

Japan Nuclear Reaction Data Center (JCPRG)

Faculty of Science, Hokkaido University

Steering Committee

Progress Report to the
IAEA Technical Meeting on the Network of Nuclear Reaction Data Centres
22-25 September, 2008

0. General

The “Japan Nuclear Reaction Data center (JCPRG)” started at April 1, 2007. At the beginning of 2008, N. Otsuka who has been the most active member of our group moved to IAEA. We engaged three young colleagues to cover the activities of N. Otsuka. However, they are not regular staffs, and are limited by three years. To order to establish the activity of JCPRG, we are hoping to have regular staff positions and submitted our plan of the new center to Hokkaido University and the Japanese Government.

Since the last NRDC meeting (October 2007, Vienna), we have worked on the following activities:

1. Reaction data compilation (NRDF and EXFOR)
2. Conversion of old NRDF to EXFOR
3. Bibliography compilation (CINDA)
4. Database maintenance and services (NRDF, EXFOR/ENDF and CINDA)
5. Digitization system (GSYS)
6. Customer services

0.1 Staff

Our activities have been carried out by 6 members (4 postdoctoral researchers, 2 graduate students and 1 technical staff). They have been supervised by the NRDF Steering Committee, which consists of 10 senior researchers (9 nuclear physicists and 1 information scientist). All activities have been coordinated by 1 secretary. Prof. A. Ohnishi moved to Yukawa Institute of Theoretical Physics, Kyoto University in April 2008. Dr. N. Otsuka moved to IAEA Nuclear Data Section in February 2008. Three researchers in the JAEA Nuclear Data Center (Drs. J. Katakura, K. Shibata and S. Chiba) are invited to become the visiting professors of the Faculty.

0.2 Budget

Since the regular JCPRG budget ended at March 2001, we have no regular budget. In 2008, 6 million JPY was allocated for Astrophysical nuclear data by Japan Society for the Promotion of Science (JSPS).

1. Data Compilation (NRDF and EXFOR)

We are continuing data compilation for charged-particle nuclear reaction data obtained in Japan.

1.1 Scope

We are scanning 16 journals for Japanese charged-particle and photo-nuclear nuclear reaction data compilation:

PR/C, PRL, NP/A, PL/B, EPJ/A, NST, JP/G, NIM/A, NIM/B, PTP, JPJ, NSE, ARI, RCA, JRN and JNRS.

1.2 NRDF

From April 2007 to March 2008, CPND and PhND in **75 references (1530 records, 8.06MB)** have been newly compiled for NRDF. Usually new data are released at the JCPRG web site several months prior to EXFOR.

1.3 EXFOR

Since the 2007 NRDC meeting, we have made **148 new entries** and have revised or deleted **37 old entries**. These were transmitted as 10 trans files (E049-E055, J007, K003-K004) to the NDS open area. JCPRG is grateful for valuable comments from Svetlana Dunaeva and Otto Schwerer (NDS), Stanislav Maev (CJD) and Vladimir Varlamov (CDFE) on our transmissions as always.

All Japanese CPND entries which mistakes were identified by NDS according to Emmeric Dupont's list were corrected in TRANS.E053.

Compilation of neutron reaction data is outside our compilation scope in principle. But many corrections to neutron entries were proposed by JCPRG in collaboration with JAEA, and revised by the four neutron centres.

1.4 NRDF/EXFOR editor

Entries after 2001 have been compiled and revised by our NRDF/EXFOR editor system (HENDEL) including CHEX.

2. Bibliography Compilation (CINDA)

We have prepared CINDA batches for CPND published in Japan every half year. Each batch covers 6 issues of each of 4 Japanese journals JPJ, PTP, NST and JNRS. Since the 2007 NRDC meeting, two regular batches (**27 added lines and 0 deleted lines**) were prepared and sent to NEA-DB (Reader code J).

Many possible mistakes were found in bibliographic information (volume, page etc.) of the CINDA master file. This year mistakes were identified for totally **638 CINDA lines** for major journals.

3. Database Maintenance (NRDF, EXFOR/ENDF and CINDA)

We are continuing database updates and services for NRDF, EXFOR/ENDF and CINDA.

3.1 NRDF (<http://www.jcprg.org/nrdf/>)

New compilation, which has been finalized for NRDF, but not for EXFOR, can be obtained from this site. DARPE (another NRDF search and plot system written in Perl) is also available at <http://www.jcprg.org/darpe/>.

3.2 EXFOR/ENDF (<http://www.jcprg.org/exfor/>)

EXFOR/ENDF search and plot system is available. This system covers EXFOR as well as major evaluated reaction data libraries.

3.3 CINDA (<http://www.jcprg.org/cinda/>)

We are developing a new search system of CINDA. This is an extension of EXFOR/ENDF search system mentioned above. A preliminary version of the system is available at <http://www.jcprg.org/cinda/>.

4. Digitization System – GSYS (<http://www.jcprg.org/gsys/>)

A Java-based digitizing system “GSYS Ver.2.2” is available in free of charge.

5. XML format for nuclear reaction data

We are interested in describing nuclear reaction data in XML (Extensible Markup Language), which might be a common (meta-) format of nuclear reaction data for various libraries (NRDF, EXFOR, ENDF etc.) and enable us to have common bases of software. Although we do not have any development in this year unfortunately, we carry out this project.

6. Customer services

We provide Japanese researchers in the fields of nuclear physics and nuclear engineering with nuclear reaction data. For more information, we published “Annual Report of Japan Nuclear Reaction Data Centre Vol.1” in March 2008 (Japanese + English abstract, <http://www.jcprg.org/annual/annual-e.html>). We have also issued a list of newly added data into EXFOR every month (<http://www.jcprg.org/exfor/info/recentdata.html>) in a CINDA like format.

We have received many comments on EXFOR compilation from Japanese users (mainly JENDL evaluators). These comments have been listed to a table (<http://www.jcprg.org/exfor/info/feedbacks.html>), and forwarded to other centres.

ANNEX: Organization and members of JCPRG

NRDF Advisory Committee

Yasuhisa ABE (*Research Center for Nuclear Physics, Osaka Univ., Suita, Osaka*)
Yoshinori AKAISHI (*RIKEN, Wako, Saitama*)
Yasuo AOKI (*Univ. of Tsukuba, Tsukuba*)
Mamoru BABA (*Cyclotron and Radioisotope Center, Tohoku Univ., Sendai*)
Junsei CHIBA (*Tokyo Univ. of Science, Noda, Chiba*)
Akira HASEGAWA (*NEA Data Bank, Paris*)
Kichiji HATANAKA (*Research Center for Nuclear Physics, Osaka Univ., Suita, Osaka*)
Masayasu ISHIHARA (*RIKEN Nishina Center, Wako, Saitama*)
Kiyoshi KATŌ (*Hokkaido Univ., Sapporo*)
Jun-ichi KATAKURA (*Japan Atomic Energy Agency, Tokai*)
Mitsuji KAWAI (*Kyushu Univ., Fukuoka*)
Shigeru KUBONO (*Center for Nuclear Study, Univ. of Tokyo, Tokyo*)
Shunpei MORINOBU (*Research Center for Nuclear Physics, Osaka Univ., Suita, Osaka*)
Hiroyoshi SAKURAI (*RIKEN Nishina Center, Wako, Saitama*)
Tohru MOTOBAYASHI (*RIKEN Nishina Center, Wako, Saitama*)
Tomofumi NAGAE (*Kyoto Univ., Kyoto*)
Tetsuo NORO (*Kyushu Univ., Fukuoka*)
Hajime OHNUMA (*Tokyo Institute of Technology, Meguro, Tokyo*)
Koichi OKAMOTO (*Japan Atomic Industrial Forum Inc., Tokyo*)
Hikonojo ORIHARA (*Tohoku Institute of Technology, Sendai*)
Teijiro SAITOH (*Nuclear Science Laboratory, Tohoku Univ., Sendai*)
Hajime TANAKA (*Hokkaido Univ., Sapporo*)
Hiroaki UTSUNOMIYA (*Konan Univ., Kobe*)

NRDF Steering Committee

Kiyoshi KATŌ (*Center Head, Hokkaido Univ., Sapporo*)
Shigeyoshi AOYAMA (*Niigata Univ., Niigata*)
Masaki CHIBA (*Sapporo-Gakuin Univ. Ebetsu*)
Yoshiharu HIRABAYASHI (*Hokkaido Univ., Sapporo*)
Toshiyuki KATAYAMA (*Hokusei-Gakuen Univ., Sapporo, now at Universität Hamburg, Hamburg*)
Hiroshi MASUI (*Kitami Institute of Technology, Kitami*)
Hiroshi NOTO (*Hokusei-Gakuen Univ., Sapporo*)
Shigeto OKABE (*Hokkaido Univ., Sapporo*)
Hiroyoshi SAKURAI (*RIKEN Nishina Center, Wako, Saitama*)

NRDF Annual Report Editorial Committee

Yoshiharu HIRABAYASHI (*Chairman, Hokkaido Univ., Sapporo*)
Hiroshi NOTO (*Hokusei-Gakuen Univ., Sapporo*)

Staff

1) Data Compilation (NRDF and EXFOR):

Tomomasa ASANO (*Hokkaido Univ., Sapporo*)
Takako ASHIZAWA (*Hokkaido Univ., Sapporo*)
Naoya FURUTACHI (*Hokkaido Univ., Sapporo*)
Hiroshi MATSUMIYA (*Hokkaido Univ., Sapporo*)
Tomoaki TOGASHI (*Hokkaido Univ., Sapporo*)
Kohsuke TSUBAKIHARA (*Hokkaido Univ., Sapporo*)
Tooru YOSHIDA (*Hokkaido Univ., Sapporo*)

2) Bibliography Compilation (CINDA):

Tomomasa ASANO (*Hokkaido Univ., Sapporo*)
Naoya FURUTACHI (*Hokkaido Univ., Sapporo*)
Tooru YOSHIDA (*Hokkaido Univ., Sapporo*)

3) System Maintenance and Development (NRDF, EXFOR/ENDF, CINDA):

Tomomasa ASANO (*Hokkaido Univ., Sapporo*)
Naoya FURUTACHI (*Hokkaido Univ., Sapporo*)
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Our product

NRDF search quick guide

<http://www.icprg.org/nrdf/>

(as of June, 2008)

1. Search

Click

Search Example(1) Example(2) Ex

Basic

Target 12C selector

Projectile p selector

Emission t selector

Residual selector

Quantity angl-dstrn selector

Energy (eV)

Data No.

Plot axis

Horizontal (1) THTC selector

Horizontal (2) selector

Vertical DSIGMA/DOMEGA selector

Bibliography

Selectors show you all possible strings for query!

2. Check and plot

Click

Plot Reset

Plot	Author	Year	Inc. energy (eV)	Work Type	Reference	L
<input type="checkbox"/>	6-C-12(P,T)6-C-10,SPEC-AMPL					
<input type="checkbox"/>	M.Yasue+	1977	5.2e+07	5.2e+07	Expt	J.Phys.Soc.Jpn.42(1977)367
<input type="checkbox"/>	M.Yasue+	1977	5.2e+07	5.2e+07	Expt	J.Phys.Soc.Jpn.42(1977)367
<input type="checkbox"/>	M.Yasue+	1977	5.2e+07	5.2e+07	Expt	J.Phys.Soc.Jpn.42(1977)367
<input type="checkbox"/>	M.Yasue+	1977	5.2e+07	5.2e+07	Expt	J.Phys.Soc.Jpn.42(1977)367
<input checked="" type="checkbox"/>	6-C-12(P,T)6-C-10,DSIGMA/DOMEGA					
<input checked="" type="checkbox"/>	J.R.Shepard+	1979	8.0e+07	8.0e+07	Expt	Nucl.Phys.A322(1979)92
<input checked="" type="checkbox"/>	J.R.Shepard+	1979	8.0e+07	8.0e+07	Expt	Nucl.Phys.A322(1979)92
<input checked="" type="checkbox"/>	J.R.Shepard+	1979	8.0e+07	8.0e+07	Expt	Nucl.Phys.A322(1979)92

3. Customize and replot

Click **Replot**

Plot options

point and line type: [color] [monochrome]

Title	<input type="text" value="J.R.Shepard et al.(1979)"/>	Legend 1	<input type="text" value="J.R.Shepard et al.(1979)"/> 1
Label	x <input type="text" value="#theta_c.m.[deg]"/>	Legend 2	<input type="text" value="J.R.Shepard et al.(1979)"/> 2
	y <input type="text" value="dsigma/dOmega"/>	Legend 3	<input type="text" value="J.R.Shepard et al.(1979)"/> 3
	z <input type="text" value=""/>		
Legend	<input type="radio"/> left-top <input checked="" type="radio"/> right-top <input type="radio"/> left-bottom <input type="radio"/> right-bottom <input type="radio"/> below <input type="radio"/> not shown		
Scale	x <input checked="" type="radio"/> linear <input type="radio"/> log y <input type="radio"/> linear <input checked="" type="radio"/> log z <input type="radio"/> linear <input type="radio"/> log		
Range	x <input type="text"/> - <input type="text"/> y <input type="text"/> - <input type="text"/> z <input type="text"/> - <input type="text"/>		
Angle (3D)	theta <input type="text"/> phi <input type="text"/>		
Multiplier	x <input type="text" value="1.0"/> y <input type="text" value="1.0"/> z <input type="text"/>		
Format	<input type="checkbox"/> pdf <input type="checkbox"/> ps <input type="checkbox"/> eps <input type="checkbox"/> tgz		
Color	<input checked="" type="radio"/> color <input type="radio"/> monochrome		

- You can customize output (title, label, legend, range etc.).
- Some **TeX symbols** can be used.
- **pdf** version is available on your request.

(TeX like expression acceptable (e.g. " $\theta_{c.m.}$ " for $\theta_{c.m.}$))

Our product

EXFOR/ENDF search quick guide

<http://www.jcprg.org/exfor/>

(as of June, 2008)

1. Search

Click

Click

2. Check and plot

Click

Click

Plot	Author	Year	Inc. energy (eV)	Work	Type	Reference
<input checked="" type="checkbox"/>	3-LI-6(N,T)2-HE-4,,SIG (Cross section)					
<input checked="" type="checkbox"/>	G.M.Hale	2006	1.0e-05	2.0e+07	Eval	Data ENDF/B-VII,10,325,2006
<input checked="" type="checkbox"/>	G.M.Hale	2005	1.0e-05	2.0e+07	Eval	Data JEFF-31,10,325,2005
<input checked="" type="checkbox"/>	S.Chiba	2002	1.0e-05	2.0e+07	Eval	Data JENDL-3.3,10,325,2002
<input checked="" type="checkbox"/>	G.M.Hale	2002	1.0e-05	2.0e+07	Eval	Data JEFF-30,10,325,2002
<input checked="" type="checkbox"/>	G.M.Hale	1991	1.0e-05	2.0e+07	Eval	Data ENDF/B-VI,10,325,1991
<input checked="" type="checkbox"/>	Nikolaev M.N.	1989	1.0e-05	2.0e+07	Eval	Data BROND-2,10,306,1989
<input checked="" type="checkbox"/>	S.Chiba	1989	1.0e-05	2.0e+07	Eval	Data JENDL-3.2,10,325,1989
<input checked="" type="checkbox"/>	Guohui Zhang et al.	2006	1.0e+06	2.2e+06	Expt	Jour Nucl.Sci.Eng.153(2006)41
<input checked="" type="checkbox"/>	D.Rochman et al.	2006	1.1e-01	3.1e+02	Expt	Jour Nucl.Instrum.Methods A564(2006)100
<input checked="" type="checkbox"/>	D.Rochman et al.	2006	1.1e-01	2.1e+03	Expt	Jour Nucl.Instrum.Methods A564(2006)100

3. Customize and replot

