

Status Report of JAERI Nuclear Data Center

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1. General

Nuclear Data Center in JAERI serves as a secretariat of Japanese Nuclear Data Committee. The committee has three subcommittees and one standing group. They have 3 - 5 working groups. The number of each working group members is about 10. Total number of the committee members is 112 in 2004. They are from Universities, industrial companies and research organizations in Japan. We opened the meeting of the working groups 33 times in 2003 to discuss nuclear data related issues.

In August 2003, the head of Nuclear Data Center, JAERI changed from Akira Hasegawa to Jun-ichi Katakura. Hasegawa moved to Deputy Director of Department of Nuclear Energy Systems to which Nuclear Data Center belongs.

2. CINDA Compilation

The CINDA compilation activity has continued. The compilation covers the neutron reaction related work performed in Japan. In 2003, 196 entries were sent to NEA Data Bank.

3. Status of JENDL project

3.1. General purpose file

The latest version of Japanese Evaluated Nuclear Data Library (JENDL) , JENDL-3.3 was released in May 2002. After the release of JENDL-3.3 the discussion for the next JENDL library was started in Japanese Nuclear Data Committee. In the discussion the outline of the next version, JENDL-4, was proposed. Followings are the outline of JENDL-4.

(1) Scope: To solve the current concern on nuclear energy development such as high burn-up, MOX fuel utilization, evaluations of burn-up credit and their safety assessments. It also includes medical and fundamental scientific applications such as BNCT (Boron Neutron Capture Therapy), medical use of accelerator and nuclear synthesis in astrophysics.

(2) Incident particles and covered maximum energy: In addition to the traditional neutron-induced reaction, charged particle- and photon-induced reactions are considered. Spontaneous fission process is also considered. Standard maximum energy is 20 MeV, but it is extended when needed.

(3) Contents: To be enriched in the quality of actinides and FP nuclides. The quantity of covariance data, types of fission yields, secondary gamma production data and charged particle spectra will also be enriched. Total number of included nuclides, however, is not going to largely exceeded that of JENDL-3.3.

3.2 Special purpose file

In addition to the general purpose file, some special purpose files have been developed in JAERI.

(1) JENDL High Energy File

JENDL High Energy File 2004 was released this March. It includes high energy neutron- and proton-induced reaction data for 66 nuclides. The maximum energy of the incident particle is 3 GeV. This file is intended to be used for the design of the high energy proton accelerator and R & D of ADS system JAERI has planned. The high energy file was primarily intended to include the data for about 120 nuclides. The released 2004 file contains about a half of the intended data. The data of other nuclides will be included successively. The file for the IFMIF (International Fusion Material Irradiation Facility) project whose maximum energy is 50 MeV will be produced from the high energy file.

(2) JENDL Photonuclear Data File

JENDL Photonuclear Data File 2004 was released this March. It includes photon reaction data for 68 nuclides. The maximum incident energy is 140 MeV. The data of other nuclides intended to be included will be taken from

the evaluated data by KAERI group. Total number of the nuclides included will be about 150.

(3) JENDL PKA/KERMA File

The file is intended to include the spectra of primary knock-on atoms (PKA) and KERMA factors. These data will be created from the file for the IFMIF project.

(4) JENDL (α,n) Reaction Data File

The data file of (α,n) reactions were released in February 2003. The file contains the data for 13 nuclides. At first it is expected to contain the data of total 32 nuclides. It becomes now difficult to complete the whole evaluations.

(5) JENDL Actinide File

Actinide data in JENDL-3.3 are being reevaluated to resolve the inconsistencies with PIE data and other benchmark test results. The results of the reevaluation will be reflected in JENDL Actinide File. In these reevaluation process, it is recognized that experimental data are not enough for making a reliable evaluated file. These data include thermal cross sections, resonance parameters, capture cross sections and the v values of Am and Cm isotopes. New experimental data are truly needed.

(6) Other JENDL Special Purpose Files

Fusion File, Activation Cross Section File, Dosimetry File and FP Decay Data File are also developed as JENDL Special Purpose Files in Japan. The first version of each file has been released already. The revision of those files has not been scheduled yet.

4. Status of ENSDF evaluation

Japanese group is continuously responsible to make an evaluation of mass region from A=118 to 129 for the ENSDF file. In the years of 2003 and 2004, the evaluations of A=122 and 123 were sent to BNL.

5. Online Service

Nuclear Data Center, JAERI, maintains Web site. Most of the JENDL data are available from the Web site. During the period from August 30, 2004 to September 6, 2004, 88136 files (3347 MB) were retrieved. On the web site,

we have WWW Chart of Nuclides whose data are annually updated.

6. Symposium on Nuclear Data

We had 2003 Symposium on Nuclear Data on November 27 - 28, 2003. The number of the participants were 121 including 7 foreigners. The main topics were nuclear needs for ADS system and innovative nuclear reactors. A tutorial session on nuclear data were arranged for the first time at the day before the symposium. We had 48 participants for the tutorial session. Most of the participants requested to have the similar session in the next year.