Status Report of JAEA Nuclear Data Center
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1. General

Nuclear Data Center of Japan Atomic Energy Agency (JAEA) is working on the nuclear data evaluation for Japanese Evaluated Nuclear Data Library JENDL. The evaluation and related works are performed in the cooperation with Universities, Research Organizations and Companies in Japan through Japanese Nuclear Data Committee.

The number of Nuclear Data Center staff members is 7 including one technical assistant as of April 1, 2012. The manpower is not enough for the evaluation and related work. The budget is obtained from Ministry of Education, Culture, Sports, Science and Technology (MEXT), but is annually decreasing after establishment of JAEA. Especially the budget must be much shorter than usual in 2012FY, since many of it will be spent for recovering after the earthquake and Fukushima accident. We are seeking another fund to compensate the decreasing budget.

2. Evaluation

Main work of evaluation is to compile the JENDL library. The highlight of the recent work is the completion of JENDL-4.0 project. After the JAEA internal procedure for public release, JENDL-4.0 was released in May 2010. The comprehensive benchmark tests have been performed and the tests have shown good performance of the JENDL-4.0 library for both of thermal and fast reactor systems. The reference papers have been published as followings;

JENDL-4.0 original:

- K. Shibata, O. Iwamoto, T. Nakagawa, N. Iwamoto, A. Ichihara, S. Kunieda, S. Chiba, K. Furutaka, N. Otuka, T. Ohsawa, T. Murata, H. Matsunobu, A. Zukeran, S. Kamada, and J. Katakura, "JENDL-4.0: A New Library for Nuclear Science and Engineering", *J. Nucl. Sci. Technol.* **48**, 1-30 (2011).

Benchmark tests:

- G. Chiba, K. Okumura, K. Sugino, Y. Nagaya, K. Yokoyama, T. Kugo, M. Ishikawa, and S. Okajima, "JENDL-4.0 Benchmarking for Fission Reactor Applications", *J. Nucl. Sci. Technol.* **48**, 172-187 (2011).

The work of JENDL-4.0 has obtained the 44th special award of Atomic Energy Society of Japan. The maintenance for JENDL-4.0 has been started for quality assurance (QA), for example, revision of error data for Cr-52,53 cross sections and resonance parameters of U-233,235,238, Pu-239, and FPY for U-234 and Am-243. The new evaluations for revising JENDL general purpose file are being performed, especially for FP nuclides such as H-2, O-17,18, Co-59, Ni-58,62, Ga-69,71, Nb-93, Pd isotopes, Sm-152, Eu-156, Er isotopes, Lu-175,176.

The 5 year period from 2010 to 2014 is the second period of mid-term research plan of JAEA. According to the mid-term plan, an objective of nuclear data research is "incident energy extension of JENDL". For this purpose, the nuclear reaction model code, CCONE is planned to be expanded to higher energy region. The considered improvements are;

- to add the multi-particle emission from the pre-equilibrium stage,
- to add the complex-particle emission from the pre-equilibrium stage, and
- to add the function of calculating photo-induced reactions.

The JENDL High Energy File (JENDL/HE) contains neutron and proton induced reaction data for energy up to 3 GeV. The JENDL-4.0 data were remerged with JENDL/HE-2007 to provide the data for the IAEA/CRP on FENDL-3. Final JENDL/HE is expected to include the reaction data of 132 nuclides.

The version up of FP Decay Data File 2000 is now planned to include recent measured and compiled data. The sensitivity analysis of FP decay heat and the error of fission energy were studied. The blanching ratios of delayed neutron were reviewed and recompilation was done by using ENSDF and/or Pfeiffer & Kratz. The decay data of 1263 nuclides have been recompiled for FP Decay Data File with considering the latest ENSDF, Yoshida's TAGS data (including the "pandemonium" effect) and delayed neutron data. The test calculation was done for the decay heat after the ^{235}U fission, and gave good agreement with the experimental data. After the data checking, it will be released as JENDL/FPD-2011 and JENDL/FPY-2011 as soon as possible. The reference for these files are available as JAEA-Data/Code 2011-025.

3. Other Services

The data related to JENDL are provided on our web site (http://wwwndc.jaea.go.jp/index.html). The monthly downloaded data size of the last Japanese fiscal year (2011/4/1 to 2012/3/31) is shown in Fig.1. The share by the country is shown in Fig.2. The reason that the access in April is high is estimated for data needs for the Fukushima accident.

The research of published papers as the source on inputs for CINDA and EXFOR has been continuously carried out. The results as the list of related papers and reports in Japan, especially for neutron induced data, are reported twice a year to the Nuclear Data Section.

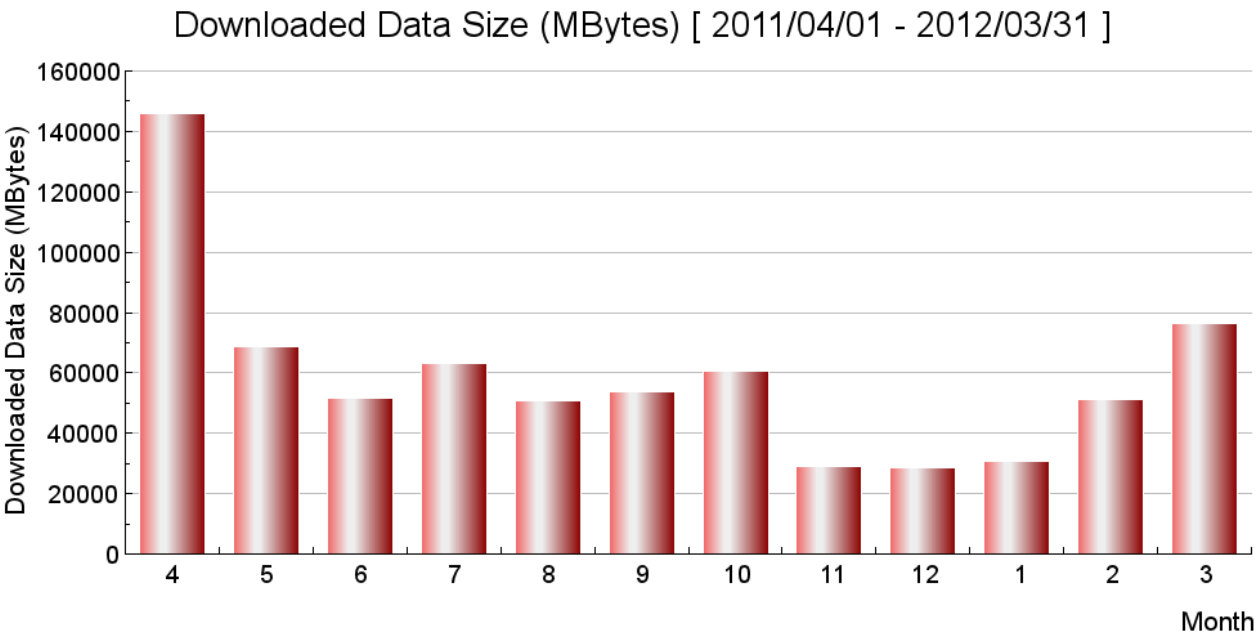

Fig.1 Down loaded Data Size in 2011 fiscal year (MBytes)

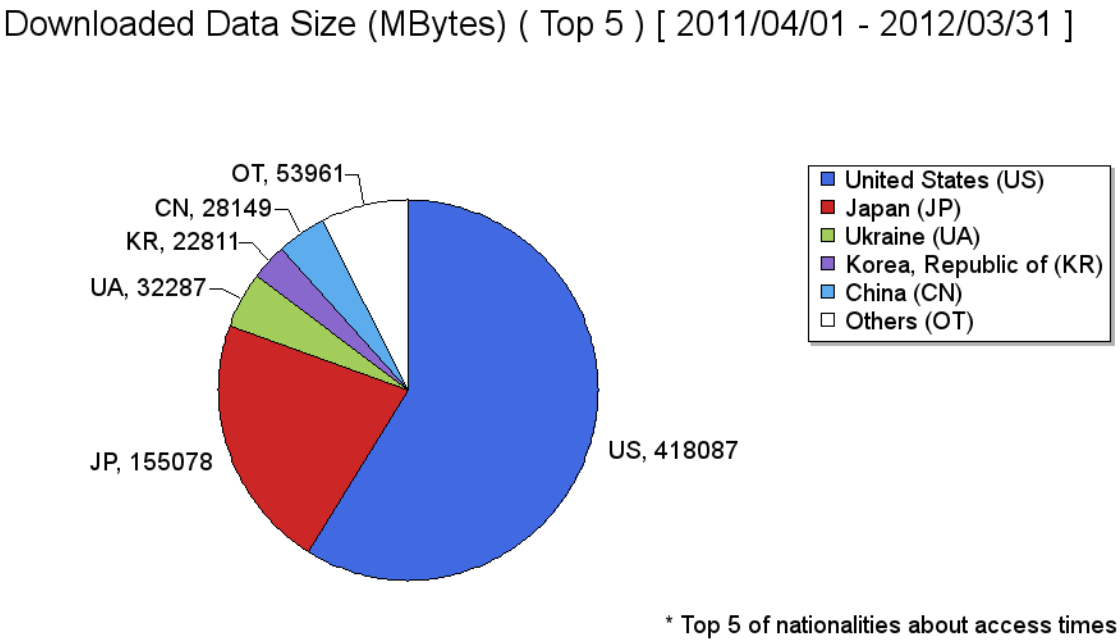

Fig. 2 Downloaded data by countries