

**Nuclear Data Section
International Atomic Energy Agency
P.O.Box 100, A-1400 Vienna, Austria**

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To: Distribution
From: V.Zerkin
Subject: Proposal on improvement of CINDA-2001 format.

Please find attached a proposal on improvements and extensions of the CINDA-2001 format

Distribution:

oblozinsky@bnl.gov
vml@bnl.gov
nordborg@nea.fr
manokhin@ippe.obninsk.ru
maev@ippe.obninsk.ru
may@obninsk.ru
Mmarina@ippe.obninsk.rug
blokhin@ippe.obninsk.ru
feliks@polyn.kiae.su
chukreev@polyn.kiae.su
S.Dunaeva@iaea.org
taova@expd.vniief.ru
varlamov@depni.sinp.msu.ru
chiba@earth.sgu.ac.jp
kato@nucl.sci.hokudai.ac.jp
ohnishi@nucl.sci.hokudai.ac.jp
oba@nrdf.meme.hokudai.ac.jp
yxzhuang@iris.ciae.ac.cn

gezg@iris.ciae.ac.cn
hongwei@iris.ciae.ac.cn
tarkanyi@atomki.hu
stakacs@atomki.hu
katakura@ndc.tokai.jaeri.go.jp
hasegawa@ndc.tokai.jaeri.go.jp
vlasov@kinr.kiev.ua
kaltchenko@kinr.kiev.ua
ogritzay@kinr.kiev.ua
jhchang@kaeri.re.kr
ohtsuka@nucl.sci.hokudai.ac.jp
m.wirtz@iaea.org
m.lammer@iaea.org
v.pronyaev@iaea.org
schwerer@iaeand.iaea.org
v.zerkin@iaea.org
henriksson@nea.fr
exfor@nea.fr

Improvement and extension of CINDA-2001 format

V.Zerkin, IAEA-NDS

During the software development and implementation of CINDA-2001 database and especially working on automatic import of EXFOR charged particle data into the new CINDA format, it appeared that some minor changes of the format would be very useful (see: Improvements). Unresolved issue with multiple translation of old CINDA to new <Reaction, Quantity> was solved in NDS version of CINDA database by keeping the old Quantity codes in the new CINDA (finally, users can retrieve data by old Quantity codes). More radical changes (Extensions) are aimed to the future development of CINDA; they need more time to think, to be agreed and accepted.

Improvements

- 1) To extend Sequence number to at least up to 3 digits. The reason is that some of EXFOR Entries have more than 99 Subentries, but the data naturally have to be in one CINDA block.
- 2) For Hierarchy Codes 8 and 9 Energy fields are not used, then if Hierarchy Code will be moved just after Sequence Number, the place of Energy can be used for products and institutes.
- 3) For Block-related information (Hierarchy 8 and 9) Sequence Number counting should be negative (-1, -2, -3, etc.). (This item is questionable...)
- 4) To have old Quantity field (3 columns: 135..137) where it is known and appropriate.
- 5) To allow not to repeat block information in lines starting from second. This will make format more human readable and easier for search.

Extensions

CINDA-2001 format has fixed fields and their positions limiting nature and size of information for exchange between data centers. At the same time, CINDA database can have more data in it (such as **title, list of authors, connectors to NSR and ENDF** databases, products, etc.) that can be taken automatically (e.g. from EXFOR) or compiled in future. In this case and also for the future needs, it would be very useful to foresee a flexible extension of CINDA-2001 format and adjust software already now.

Secondly, CINDA-2001 format is line-oriented (blocks are defined implicitly), and **information related to block** (products and institutes) is presented in lines with Hierarchy codes 8 and 9 and separate Sequence#; but it is not a separate line by its nature, although can be properly treated by software. This is also not prepared for further development, because the meaning of hierarchy is fixed and for new type of information we do need a new hierarchy code (by the way, since hierarchy is one digit, all codes are already occupied).

The aim of the proposal is to allow CINDA-2001 format to have a flexible extensions for both lines and blocks:

- 1) CINDA-Line can be given in CINDA-2001 format (lets call it LONG-LINE)

2) CINDA-Line can also be given as combination of two lines:

<BLOCK, SHORT-LINES>:

- a) BLOCK: first line in the bunch of CINDA-Lines, following to it. This is leading line with block-information starting with block-flag ("B"), in fact, it is columns 1..38 of CINDA-2001 format
- b) SHORT-LINES: lines containing CINDA-Line without BLOCK, but with leading Operation-Code. SHORT and LONG lines are differentiated by case of Operation-Code: capital for LONG and lower-case for SHORT. Corresponds to columns 39..135 of CINDA-2001 format

3) Both CINDA-Line and BLOCK can have an extension in one or more following line(s) with sign "+" in the first position, keyword in columns 2..11 and information in positions 12..132.

If there is no keyword given (blank space), this means multi-line information (the line still should have sign "+" in the first column). An information given in CINDA-Line or Block can be continued in [overwritten by] its extension, e.g. to make long (multi-line) comment, or make reference with the code longer than 23 symbols. Keywords which are not known for some versions of software can be ignored.

Full list of extensions can be discussed if the new format will be accepted.

Examples of keywords:

- CINDA-Line: Author, Title, Comment, Reference, NSR-KeyNo;
- CINDA-Block: Product, Institute (instead of Hierarchy codes 8 and 9).

Appendix 1. IMPROVEMENTS

Operation Code	Z	A	Meta	Reaction	Quantity	Lab	Block #	Seq. #	Hierarchy	Work-type	Reader	E-min	E-max	Reference	Date-ref	Comment	Date-mod	Old Quantity
	I3	I3A		A15	A3	A6	A5	I4	IAA	A7	A7			A23	I6	A38	A8	
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789
A	0	1	N, TOT		CS	1USAPTN17730		13EC	7.0+08	3.6+09J, PR/D, 8, 136					197307	Devlin+ MOM = 0.7-3.6 GEV/C.	19900117TOT	
A								26EC	7.0+08	3.6+094, EXFOR10365.005					198304	.26 PTS. SIGMA.	19900117TOT	
A								36EC	7.0+08	3.6+094, EXFOR10365.004					198304	.26 PTS. SIGMA. N-P + N-N.	19900117TOT	
A								-19EC1USABNL, 1USALAS, 2FR ILL, 2GERJUL, 2GERKFK										19900117TOT
A	0	1	N, TOT		CS	1USALRL17000		15T+		6.0+07R, DOE-NDC-47, 86					198804	Brown+ NDG.	19900117TOT	
A	0	1	N, EL		DA	1USAUI 17000		13T+	5.0+07	2.0+08J, PR/C, 36, 2221					198712	Schiavilla+ GRPHS.CORREL.BORN APPROX	19900117DEL	
A	0	1	N, EL		DA	1USALRL17000		15T+		6.0+07R, DOE-NDC-47, 86					198804	Brown+ NDG.	19900117DEL	
A	1	1	N, X		EVL1USAYAL10010			13D8		1.0+07J, ARN, 2, 365					195300	Breit+SCATT LENGTH- SEE PAGE 384	19900117EVL	
A	1	1	N, X		EVL1USAUNC10010			13DC	2.5-02	1.0+07R, NDA-57-27					195609	Monroe+.TOT,ABS.TABLE+CURVE	19900117EVL	
A	1	1	N, X		EVL1USAGEN10010			13D8	3.2-02	1.0+07R, APEX-467					195806	Tralli+.18GROUPS ABS	19900117EVL	
A	1	1	N, X		EVL1USAGEN10020			13D8Maxw		R, APEX-467					195806	Tralli+.ONLY 2.23 MEV LINE FOR SNG	19900117EVL	
A	1	1	N, X		EVL1USAPCT11500			13D+	2.5-02	1.4+07R, NP-8216					195810	Lamarsh+ ALL DATA	19900117EVL	
A	1	1	N, X		EVL1USAUNC10020			13D8	4.1-02	1.8+07R, TID-21294					196303	Goldstein.TOT SEL	19900117EVL	
A	1	1	N, X		EVL1USAAI 10030			13DC	1.0-03	1.0+07R, NAA-SR-M-8904					196308	Alter+.TOT SCT NG	19900117EVL	
A								23DC	1.0+04	1.4+07R, NAA-SR-TDR-, 6545					196106	Alter.TABULATED TOT,SEL,SIN	19900117EVL	
A								33DC	1.0+00	1.0+07R, NAA-SR-TDR-, 5861					196011	Alter.TABULATED TOT,SEL,SIN.MTECARLO	19900117EVL	
A	1	1	N, TOT		CS	1USACOL10010		13E2Maxw		J, PR, 48, 265					193508	Dunning+ IONCH,TRANS,SIG SLOW+FAST N	19900117TOT	
A								26ECMaxw		4, EXFOR12634.002					198403	.1 PT. SIGMA.	19900117TOT	
A	1	1	N, TOT		CS	1USAPTN10010		12E2	2.4+06	J, PR, 52, 911					193711	Ladenburg+ TRANSMISSION, D-D NEUTS	19900117TOT	
A								23EC	2.4+06	J, PR, 52, 1255					193712	FURTHER ANALYSIS	19900117TOT	
A								36E+	2.4+06	4, EXFOR13790.002					200208	.1 PT. SIGMA.	20020812TOT	
A	1	1	N, TOT		CS	1USABRK10010		13E2Maxw		2.5-02J, PR, 55, 339					193902	Libby+ ORTHO+P-HYDROGEN, GAS TRANS	19900117TOT	
A								26E+	2.5-02	4, EXFOR13789.002					200208	.1 PT. SIGMA.	20020812TOT	
A	99255	0, F			FY	3INDTRM34190		13R\$Spon		J, PRM, 33, 109					198907	Prakash. GRPH:SCHEMATIC A-DIST,CFD	19900516NFY	
A								-18R\$23-V-66, 24-CR-68/69/70, 25-MN-68/69, 26-FE-67/68/70, 27-CO-70/72/75										19900516NFY
A								-28R\$28-NI-70/71/72, 29-CU-68/68M/70/70M, 30-ZN-71/71M/72/73										19900516NFY
A								-39R\$3INDTAT, 3INDDLH										19900516NFY
A	99255	N, 0			RP	4CCPFEI44130		13TO	2.0+06	4.0+06J, YF, 39, 281					198402	Kupriyanov+ SYSTEMATCS.TBL AVG WN/WF	19850319RES	
A								24T\$	2.0+06	4.0+06J, SNP, 39, 176					198402	.ENGLISH OF YF 39 281	19850319RES	

Appendix 2. EXTENSIONS

1) LONG-LINE

Operation Code	Z	A	Meta	Reaction	Quantity	Lab	Block #	Seq. #	Work-type	Reader	E-min	E-max	Hierarchy	Reference	Date-ref	Comment	Date-mod	Old Quantity
	I3	I3A		A15	A3	A6	A5	I2AA	A7	A7	I	A23	I6	A38	A8			
1	1	1	1	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1
123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789
A	0	1	N, TOT	CS	1USAPTN	17730	1EC	7.0+08	3.6+09	3J, PR/D, 8, 136	197307	Devlin+	MOM = 0.7-3.6 GEV/C.	19900117	TOT			
A	0	1	N, TOT	CS	1USAPTN	17730	2EC	7.0+08	3.6+09	64, EXFOR10365.005	198304	.26 PTS. SIGMA.		19900117	TOT			
A	0	1	N, TOT	CS	1USAPTN	17730	3EC	7.0+08	3.6+09	64, EXFOR10365.004	198304	.26 PTS. SIGMA. N-P + N-N.		19900117	TOT			

Block-Flag	Z	A	Meta	Reaction	Quantity	Lab	Block #
I3	I3A		A15	A3	A6	A5	
1	1	1	1	1	1	1	1
123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789
B	1	1	N, TOT	CS	1USAPTN	10010	

2a) BLOCK

Operation Code	Seq. #	Work-type	Reader	E-min	E-max	Hierarchy	Reference	Date-ref	Comment	Date-mod	Old Quantity
I3AA	A7	A7	I	A23	I6	A38	A8				
1	1	1	1	1	1	1	1	1	1	1	1
123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789
a	1E2	2.4+06		2J, PR, 52, 911	193711	Ladenburg+	TRANSMISSION, D-D NEUTS	19900117	TOT		
a	2EC	2.4+06		3J, PR, 52, 1255	193712	FURTHER ANALYSIS		19900117	TOT		
a	3E+	2.4+06		64, EXFOR13790.002	200208	.1 PT. SIGMA.		200208	12	TOT	

2b) SHORT-LINE

Extension Flag	Keyword	Contents
A10	A87	
1	1	1
123456789	123456789	123456789
+	Author	R.Ladenburg, M.H.Kanner
+	Title	On the Neutrons from the
+		Deuteron-Deuteron Reaction

3) Line Extensions

Example 1. Long-Lines only.

A	0	1	N, TOT	CS	1USAPTN17730	1EC	7.0+08	3.6+093J, PR/D, 8, 136	197307Devlin+ MOM = 0.7-3.6 GEV/C.	19900117TOT
A	0	1	N, TOT	CS	1USAPTN17730	2EC	7.0+08	3.6+0964, EXFOR10365.005	198304.26 PTS. SIGMA.	19900117TOT
A	0	1	N, TOT	CS	1USAPTN17730	3EC	7.0+08	3.6+0964, EXFOR10365.004	198304.26 PTS. SIGMA. N-P + N-N.	19900117TOT

Example 2. Three CINDA-Lines: Common Block-Line and its 3 Short-Lines

B	1	1	N, TOT	CS	1USAPTN10010					
a	1E2	2.4+06		2J, PR, 52, 911		193711Ladenburg+ TRANSMISSION, D-D NEUTS			19900117TOT	
a	2EC	2.4+06		3J, PR, 52, 1255		193712.FURTHER ANALYSIS			19900117TOT	
a	3E+	2.4+06		64, EXFOR13790.002		200208.1 PT. SIGMA.			20020812TOT	

Example 3. The same three lines as in Example-2 with extensions:

- Block has an additional Institute-code,

- Line #1 has Authors list and Title

B	1	1	N, TOT	CS	1USAPTN10010					
+Institute 1USARUT										
a	1E2	2.4+06		2J, PR, 52, 911		193711Ladenburg+ TRANSMISSION, D-D NEUTS			19900117TOT	
+Author R.Ladenburg, M.H.Kanner										
+Title On the Neutrons from the										
+ Deuteron-Deuteron Reaction										
a	2EC	2.4+06		3J, PR, 52, 1255		193712.FURTHER ANALYSIS			19900117TOT	
a	3E+	2.4+06		64, EXFOR13790.002		200208.1 PT. SIGMA.			20020812TOT	