

Japan Nuclear Reaction Data Centre (JCPRG)

Progress Report

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IAEA's Technical Meeting on the
"International Network of Nuclear Reaction Data Centres"
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0. General

In this report, we review the activities of Japan Nuclear Reaction Data Centre (JCPRG) since the last NRDC meeting in 2011. Our main objectives are as follows:

- a) Compilation of nuclear reaction data for two databases, NRDF and EXFOR
- b) Evaluation of astrophysical nuclear reaction data
- c) Development of software and systems
- d) Development of collaboration among Asian countries

0.1 Staff

We have 9 core members (1 professor, 2 seniors and 6 postdoctoral researchers) to perform our activities. The activities are supervised by the JCPRG Steering Committee consisting of 6 professors of Hokkaido University. JCPRG is advised and will be assessed by the JCPRG Advisory Board consisting of 5 members external to the university.

0.2 Budget

Since May 2011, JCPRG has been reorganized as a centre in Faculty of Science, Hokkaido University. We receive an annual budget for research and education from Hokkaido University. In addition, grant of 5 million JPY is allocated by Asia Africa Science Platform Program of Japan Society for the Promotion of Science (JSPS) to develop collaboration among Asian nuclear data centres.

0.3 Collaboration

JCPRG has collaborations with institutes, both inside and outside of Hokkaido University. We collaborated with Meme Media Laboratory in the university to develop some software and data retrieval systems. As for the collaboration with RIKEN, we advance the compilation of RI beam data performed in RIKEN. Under the collaboration with JAEA, we cooperate to educate graduate school students and to evaluate light nuclei reaction data.

1. Compilation

1.1 NRDF

From April 2011 to March 2012, 50 new papers of charged-particle and photonuclear reaction data have been compiled for NRDF. Compiled data can be found on the JCPRG website.

1.2 EXFOR

Since the last NRDC meeting, we have transmitted 50 new and 65 revised/deleted entries as 7 trans files (E065-E068, K011, R024-R025) to the NDS open area.

JCPRG is grateful to Naohiko Otsuka (NDS), Emmeric Dupont (NEA-DB) and Varlamov Vladimir V. (CDFE) for their valuable comments and suggestions.

Table 1. EXFOR E-entries transmitted from JCPRG to NDS IAEA.

TRANS	TRANS Status	ENTRY Tot.	ENTRY New	ENTRY Rev.
E065	Final (2011/5/18)*	42	21	21
E066	Final (2011/10/8)	19	14	5
E067	Final (2012/1/31)	12	12	0
E068	Prelim. (2012/4/5)	32	0	32

* The Prelim. file had been transmitted before the last NRDC meeting.

Table 2. EXFOR K-entries transmitted from JCPRG to NDS IAEA.

TRANS	TRANS Status	ENTRY Tot.	ENTRY New	ENTRY Rev.
K011	Prelim. (2012/4/5)	4	3	1

Table 3. EXFOR R-entries transmitted from JCPRG to NDS IAEA.

TRANS	TRANS Status	ENTRY Tot.	ENTRY New	ENTRY Rev.
R024	Final (2011/11/22)	5	0	5
R025	Final (2012/1/31)	1	0	1

2. Evaluation

We are motivated to construct a database of astrophysical nuclear reaction data, which are theoretically evaluated and we call it Nuclear Reaction Data Files for Astrophysics (NRDF/A). In 2011, we updated 428 bibliographic records.

3. System Development

3.1 Data Retrieval System

We have 4 data retrieval systems mentioned below.

- NRDF (<http://www.jcprg.org/nrdf/>)
- NRDF/A (<http://www.jcprg.org/nrdfa/>)
- EXFOR/ENDF (<http://www.jcprg.org/exfor/>)
- CINDA (<http://www.jcprg.org/cinda/>)

The relational database management system MySQL has been adopted for the databases to search and retrieve NRDF, EXFOR, ENDF and CINDA data. For EXFOR, new trans files are copied from the NDS open area, and the MySQL database is updated periodically. For CINDA, its MySQL database is updated when a new CINDA Master File is released by IAEA NDS.

3.2 Coding Software

We have a coding editor and digitizing software applicable for the coding purpose

- Coding editor "HENDEL" (<http://www.jcprg.org/manuals/hendel/>)
- Digitization software "GSYS" (<http://www.jcprg.org/gsys/>)

3.3 Mail Archive System

We have a mail archive system to share information among current and future compilers. Once someone sends a mail to compiler@jcprg.org, our mail server distributes it to the members in the mailing list. The mail is also delivered to the directory whose name is the entry number represented in the subject. It is archived on the server and available on the web through a browser, though the access is restricted by ID and password. Archived mails can be searched and retrieved by a keyword.

4. Asian Collaboration

From September 5 to 9, 2011 the 2nd Asian Nuclear Reaction Database Development Workshop had been held at Beijing, China. The workshop was organized by China Institute of Atomic Energy and partly supported by the Asia-Africa Science Platform Program of the Japan Society for the Promotion of Science. The main purpose of the workshop was to develop nuclear data activities and collaboration in Asia. There were many participants from nuclear reaction data centres in Asia, such as Japan, China, India and South Korea, which are members of the International Network of Nuclear Reaction Data Centres (NRDC). The sessions in the workshop were devoted to share information about their activities, to strengthen collaboration among the centres in Asia and to promote the dissemination and improvement of data compilation techniques. The workshop was very fruitful for participants and the next meeting will be held in Kyungpook National University, Korea.

5. Others

5.1 Presentations in meetings

On December 13, 2011, JCPRG and RIKEN Nishina Center organized a RIKEN mini-Workshop to develop the collaboration between the two institutes. As a result of discussion in the mini-Workshop, we could propose a procedure to exchange experimental information and numerical data between RIKEN and JCPRG. In addition, the consensus within the participants about compilation of proceeding, doctoral thesis and unpublished experimental data had been reached. We will develop our collaboration in line with the discussion.

5.2 Publication of Annual Report

The "NRDF Annual Report 2010" had been published and made available on our website. From 2011, the title of this report is changed to "JCPRG Annual Report" and will be available soon.