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**Memo CP-C/234**

**DATE:** May 8, 1997  
**TO:** Distribution  
**FROM:** V. McLane *vm*  
**SUBJECT:** New "CINDA2000" index

At the NRDC meeting last June, I volunteered to design a "CINDA2000", which would solve two problems: 1) dates as of the year 2000, and 2) the entry of charged-particle and photo-nuclear reaction data into the bibliographic file. The *first-order* exchange file format is as follows:

1st record of block

Columns	1-5:	block (A5: EXFOR accession number or Zyyynn)
	6-24:	reaction (A23:ZZZSSAAAM(xxxxx,yyyy))
	25-33:	quantity (A9)
	39-43:	institute (2A3: country, lab)
	44:	data type(A2)

Following record(s) Multiple records will be used for the same reaction coded in different subentries or for variable product nucleus.

Columns	1-5:	<i>blank</i>
	6:	reference hierarchy (I1)
	7-38:	reference,date (A24, I6: yyyyymm)
	39-48:	author
	49-88:	comment (A40) or residual nucleus string for hierarchy = R
	89-106:	energy range (2(+x.x+nn))

Distribution:

M. Chiba, Sapporo  
 F. E. Chukreev, CaJaD  
 K. Kato, JCPDG  
 V. N. Manokhin, CJD  
 O. Schwerer, NDS  
 NNDC (3)

F. T. Tárkányi, Debrecen  
 N. Tubbs, NEADB  
 Y. Tendow, RIKEN  
 V. Varlamov, CDFE  
 Zhang Zingshang, CNDC

cc: Arcilla  
 Lammer  
 Muir  
 Oblozinsky  
 Schwerer  
 Wienke

*Example of an exchange record*

A0517 6C 12 (A,X)	TTT GERKLN E		
3 R,INDC(GER)-37/LN	1969 Krasnov+ Grphs.	2.7+07	4.1+07
6 A0517.002	199311 .3 pts. prod.yld.	2.7+07	4.1+07
R	Be9,B10,B11		

I have written codes to convert both CPBIB (NNDC Charged-particle bibliography) and EXFOR references into this format. Examples of the output listings are attached.

Example of Reaction Bibliography for alpha on 12C 12-Jul-1996

Reaction	Quantity	Ty	Lab	Block	Energy range	H Reference	Date	Comment
C 12(A, EL)	DA	EX	JPN TOK	E1191	6.5+07 6.5+07 3 J, NP/A, 394, 29 6.5+07 6.5+07 6 4, EXFOR E1191.002		1983 1990 Oct	Yasue+ .8 pts. da.
C 12(A, EL)	DA	EX	USA OSU	Z8501	3.5+06 3.6+06 3 J, PR/C, 31, 1065		1985	Kovash+ MIT. Grphs.
C 12(A, G)	DA	EX	CAN QU	Z9201	1.4+04 3.0+06 3 J, PRL, 69, 1896		1992	Ouellet+ Grphs.
C 12(A, G)	DA	EX	GERMUN	Z8501	9.4+05 2.8+06 3 J, NP/A, 462, 385 1.7+06 2.8+06 3 J, PRL, 55, 1262		1987 1985	Redder+ oth. Grphs, tbl, E1/E2. Redder+ Grphs.
C 12(A, G)	DA	EX	UK OXF	Z7001	7.7+06 8.1+06 3 J, PL/B, 33, 291		1970	Von Wimmersperg+ NDG. T-inv holds.
C 12(A, G)	DA	EX	UK OXF	Z7101	7.6+06 8.1+06 3 J, NP/A, 167, 352		1971	Kernel+ Rel, tbl, grph, leg pol fit.
C 12(A, G)	DA	EX	USA BNL	Z8101	3.4+07 4.2+07 3 J, PRL, 46, 884 NDG		1981 Mar 1981	Sandorfi+ Sandorfi+
C 12(A, G)	DA	EX	USA KTY	Z8801	NDG	5 J, BAPS, 33, 1023 (GI14)	1988	Trice+ 160 quadr capt ampl.
C 12(A, G)	DA	EX	USA WAU	Z7401	7.0+06 2.8+07 3 J, PRL, 32, 1061 1.0+07 2.8+07 3 C, 73 MUNICH, 1, 683		1974 1973 Aug	Snover+ Grphs. Snover+ UBC. 52degr, rel grph.
C 12(A, G)	DA/DE	EX	AUL AMU	Z6401	6.9+06 8.3+06 3 J, NP, 58, 529		1964	Mitchell+ Rel grphs.
C 12(A, G)	DA/DE	EX	USACIT	Z6401	2.8+06 8.3+06 3 J, NP, 56, 497		1964	Larson+ Rel grphs.
C 12(A, G)	DE	EX	AUL AMU	Z7601	6.5+06 8.5+06 3 J, NP/A, 273, 397		1976	Ophel+ Rel yld, grph, tbl.
C 12(A, G)	SIG	EX	FR CSN	Z9601	1.4+06	5 C, 96 NOTRED, (NBAE2-5)	1996 Jun	Kiener+ Inv react, from 160 breakup.
C 12(A, G)	SIG	EX	GERBOC	Z9601	1.0+06 3.4+06 3 C, 96 NOTRED, (NBAE2-4)		1996 Jun	Trautvetter+ E1/E2 determ.
C 12(A, G)	SIG	EX	GERKLN	Z7301	+06	5 P, BMT-PEK-73-02	1973 Mar	Ewen+ Grphs.
C 12(A, G)	SIG	EX	GERMUN	Z8501	1.7+06 2.8+06 3 J, PRL, 55, 1262		1985	Redder+ Partl sig, tbl, E1/E2.
C 12(A, G)	SIG	EX	USACIT	Z7401	1.4+06 2.9+06 3 J, NP/A, 233, 495 1.7+06 2.9+06 5 J, DA/B, 34, 808		1974 1973	Dyer+ Grphs, E1 sig, tbl. Dyer. lvs, lvl wid.
C 12(A, G)	SIG	EX	USACIT	Z8801	1.3+06 3.0+06 3 J, PRL, 60, 1475 1.3+06 3.3+06 5 J, DA/B, 48, 1725		1988 1987	Kremer+ Grphs. Kremer. SIG=42.6nb at 2.4MeV.
C 12(A, G)	SIG	EX	USA KTY	Z8801	NDG	5 J, BAPS, 33, 1023 (GI14)	1988	Trice+ 160 quadr capt ampl.
C 12(A, G)	SIG	TH	USALAS	Z9601	+06	3 C, 96 NOTRED, (NBAE2-8)	1996 Jun	Hale. R-mat anal, fit to meas.
C 12(A, G)	SIG	EX	USA ORL	Z7001	1.6+06 3.1+06 3 J, PR/C, 2, 63		1970	Jaszczak+ Grph, data in text.
C 12(A, G)	SIG	EX	USA ORL	Z7002	3.1+06 4.1+06 3 J, PR/C, 2, 2452		1970	Jaszczak+ Grph.
C 12(A, G)	SIG	EX	USA OSU	Z8501	3.5+06 3.6+06 3 J, PR/C, 31, 1065 NDG		1985 1983 Oct	Kovash+ MIT. Rel sig, G-G coinc. Kovash. MIT. NDG.
C 12(A, G)	SIG	EX	USA WAU	Z7801	NDG	5 J, DA/B, 39, 2374	1978	Ebiawa. DSD mdm.
C 12(A, G)	SIG/SFC	EX	CAN QU	Z9201	1.4+04 3.0+06 3 J, PRL, 69, 1896		1992	Ouellet+ Tbl.
C 12(A, G)	SIG/SFC	EX	GERMUN	Z8701	9.4+05 2.8+06 3 J, NP/A, 462, 385		1987	Redder+ oth. Tbl.
C 12(A, G)	SIG/SFC	EX	USACIT	Z7401	1.4+06 2.9+06 3 J, NP/A, 233, 495		1974	Dyer+ E1 contr, grphs.
C 12(A, G)	SIG/SFC	EX	USACIT	Z8801	1.3+06 3.0+06 3 J, PRL, 60, 1475		1988	Kremer+ Grphs.

C 12 (A, G)	SPC	EK GERMON Z8501	1.7+06	2.8+06	3 J, PRL, 55, 1262	1987	Kremer. S=40 keV-b at 300 keV <sub>1</sub>
C 12 (A, G)	SPC	EK GERMON Z8701	2.7+04	2.9+05	3 J, NIM/A, 260, 33	1985	Redder+ toth. nomneg E2 contr RR
C 12 (A, G)	SPC	EK UK BIR Z7501	4.1+06	4.4+06	3 J, NP/A, 252, 8	1987	Seuthet Thk targ. Grph.
C 12 (A, INL)	DA	EK JENYOK E1191	6.5+07	6.5+07	3 J, NP/A, 394, 29	1975	Chew+ G-G coinc, grph.
			6.5+07	6.5+07	6 4, EXFOR E1191.003	1983	Yasue+
			6.5+07	6.5+07	6 4, EXFOR E1191.004	1990Oct	.8 pts. partl d/da.
			6.5+07	6.5+07	6 4, EXFOR E1191.004	1990Oct	.8 pts. partl d/da.
C 12 (A, INL)	DA/DE	EK AULAMU Z6401	6.9+06	8.2+06	3 J, NP, 58, 529	1964	Mitchell+ Gam em, rel grphs, anisku
C 12 (A, INL)	DA/DE	EK USACIT Z6401	2.8+06	8.3+06	3 J, NP, 56, 497	1964	Larsen+ Gam em, el grphs.
C 12 (A, INL)	SIG	EK USAWAS C0313	2.7+07	2.7+07	3 J, PR/C, 32, 1873	1985Dec	Dyer+ Prod 4.439 MeV gamma, tbl.
			2.7+07	2.7+07	6 4, EXFOR C0313.002	1996Jul	.17 pts. partl sigma.
C 12 (A, N)	DA	EK USAMNG R0028	4.1+07	4.1+07	3 J, NP/A, 363, 93	1981	Overwey+
			4.1+07	4.1+07	6 4, EXFOR R0028.002	1989Apr	.1 pts. partl d/da.
			4.1+07	4.1+07	6 4, EXFOR R0028.003	1987Oct	.5 pts. partl d/da.
			4.1+07	4.1+07	6 4, EXFOR R0028.004	1987Oct	.3 pts. partl d/da.
			4.1+07	4.1+07	6 4, EXFOR R0028.005	1987Oct	.1 pts. partl d/da.
			4.1+07	4.1+07	6 4, EXFOR R0028.006	1987Oct	.2 pts. partl d/da.
			4.1+07	4.1+07	6 4, EXFOR R0028.007	1987Oct	.1 pts. partl d/da.
			4.1+07	4.1+07	6 4, EXFOR R0028.008	1987Oct	.2 pts. partl d/da.
			4.1+07	4.1+07	6 4, EXFOR R0028.009	1987Oct	.2 pts. partl d/da.
C 12 (A, N)	TTY	EK UK HAR D0047	3.6+06	1.0+07	3 R, AERE-R-10502	1982Jun	West+
			3.6+06	1.0+07	6 4, EXFOR D0047.005	1984Jan	.4 pts. TT yld.
C 12 (A, N)	TTY	DE UK HAR D0048	3.7+06	9.9+06	3 R, AERE-R-10502	1982Jun	West+
			3.7+06	9.9+06	6 4, EXFOR D0048.005	1984Jan	.2 pts. TT yld.
C 12 (A, N+A)	SIG	EK USABRK E0101	3.8+08	3.8+08	3 J, PR, 101, 329	1956	Crandell+
			3.8+08	3.8+08	6 4, EXFOR E0101.004	1979Nov	.20 pts. sigma.
C 12 (A, N+A)	SIG	EK ZZZDUB A0242	1.5+10	1.5+10	5 P, JINR-16-85-35	1985	Bamblevskij.
			1.5+10	1.5+10	6 4, EXFOR A0242.002	1987Apr	.10 pts. sigma.
C 12 (A, N+A)	TTY	EK CCPFEI A0260	3.0+07	4.3+07	3 J, AE, 27, 125	1969	Krasnov+
			3.0+07	4.3+07	6 4, EXFOR A0260.008	1986Sep	.4 pts. TT yld.
C 12 (A, X)	SIG	EK FR CSN Z7101	1.0+08	1.4+08	3 J, NP/A, 165, 405	1971	Fontes+ Prod 6, 7Li, 7, 9Be, 10Be, tbl.
C 12 (A, X)	SIG	EK FR PAR B0092	1.0+08	1.6+08	3 J, PR/C, 15, 2159	1977	Fontes. Boxon prod
			1.0+08	1.6+08	6 4, EXFOR B0092.003	1979Jun	.25 pts. Ratio IIB/10B prod.
C 12 (A, X)	SIG	EK GERUH A0529	7.7+07	1.6+08	3 C, 91JUBELIC, 745	1991	Lange+
			7.7+07	1.7+08	6 4, EXFOR A0529.003	1995Apr	.5 pts. 10Be prod sigma.
			7.7+07	1.6+08	6 4, EXFOR A0529.002	1995Apr	.8 pts. 7Be prod sigma.
C 12 (A, X)	SIG	EK GERKIN A0517	7.9+07	1.7+08	3 R, INDC(GER)-36/LN, 55	1991	Dittrich+
			7.9+07	1.7+08	6 4, EXFOR A0517.002	1993Nov	.3 pts. 7Be prod sigma.
			7.9+07	1.7+08	6 4, EXFOR A0517.003	1993Nov	.3 pts. 10Be prod sigma.
C 12 (A, X)	TTY	EK CCPFEI A0260	2.7+07	4.1+07	3 J, AB, 27, 125	1969	Krasnov+
			2.7+07	4.1+07	6 4, EXFOR A0260.009	1986Sep	.4 pts. 13N prod TT yield.
C 12 (A, RES)		EK AULAMU Z6501	7.7+06	8.4+06	3 J, NP, 66, 553	1965	Mitchell+ gam-0 em. J, pi, l, vl. wid.
C 12 (A, RES)		EK AULAMU Z6401	6.9+06	8.2+06	3 J, NP, 58, 529	1964	Mitchell+ Gam em, l, vl J, pi.
C 12 (A, RES)		EK AULAMU Z7601	7.1+06	7.9+06	3 J, NP/A, 273, 397	1976	Ophel+ Res.

C 12 (A, RES)	EX CANQU	Z9201	1.4+04	3.0+06	3	J, PRL, 69, 1896	1992	Queliet+ E1, E2 contr, cluster, mdl
C 12 (A, RES)	EX FR STR	Z7001	3.6+06	5.8+6	3	J, JPR, 31, 255	1970Apr	Brochard+ partl wid.
C 12 (A, RES)	EX ITFML	Z7401	5.1+06	5.4+6	3	J, NCL, 9, 251	1974Feb	Bellotti+ partl wid.
C 12 (A, RES)	EX UK BIR	Z7501	4.2+06		3	J, NP/A, 252, 8	1975	Chew+ Res G-wid.
C 12 (A, RES)	EX USEBNL	Z8101	3.4+07	4.2+07	3	J, PRL, 46, 884	1981Apr	Sandorfi+ Giant E2 trns, mdl calc
			NDG		0	5 J, BAPS, 26, 536 (AG6)	1981	Sandorfi+ Giant E2 trns, mdl calc
C 12 (A, RES)	EX USACIT	Z6401	3.2+06	8.1+06	3	J, NP, 56, 497	1964	Larsen+ Cam em, lvls, J, pi, RP.
C 12 (A, RES)	EX USNWAU	Z7401	1.3+06	2.7+07	3	J, PRL, 32, 1061	1974	Snover+ Giant E2 res.
			1.7+07	2.6+07	3	C, TCMUNICH, 2, 683	1973AUG	Snover+ +UBC. B res, tot wid.
			1.3+06	2.7+07	5	P, RIO-1388-21, 111	1973Jun	Adelberger+