1016/0029-5582(60)90384-9	J,NP,18,46,1960	C0227	2UK HAR		FACILITY: Add (SYNCY,2UK HAR).
Gooding	1961	10.1103/PhysRevLett.7.28	J,PRL,7,28,1961	1USABRK	A	Table	
Gosset	1977	10.1103/PhysRevC.16.629	J,PR/C,16,629,1977	C2151	1USABRK		
Gradsztajn	1965	10.1103/PhysRevLett.14.436	J,PRL,14,436,1965		N		No original measured data given
Graulich	2000	10.1103/PhysRevC.63.011302	J,PR/C,63,011302,2000	2BLGLVN	N	Curve	Energy spectrum in arbitrary units
Green	1980	10.1103/PhysRevC.22.1594	J,PR/C,22,1594,1980	C0654	1CANTMF		
Green	1987	10.1103/PhysRevC.35.1341	J,PR/C,35,1341,1987	C0763	1CANTMF		
Greiner	1975	10.1103/PhysRevLett.35.152	J,PRL,35,152,1975	1USABRK	N	Curve	Paralel-momentum distribution
Griffiths	1969	10.1086/150231	J,AJ,158,711,1969	2UK NIN	A	Curve	
Guertin	2005	10.1140/epja/i2004-10073-1	J,EPJ/A,23,49,2005	O1146	2BLGLVN		
Gupta	1999	10.1016/S0375-9474(98)00635-6	J,NP/A,646,161,1999	D0441	3INDTRM		
Gutbrod	1976	10.1103/PhysRevLett.37.667	J,PRL,37,667,1976	1USABRK	B	Curve	
Harada	1999	10.1080/18811248.1999.9726214	J,NST,36,313,1999	E1761	2JPNKYU+		
Hautala	2002	10.1103/PhysRevC.65.034612	J,PR/C,65,034612,2002	C0864	1USAINU		
He	1994	10.1007/BF01289597	J,ZP/A,348,105,1994	1USABNL	B	Table	
Heckman	1972	10.1103/PhysRevLett.28.926	J,PRL,28,926,1972	1USABRK	B	Table	
Heckman	1978	10.1103/PhysRevC.17.1735	J,PR/C,17,1735,1978	1USABRK	N	Table	Not clear if "Experiment" in Table III is for compilation
Heilbronn	1991	10.1103/PhysRevC.43.2318	J,PR/C,43,2318,1991	1USAMSU	B	Curve	
Henzlova	2008	10.1103/PhysRevC.78.044616	J,PR/C,78,044616,2008	2GERGSI	B	Table	
Herbach	2006	10.1016/j.nuclphysa.2005.10.014	J,NP/A,765,426,2006	O1305	2GERGSI		
Heydegger	1976	10.1103/PhysRevC.14.1506	J,PR/C,14,1506,1976	O0501	1USACHI+		
Hicks	1956	10.1103/PhysRev.102.1390	J,PR,102,1390,1956	C0257	1USABRK		

Hintz	1952	10.1103/PhysRev.88.19	J,PR,88,19,1952	B0076	1USAHRV			
Hirzebruch	1992	10.1103/PhysRevC.46.1487	J,PR/C,46,1487,1992		4ZZZDUB+	B	Table	
Hirzebruch	1995	10.1103/PhysRevC.51.2085	J,PR/C,51,2085,1995		1USABNL	B	Table	
Honda	1960	10.1103/PhysRev.118.1618	J,PR,118,1618,1960	C0235	1USABRK			
Honda	1964	10.1016/0029-5582(64)90277-9	J,NP,51,363,1964	C0226	1USABRK			
Horváth	1994	10.1103/PhysRevC.49.1012	J,PR/C,49,1012,1994		1USAMSU	B	Curve	
Horwitz	1960	10.1103/PhysRev.117.1361	J,PR,117,1361,1960	C0221	1USABRK			
Hsi	1999	10.1103/PhysRevC.60.034609	J,PR/C,60,034609,1999		1USABNL	N	Curve	Angular distribution in arbitrary units
Hudis	1968	10.1103/PhysRev.171.1297	J,PR,171,1297,1968	C0341	1USABNL			
Hudis	1968	10.1103/PhysRev.171.1301	J,PR,171,1301,1968	B0078	1USABNL			
Hudis	1970	10.1103/PhysRevC.1.2019	J,PR/C,1,2019,1970	C0340	1USABNL			
Husain	1973	10.1103/PhysRevC.7.2452	J,PR/C,7,2452,1973	C2366	1USABNL			
Hyde	1971	10.1103/PhysRevC.4.1759	J,PR/C,4,1759,1971	C0393	1USABRK			
Iancu	2005	10.1016/j.radmeas.2004.10.011	J,RM,39,525,2005	O1271	2GERGSI			
Ieiri	1989	10.1016/0375-9474(89)90554-X	J,NP/A,504,477,1989	E1315	2JPNOSA			
Inamura	1979	10.1016/0370-2693(79)90651-8	J,PL/B,84,71,1979	E0144	2JPNIPC			
Iwamoto	2010	10.1103/PhysRevC.82.034604	J,PR/C,82,034604,2010	E2289	2JPNOSA			
Jacak	1983	10.1103/PhysRevLett.51.1846	J,PRL,51,1846,1983		1USABRK	B	Curve	
Jäderström	2008	10.1103/PhysRevC.77.044601	J,PR/C,77,044601,2008	O1658	2SWDUPP			
Jaros	1978	10.1103/PhysRevC.18.2273	J,PR/C,18,2273,1978	O0744	1USABRK			
Jilany	2004	10.1103/PhysRevC.70.014901	J,PR/C,70,014901,2004		4ZZZDUB	N	Table	Particle multiplicities
Junghans	1998	10.1016/S0375-9474(98)00658-7	J,NP/A,629,635,1998	A0113	2GERGSI			
Kadkin	1998		J,PAN,61,1459,1998	D5001	4UKRIJD			
Karnaukhov	2003	10.1103/PhysRevC.67.011601	J,PR/C,67,011601,2003			N		No original measured data given
Katcoff	1959	10.1103/PhysRev.114.905	J,PR,114,905,1959	C0242	1USABNL			FACILITY: Must be (SYNCH,1USABNL).
Katcoff	1968	10.1103/PhysRev.166.1147	J,PR,166,1147,1968	C0339	1USABNL			
Kaufman	1980	10.1103/PhysRevC.22.167	J,PR/C,22,167,1980	C0480	1USABNL+			
Kavaloski	1963	10.1103/PhysRev.132.813	J,PR,132,813,1963		1USAMIN	A	Curve	

Kiang	1989	10.1016/0375-9474(89)90050-X	J,NP/A,499,339,1989	E1325	2JPNTOH			
Kidd	1988	10.1103/PhysRevC.37.2613	J,PR/C,37,2613,1988		1USABRK	A	Table	
Kim	2002	10.1016/S0168-583X(02)01297-1	J,NIM/B,196,239,2002	C0941	1USADAV+			
Kin	2005	10.1103/PhysRevC.72.014606	J,PR/C,72,014606,2005	E1936	2JPNOSA			
Knott	1996	10.1103/PhysRevC.53.347	J,PR/C,53,347,1996	C1230	1USABRK			
Knott	1997	10.1103/PhysRevC.56.398	J,PR/C,56,398,1997	C1231	1USABRK			
Kobayashi	1988	10.1103/PhysRevLett.60.2599	J,PRL,60,2599,1988	E1256	1USABRK			
Korejwo	2000	10.1088/0954-3899/26/8/306	J,JP/G,26,1171,2000	A0661	4ZZZDUB			
Korejwo	2002	10.1088/0954-3899/28/6/304	J,JP/G,28,1199,2002	A0660	4ZZZDUB			
Korteling	1970	10.1103/PhysRevC.1.193	J,PR/C,1,193,1970	C0252	1USACAR			
Korteling	1970	10.1103/PhysRevC.1.1960	J,PR/C,1,1960,1970	C0253	1USACAR			
Kox	1987	10.1103/PhysRevC.35.1678	J,PR/C,35,1678,1987		2FR SAT+	A	Table	
Kreutz	1993	10.1016/0375-9474(93)90476-E	J,NP/A,556,672,1993		2GERGSI	N	Curve	Charge cross section gated by Zbound
Kundu	2008	10.1103/PhysRevC.78.044601	J,PR/C,78,044601,2008	D6066	3INDVEC			
Kwiatkowski	1986	10.1016/0370-2693(86)90994-9	J,PL/B,171,41,1986		1USAINU	A	Curve	
Kyun Kim	1994	10.1016/0375-9474(94)90764-1	J,NP/A,578,621,1994	E2019	2JPNIPC			
La Tessa	2007	10.1016/j.nuclphysa.2007.04.016	J,NP/A,791,434,2007	E2056	2JPNIRS			
Lafleur	1966	10.1139/v66-410	J,CJC,44,2749,1966	C0401	1CANMCG			
Leistenschneider	2002	10.1103/PhysRevC.65.064607	J,PR/C,65,064607,2002	A0407	2GERGSI			
Lemaire	1979	10.1016/0370-2693(79)90772-X	J,PL/B,85,38,1979		1USABRK	N	Curve	Invariant cross section
Lestringuez	1971	10.1016/0370-2693(71)90717-9	J,PL/B,36,331,1971	O2053	1USABRK			
Letourneau	2002	10.1016/S0375-9474(02)01133-8	J,NP/A,712,133,2002	D0579	2GERJUL			
Lewandowski	1980	10.1007/BF02776069	J,NCL,28,15,1980	O0754	2SWTVIL			
Leya	1998	10.1016/S0168-583X(98)00528-X	J,NIM/B,145,449,1998	O0520	2SWTPSI+			
Leya	2005	10.1016/j.nimb.2004.11.009	J,NIM/B,229,1,2005	O0839	2FR SAT+			
Liang	1997	10.1103/PhysRevC.56.908	J,PR/C,56,908,1997	C1455	1USAWAU			
Lindner	1956	10.1103/PhysRev.103.378	J,PR,103,378,1956	C0367	1USABRK			
Lindsay	1962	10.1103/PhysRev.127.1269	J,PR,127,1269,1962	C1508	1USAUSC			
Lindstrom	1975		R,LBL-3650,1975		1USABRK	B	Table	

Logan	1980	10.1103/PhysRevC.22.104	J,PR/C,22,104,1980		1USABRK	B	Curve
Logan	1980	10.1103/PhysRevC.22.1080	J,PR/C,22,1080,1980	C0358	1USABRK		
Loveland	1977	10.1016/0370-2693(77)90546-9	J,PL/B,69,284,1977	C2535	1USABRK		
Loveland	1977	10.1103/PhysRevLett.39.320	J,PRL,39,320,1977	C2536	1USABRK		
Lukyanov	2009	10.1103/PhysRevC.80.014609	J,PR/C,80,014609,2009	C1723	1USAMSU		
Machner	1984	10.1016/0370-2693(84)91868-9	J,PL/B,138,39,1984	O0524	2FR PAR		
Marcinkowski	1998	10.1016/S0375-9474(98)00128-6	J,NP/A,633,446,1998	O0503	3POLIPJ		
Marquez	1951	10.1103/PhysRev.81.953	J,PR,81,953,1951	C0259	1USABRK		INSTITUTE: 1USALRL -> 1USABRK
Marquez	1952	10.1103/PhysRev.86.405	J,PR,86,405,1952	C0250	1USACHI		
Matsuoka	1983	10.1016/0375-9474(83)90351-2	J,NP/A,408,99,1983	E0816	2JPNOSA		
McGill	1984	10.1103/PhysRevC.29.204	J,PR/C,29,204,1984	T0156	1USALAS		
Meadows	1951	10.1103/PhysRev.83.1257	J,PR,83,1257(1),1951	C0266	1USAHRV		
Merchel	2000	10.1016/S0168-583X(00)00105-1	J,NIM/B,172,806,2000	O1229	2FR SAT+		
Meyer	1972		J,AAA/S,7,417,1972			N	Compilation
Meyer	1980	10.1103/PhysRevC.22.179	J,PR/C,22,179,1980		1USABRK	A	Curve
Michel	1979	10.1016/0375-9474(79)90332-4	J,NP/A,322,40,1979	A0146	2GERJUL		
Michel	1985	10.1016/0375-9474(85)90441-5	J,NP/A,441,617,1985	A0100	2FR PAR+		
Michel	1995	10.1016/0168-583X(95)00566-8	J,NIM/B,103,183,1995	O0277	2FR SAT+		
Michel	1996	10.1016/0168-583X(95)01345-8	J,NIM/B,113,434,1996			N	Conf. proc. Review of their activity.
Michel	1997	10.1016/S0168-583X(97)00213-9	J,NIM/B,129,153,1997	O0276	2SWDUPP+		
Mills	1992	10.1016/0883-2889(92)90221-Y	J,ARI,43,1019,1992	A0507	3SAFNAC		
Miura	1987	10.1016/0375-9474(87)90329-0	J,NP/A,467,79,1987	E1371	2JPNTOH		
Mocko	2006	10.1103/PhysRevC.74.054612	J,PR/C,74,054612,2006		1USAMSU	B	Curve
Mocko	2007	10.1103/PhysRevC.76.014609	J,PR/C,76,014609,2007	E2059	2JPNIPC		
Momota	2002	10.1016/S0375-9474(01)01564-0	J,NP/A,701,150,2002	A0455	2JPNIPC+		
Morita	1982	10.1103/PhysRevC.26.511	J,PR/C,26,511,1982	C2568	1USABRK		
Motobayashi	1984	10.1016/0375-9474(84)90376-2	J,NP/A,413,290,1984	E0828	2JPNOSA		
Mougey	1981	10.1016/0370-2693(81)90032-0	J,PL/B,105,25,1981		2ZZZCER	A	Table
Murakami	2003		C,2003VARENN,,541,2003		2JPNIRS	B	Curve

Murphy	1983	10.1103/PhysRevC.28.428	J,PR/C,28,428,1983		1USABRK?	N	Curve	Energy spectrum in arbitrary units
Mustapha	1999		C,99BORMIO,,1999	O0784	2GERGSI			Published as J,NP/A,683,540,2001. See also R,IPNO-T-99-05,1999.
Nagamiya	1979	10.1016/0370-2693(79)90509-4	J,PL/B,81,147,1979		1USABRK	N	Curve	Invariant cross section
Nagamiya	1980	10.1103/PhysRevLett.45.602	J,PRL,45,602,1980		1USABRK?	N	Curve	Invariant cross section
Nagamiya	1981	10.1103/PhysRevC.24.971	J,PR/C,24,971,1981		1USABRK	B	Curve	Only Fig.16, Table IV and Fig.26 for EXFOR?
Nakamura	2007	10.1142/5973	B,NAKAMURA,2007			N		Compilation
Nakayama	2007	10.1103/PhysRevC.76.021305	J,PR/C,76,021305,2007	E2037	2JPNOSA			
Napolitani	2004	10.1103/PhysRevC.70.054607	J,PR/C,70,054607,2004	O1176	2GERGSI			
Napolitani	2007	10.1103/PhysRevC.76.064609	J,PR/C,76,064609,2007	O1589	2GERGSI			
Natowitz	1981	10.1103/PhysRevLett.47.1114	J,PRL,47,1114,1981		1USABRK	N	Curve	Energy spectrum in arbitrary units
Newton	1962	10.1088/0370-1328/79/1/305	J,PPS,79,27,1962		2UK HAR	A	Table	
Nicholls	1972	10.1016/0375-9474(72)90925-6	J,NP/A,181,329,1972	O0531	2UK HAR			
Nilsen	1995	10.1103/PhysRevC.52.3277	J,PR/C,52,3277,1995		1USABRK	A	Curve	
Notani	2007	10.1103/PhysRevC.76.044605	J,PR/C,76,044605,2007	E2085	2JPNIPC			
Ogilvie	1991	10.1103/PhysRevLett.67.1214	J,PRL,67,1214,1991		2GERGSI	B	Curve	
Ohnuma	1986	10.1016/0375-9474(86)90366-0	J,NP/A,456,61,1986	E1695	2JPNTOK+			
Ohnuma	1987	10.1016/0375-9474(87)90328-9	J,NP/A,467,61,1987	E1372	2JPNTOH			FACILITY: Add (ISOCY,2JPNTOH).
Okihana	1997	10.1016/S0375-9474(96)00452-6	J,NP/A,614,71,1997	E1678	2JPNOSA			
Okumuşoğlu	1974	10.1016/0375-9474(74)90503-X	J,NP/A,231,391,1974	D0346	2UK BIR			FACILITY: Add 2UK BIR in the 2nd field.
Olson	1981	10.1103/PhysRevC.24.1529	J,PR/C,24,1529,1981		1USABRK	B	Table	
Olson	1983	10.1103/PhysRevC.28.1602	J,PR/C,28,1602,1983			N		Theoretical analysis of tabulated cross sections from Refs.1 and 2?
Ozawa	2000	10.1016/S0375-9474(00)00147-0	J,NP/A,673,411,2000		2GERGSI	B	Table	
Pakou	2003	10.1103/PhysRevLett.90.202701	J,PRL,90,202701,2003	A0690	2GRCATH			
Pakou	2005	10.1103/PhysRevC.71.064602	J,PR/C,71,064602,2005	D0355	2GRCATH			
Parikh	1960	10.1016/0029-5582(60)90430-2	J,NP,18,628,1960	C0206	2UK LVP			
Parikh	1960	10.1016/0029-5582(60)90431-4	J,NP,18,638,1960	C0207	2UK LVP			

Pate	1961	10.1103/PhysRev.123.647	J,PR,123,647,1961	C0369	1USABNL+			FACILITY: (SYNCY,1USALRL) -> (SYNCH,1USABRK)
Perdrisat	1969	10.1103/PhysRev.187.1201	J,PR,187,1201,1969		1USASRE	A	Table	
Pereira	2007	10.1103/PhysRevC.75.014602	J,PR/C,75,014602,2007	O1504	2GERGSI			
Perron	1976	10.1103/PhysRevC.14.1108	J,PR/C,14,1108,1976	O0085	2ZZZCER			
Pfaff	1995	10.1103/PhysRevC.51.1348	J,PR/C,51,1348,1995		1USAMSU	B	Curve	
Pfaff	1996	10.1103/PhysRevC.53.1753	J,PR/C,53,1753,1996		1USAMSU	B	Curve	
Pfeiffer	1973	10.1016/0375-9474(73)90084-5	J,NP/A,206,545,1973		2GERMPH?	A	Curve	
Pfütznner	1995	10.1016/0375-9474(94)00816-6	J,NP/A,587,229,1995	O0944	2GERGSI			
Poppe	1963	10.1103/PhysRev.129.733	J,PR,129,733,1963	A1090	1USAWIS?			
Porile	1964	10.1103/PhysRev.135.B122	J,PR,135,B122,1964	C0270	1USABNL			
Porile	1989	10.1103/PhysRevC.39.1914	J,PR/C,39,1914,1989		1USABNL	B	Table	
Poskanzer	1971	10.1103/PhysRevC.3.882	J,PR/C,3,882,1971	C0376	1USABRK			
Poskanzer	1975	10.1103/PhysRevLett.35.1701	J,PRL,35,1701,1975		1USABRK	B	Curve	
Price	1991	10.1103/PhysRevC.43.835	J,PR/C,43,835,1991		1USABNL	B	Table	
Prout	2002	10.1103/PhysRevC.65.034611	J,PR/C,65,034611,2002	C0863	1USAINU			
Pugh	1973	10.1016/0370-2693(73)90681-3	J,PL/B,46,192,1973		1USAMRY	N	Curve	$d\sigma/d\Omega_1/d\Omega_2/dE_1$ without angle values
Radin	1974	10.1103/PhysRevC.9.1718	J,PR/C,9,1718,1974	C2346	1USABRK			
Raisbeck	1972	10.1103/PhysRevC.6.685	J,PR/C,6,685,1972	C0233	2FR PAR+			FACILITY: Add (SYNCY,2FR PAR), (SYNCY,2ZZZCER) and (SYNCY,1USABRK).
Raisbeck	1974	10.1103/PhysRevC.9.1385	J,PR/C,9,1385,1974	O2056	2FR PAR+			
Raisbeck	1975	10.1103/PhysRevC.12.915	J,PR/C,12,915,1975	O0094	2FR SAC+			
Raisbeck	1975	10.1103/PhysRevLett.35.155	J,PRL,35,155,1975	O2242	2FR SAT			FACILITY: 2FR CSN -> 2FR SAT
Ramaty	1969	10.1086/149894	J,AJ,155,587,1969			N		
Rayudu	1964	10.1139/v64-178	J,CJC,42,1149,1964	O0073	1USACAR			
Reeder	1965	10.1016/0022-1902(65)80038-0	J,JIN,27,1879,1965	O0583	1USABNL			
Reedy	1987	10.1016/0168-583X(87)90245-X	J,NIM/B,29,251,1987			N		No original measured data given
Reedy	2007		C,2007LEAGUE,,1192,2007			N		Compilation
Regnier	1979	10.1103/PhysRevC.20.1517	J,PR/C,20,1517,1979	O0095	2FR GRA+			

Reinhold	1998	10.1103/PhysRevC.58.247	J,PR/C,58,247,1998	O1015	2GERGSI			
Reisdorf	2010	10.1016/j.nuclphysa.2010.09.008	J,NP/A,848,366,2010		2GERGSI	N	Curve	Rapidity distribution
Rejmund	2001	10.1016/S0375-9474(00)00468-1	J,NP/A,683,540,2001	O0784	2GERGSI			
Remington	1986	10.1103/PhysRevC.34.1685	J,PR/C,34,1685,1986		1USAMSU	B	Curve	Fig.10 only
Remsberg	1963	10.1103/PhysRev.130.2069	J,PR,130,2069,1963	C0269	1USACOL			
Remsberg	1975	10.1103/PhysRevLett.35.361	J,PRL,35,361,1975		1USABNL	B	Curve	
Renberg	1972	10.1016/0375-9474(72)90932-3	J,NP/A,183,81,1972	O0213	2ZZZCER			
Ricciardi	2006	10.1103/PhysRevC.73.014607	J,PR/C,73,014607,2006	O1302	2GERGSI			
Richter	1992	10.1103/PhysRevC.46.1030	J,PR/C,46,1030,1992	O0535	3SAFNAC			
Ridikas	2000	10.1103/PhysRevC.63.014610	J,PR/C,63,014610,2000	D0489	3SAFITH			
Roeder	2006	10.1103/PhysRevC.74.034602	J,PR/C,74,034602,2006	C1465	1USAMSU			
Rosenfeld	1956	10.1103/PhysRev.103.413	J,PR,103,413,1956	C0060	1USACHI			
Rowland	1958	10.1103/PhysRev.110.175	J,PR,110,175,1958	C0243	1USABNL			FACILITY: Must be (SYNCH,1USABNL).
Roy	1981	10.1103/PhysRevC.23.1671	J,PR/C,23,1671,1981	O0146	1CANTMF			
Rudy	1975	10.1016/0370-2693(75)90036-2	J,PL/B,59,240,1975		1USABRK	N	Table	Cross section ratio of $^{12}\text{C}(25.2\text{ GeV})/p(300\text{ GeV})$
Samanta	1992	10.1103/PhysRevC.45.1757	J,PR/C,45,1757,1992	O1173	3INDVEC			
Sampsonidis	1995	10.1103/PhysRevC.51.3304	J,PR/C,51,3304,1995		4ZZZDUB	B	Curve	
Sandoval	1980	10.1103/PhysRevC.21.1321	J,PR/C,21,1321,1980		1USABRK	B	Table	Numerical data available as PAPS PRVCA 21-1321-118.
Scampoli	2005	10.1016/j.asr.2005.01.046	J,ASR,35,230,2005		1USABNL	A	Table	
Schaeffer	1959	10.1103/PhysRev.113.674	J,PR,113,674,1959	C0277	1USABNL+			
Schall	1996	10.1016/0168-583X(96)00325-4	J,NIM/B,117,221,1996		2GERGSI	A	Table	
Schiekel	1996	10.1016/0168-583X(95)01396-2	J,NIM/B,113,484,1996	O0353	2FR SAT+			FACILITY:
Schiekel	1996	10.1016/0168-583X(96)00145-0	J,NIM/B,114,91,1996	O0284	2FR SAT			FACILITY: 2FR SAC -> 2FR SAT
Schnabel	2004	10.1016/j.nimb.2004.04.150	J,NIM/B,223-224,812,2004	O1741	2SWDUPP+			
Schweizer	1979	10.1103/PhysRevC.19.1408	J,PR/C,19,1408,1979		1USASRE	A	Curve	
Segel	1982	10.1103/PhysRevC.26.2424	J,PR/C,26,2424,1982	O0149	1USAINU			
Sengupta	1989	10.1016/0370-2693(89)91270-7	J,PL/B,222,301,1989		2ZZZCER	B	Table	

Shibata	1985	10.1016/0375-9474(85)90155-1	J,NP/A,441,445,1985	E1223	2JPNOSA			
Shyam	1999	10.1007/s12043-999-0036-5	J,PRM,53,595,1999			N		No original measured data given
Signorini	2003	10.1103/PhysRevC.67.044607	J,PR/C,67,044607,2003	O1320	2ITYPAD			
Simpson	1983	10.1146/annurev.ns.33.120183.001543	J,ARN,33,323,1983			N		Review
Singh	1990	10.1103/PhysRevC.42.1757	J,PR/C,42,1757,1990		2ZZZCER	N	Table	Mean free path
Singh	1991	10.1103/PhysRevC.43.2417	J,PR/C,43,2417,1991		1USABRK	B	Table	
Singh	1994	10.1016/0375-9474(94)90085-X	J,NP/A,570,819,1994		4ZZZDUB	B	Table	Cross section for an emulsion target
Singh	1996	10.1103/PhysRevC.54.3185	J,PR/C,54,3185,1996		2ZZZCER	N	Curve	Multiplicity distribution
Singh	2010	10.1007/s12648-010-0117-9	J,IJP,84,1257,2010		2GERGSI	B	Table	
Singh	2011	10.1007/s12648-011-0170-z	J,IJP,85,1523,2011		2GERGSI	N	Table	Transverse momentum differential cross section
Sisterson	1997	10.1016/S0168-583X(96)00409-0	J,NIM/B,123,324,1997	C0507	1USADAV+			
Siwek-Wilczyńska	1979	10.1103/PhysRevLett.42.1599	J,PRL,42,1599,1979		2NEDKVI	A	Curve	
Skoski	1973	10.1103/PhysRevLett.30.51	J,PRL,30,51,1973		1USAPTN	A	Table	
Sobotka	1983	10.1103/PhysRevLett.51.2187	J,PRL,51,2187,1983		1USABRK	A	Curve	
Souliotis	1994	10.1103/PhysRevC.49.3301	J,PR/C,49,3301,1994		1USAMSU	B	Curve	
Sourkes	1976	10.1103/PhysRevC.13.451	J,PR/C,13,451,1976	A1261	1USAMIN			
Souza	2009	10.1016/j.nuclphysa.2009.02.009	J,NP/A,821,36,2009	D0564	3BZLUSP			
Stapleton	1971	10.1016/0375-9474(71)90625-7	J,NP/A,175,124,1971	C0248	?			
Steckmeyer	1989	10.1016/0375-9474(89)90430-2	J,NP/A,500,372,1989		2FR GAN	B	Curve	
Stéphan	1991	10.1016/0370-2693(91)90634-3	J,PL/B,262,6,1991		2FR GAN	B	Table	
Stevenson	1981	10.1103/PhysRevC.24.2102	J,PR/C,24,2102,1981		1USABRK	A	Curve	
Stock	1980	10.1103/PhysRevLett.44.1243	J,PRL,44,1243,1980		1USABRK	N	Curve	Gated by "high multiplicity" and "low multiplicity"
Stolz	2002	10.1103/PhysRevC.65.064603	J,PR/C,65,064603,2002	A0369	2GERGSI			
Stovall	1964	10.1103/PhysRev.135.B330	J,PR,135,B330,1964	O0166	1USAMIN			
Strauch	1956	10.1103/PhysRev.104.191	J,PR,104,191,1956	O0227	1USAHRV			
Streibel	1997	10.1016/S1350-4487(97)00091-7	J,RM,28,317,1997		1USABNL+	N		Production cross section relative to C and Al production
Sugitate	1982	10.1016/0375-9474(82)90422-5	J,NP/A,388,402,1982	E0842	2JPNIPC			

Symons	1979	10.1103/PhysRevLett.42.40	J,PRL,42,40,1979		1USABRK	A	Table	
Taieb	2003	10.1016/S0375-9474(03)01517-3	J,NP/A,724,413,2003	O1053	2GERGSI			
Tanaka	1995	10.1016/0375-9474(94)00730-B	J,NP/A,583,581,1995		2JPNKEK	N	Curve	Energy spectrum in arbitrary units
Tanihata	1980	10.1016/0370-2693(80)90620-6	J,PL/B,97,363,1980		1USABRK	N	Table	Charged particle production cross section
Tanihata	1981	10.1016/0370-2693(81)90757-7	J,PL/B,100,121,1981		1USABRK	A	Curve	
Tannenwald	1953	10.1103/PhysRev.89.508	J,PR,89,508,1953	14749	1USABRK			
Titarenko	1998	10.1016/S0168-9002(98)00530-0	J,NIM/A,414,73,1998	O0900	4RUSITE			
Titarenko	2002	10.1103/PhysRevC.65.064610	J,PR/C,65,064610,2002	O0978	4RUSITE			
Titarenko	2006	10.1016/j.nima.2006.02.059	J,NIM/A,562,801,2006	O1728	4RUSITE			The NIMA article is not the primary reference.
Titarenko	2008	10.1103/PhysRevC.78.034615	J,PR/C,78,034615,2008	O1727	4RUSITE			
Tokushuku	1990	10.1016/0370-2693(90)91958-E	J,PL/B,235,245,1990	E1645	2JPNLEP			
Toshito	2007	10.1103/PhysRevC.75.054606	J,PR/C,75,054606,2007	E2053	2JPNIRS			
Trockel	1988	10.1103/PhysRevC.38.576	J,PR/C,38,576,1988	O1602	2ZZZCER			
Tull	1990	10.2172/6028607	R,LBL-29718,1990		1USABRK	B	Table	Thesis
Tyrén	1957	10.1016/0029-5582(57)90051-2	J,NP,3,52,1957	O0223	2SWDUPP			
Tyrén	1966	10.1016/0029-5582(66)90149-0	J,NP,79,321,1966		1USACHI	A	Curve	Es: Q-value
Uozumi	2007	10.1016/j.nima.2006.11.022	J,NIM/A,571,743,2007	E2007	2JPNOSA			
Urbon	1980	10.1103/PhysRevC.21.1048	J,PR/C,21,1048,1980		1USAANL	N	Curve	Angular distribution in arbitrary units
Utsunomiya	1980	10.1016/0375-9474(80)90144-X	J,NP/A,334,127,1980		2JPNIPC	B	Curve	
Utsunomiya	1981	10.1016/0370-2693(81)91006-6	J,PL/B,105,135,1981	E1396	2JPNIPC			
Valentin	1965	10.1016/0029-5582(65)90072-6	J,NP,62,81,1965	C0062	2FR PAR			
Van Bibber	1979	10.1103/PhysRevLett.43.840	J,PRL,43,840,1979		1USABRK	B	Curve	
Vaz	1983	10.1007/BF01411611	J,ZP/A,311,89,1983		1USABRK	B	Curve	
Villagrasa-Canton	2007	10.1103/PhysRevC.75.044603	J,PR/C,75,044603,2007	O1507	2GERGSI			
Viyogi	1979	10.1103/PhysRevLett.42.33	J,PRL,42,33,1979	C0408	1USABRK			
Volnin	1975	10.1016/0370-2693(75)90371-8	J,PL/B,55,409,1975	O0106	4RUSLIN			
Waddington	1993	10.1142/S0218301393000327	J,IMP/E,2,739,1993		1USABNL	N		Review
Waddington	2000	10.1103/PhysRevC.61.024910	J,PR/C,61,024910,2000		1USABNL	A	Curve	

Warner	1980	10.1016/0375-9474(80)90379-6	J,NP/A,341,483,1980	C0735	1CANCRC		
Warner	1983	10.1016/0375-9474(83)90363-9	J,NP/A,401,521,1983	T0178	1USAINU		
Warner	1992	10.1103/PhysRevC.45.2328	J,PR/C,45,2328,1992	E1375	2JPNOSA		
Warner	1992	10.1103/PhysRevC.46.616	J,PR/C,46,616,1992	E1582	2JPNOSA		
Warwick	1983	10.1103/PhysRevC.27.1083	J,PR/C,27,1083,1983		1USABRK	B	Curve
Watanabe	1987	10.1103/PhysRevC.36.1325	J,PR/C,36,1325,1987	E1842	2JPNKYU		Energy spectrum numerical data are in preparation in 2003.
Watanabe	1990	10.1007/BF01904164	J,ZP/A,336,63,1990	E1844	2JPNKYU		
Watanabe	1995	10.1103/PhysRevC.51.1891	J,PR/C,51,1891,1995	E1845	2JPNJAE		
Webb	1987	10.1103/PhysRevC.36.193	J,PR/C,36,193,1987		1USABRK	B	Curve
Webber	1990	10.1086/168268	J,AJ,348,611,1990			N	No original measured data given
Webber	1990	10.1103/PhysRevC.41.520	J,PR/C,41,520,1990		1USABRK	A	Table IV is not for compilation.
Webber	1990	10.1103/PhysRevC.41.533	J,PR/C,41,533,1990	C1546	1USABRK		
Webber	1990	10.1103/PhysRevC.41.547	J,PR/C,41,547,1990		1USABRK	A	Table
Webber	1998	10.1086/306445	J,AJ,508,940,1998		2FR SAT	A	Table
Webber	1998	10.1086/306446	J,AJ,508,949,1998		2FR SAT	A	Table
Webber	1998	10.1103/PhysRevC.58.3539	J,PR/C,58,3539,1998		2FR SAT	A	Table Numerical data available as PAPS PRVCAN-58-074812
Weber	1992	10.1007/BF01291599	J,ZP/A,343,67,1992		2GERGSI	A	Table
Weber	1994	10.1016/0375-9474(94)90766-8	J,NP/A,578,659,1994		2GERGSI	B	Curve
Wefel	1979	10.1103/PhysRevC.19.1380	J,PR/C,19,1380,1979		1USAPTN	A	Table
Wesick	1985	10.1103/PhysRevC.32.1474	J,PR/C,32,1474,1985	C0832	1USAINU		
West	1966	10.1103/PhysRev.141.1033	J,PR,141,1033,1966	C0971	1USAWAS		
Westerberg	1978	10.1103/PhysRevC.18.796	J,PR/C,18,796,1978		1USAORL	A	Curve
Westfall	1979	10.1103/PhysRevC.19.1309	J,PR/C,19,1309,1979	C0407	1USABRK		
Westfall	1979	10.1103/PhysRevLett.43.1859	J,PRL,43,1859,1979		1USABRK	A	Curve
Westfall	1982	10.1016/0370-2693(82)90988-1	J,PL/B,116,118,1982		1USABRK	B	Curve
Westfall	1984	10.1103/PhysRevC.29.861	J,PR/C,29,861,1984		1USAMSU	A	Curve
Whitfield	1993	10.1103/PhysRevC.47.1636	J,PR/C,47,1636,1993	T0201	1USAMSU		
Wickersham	1957	10.1103/PhysRev.107.1050	J,PR,107,1050,1957	C1998	1USABRK		

Wilczyński	1980	10.1103/PhysRevLett.45.606	J,PRL,45,606,1980	2NEDKVI	B	Table	
Wlazlo	2000	10.1103/PhysRevLett.84.5736	J,PRL,84,5736,2000	O0833	2GERGSI		
Wright	1950	10.1103/PhysRev.79.838	J,PR,79,838,1950	P0066	1USABRK		
Wu	1979	10.1103/PhysRevC.19.698	J,PR/C,19,698,1979	O0137	1USAMRY		
Yamada	1979	10.1103/PhysRevLett.43.605	J,PRL,43,605,1979	1USATAM?	N	Curve	Energy spectrum in arbitrary units
Yamaguchi	2006	10.1103/PhysRevC.74.044608	J,PR/C,74,044608,2006	2GERGSI	B	Table	
Yamaguchi	2010	10.1103/PhysRevC.82.014609	J,PR/C,82,014609,2010	E2283	2JPNIRS		
Yashima	2003	10.1524/ract.91.12.689.23423	J,RCA,91,689,2003	E1829	2JPNIRS		
Yashima	2004	10.1016/j.nimb.2004.06.025	J,NIM/B,226,243,2004	E1923	2JPNIRS		
Yennello	1991	10.1103/PhysRevLett.67.671	J,PRL,67,671,1991	2FR SAT	N	Curve	Gated by multiplicity
Yennello	1993	10.1103/PhysRevC.48.1092	J,PR/C,48,1092,1993	2FR SAT	A	Curve	
Yiou	1968	10.1051/anphys/196814030169	J,APN,14,169,1968	2ZZZCER+	A	Table	Tables III,IV,V in C0395. Tabl VI: ?
Yiou	1969	10.1029/JA074i009p02447	J,JGR,74,2447,1969	C0395	2FR PAR+		FACILITY: 2FR CSN -> 2FR PAR and 2ZZZCER
Yokoyama	2001	10.1524/ract.2001.89.11-12.703	J,RCA,89,703,2001	E2074	2JPNIRS		
Yule	1960	10.1103/PhysRev.118.1591	J,PR,118,1591,1960	C0700	1USACHI		
Zamani	2010	10.1103/PhysRevC.82.044605	J,PR/C,82,044605,2010	4ZZZDUB	B	Table	Nonelastic rather than "inelastic"?
Zeitlin	1997	10.1103/PhysRevC.56.388	J,PR/C,56,388,1997	1USABNL	B	Table	
Zeitlin	2001	10.1103/PhysRevC.64.024902	J,PR/C,64,024902,2001	2JPNIRS	A	Table	
Zeitlin	2007	10.1016/j.nuclphysa.2006.10.088	J,NP/A,784,341,2007	E2010	2JPNIRS+		
Zeitlin	2007	10.1103/PhysRevC.76.014911	J,PR/C,76,014911,2007	C1581	2JPNIRS		
Zeitlin	2008	10.1103/PhysRevC.77.034605	J,PR/C,77,034605,2008	C1609	2JPNIRS+		
Zeitlin	2011	10.1103/PhysRevC.83.034909	J,PR/C,83,034909,2011	2JPNIRS+	B	Table	
Zhou	2010	10.1103/PhysRevC.82.024601	J,PR/C,82,024601,2010	32684	3CPRAEP		
Zhu	1991	10.1103/PhysRevC.44.R582	J,PR/C,44,582,1991	C1442	1USAINU		