Nuclear Data Evaluation Activities of Japan Atomic Energy Agency

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General

Japan Atomic Energy Agency (JAEA) has been established in October 1, 2005. The Agency has succeeded the activities of Japan Atomic Energy Research Institute (JAERI) and Japan Nuclear Fuel Cycle Development Cooperation (JNC). The number of the staff members amounts more than 4000. The activities of JAEA cover from basic nuclear sciences to big project such as FBR development and J-PARC (Japan Proton Accelerator Research Complex) project.

The activities of Nuclear Data Center in JAERI have been taken over by Nuclear Data Center (The English name has not been officially fixed yet at this time.) in JAEA.

Activities of Nuclear Data Evaluation

We have some nuclear data evaluation activities. The first and important one is JENDL-4 project. The JENDL-4 library is planned to be released in 2010. The second one is development of High Energy File. The data of the high energy file is going to be used for shielding design of high energy proton accelerator of J-PARC and development of ADS system. The nuclear reaction codes are being developed for evaluation work. The brief summary of those activities is given below.

1) JENDL-4 Project

The evaluation work for the JENDL-4 library has been continued. In the evaluation work the data of FP and MA nuclides are mainly reviewed and are going to be revised. The resonance parameters of FP nuclides are

reviewed and update based on recent measured data. The fission cross sections of Cm, Cf and Pu isotopes are updated based on measured data. The covariance data of those isotopes are also evaluated. The covariance data of minor actinides are also requested for ADS (Accelerator Driven System) development and evaluated for the isotopes of Np, Am and so on.

2) High Energy File

The JENDL High Energy File containing the data of 66 nuclides was released in March 2004 as JENDL/HE-2004. The data included are reaction data of protons and neutrons with energy up to 3 GeV. The final version of the high energy file is planned to be released in 2007 which includes the data of 122 nuclides.

3) Code Development

Nuclear model codes are being developed for the evaluation work of JENDL-4. The codes are developed based on spherical optical model, DWBA and coupled-channel optical models (CCOM, CCDM, CCPM, CCSM and POD).

Other activities

1) Development of Data Utilization System

We are developing the Data Utilization System. The development is conducted by the research contract with the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The utilization system provides two functions: 1) retrieval of measured and evaluated data, 2) processing of evaluated data for application. The development is planned to be finished in FY2006. The main work of the MEXT project is the development of detector system to measure the nuclear data of minor actinides. The development of the detector system has almost finished and the test of the system is being performed. The measured data are planned to be obtained late this year. The measurements of fission and capture cross section of ^{237}Np and ^{241,243}Am are planned to be obtained until the end of FY2006.

2) (α,n) Reaction Data

The data of (α,n) reaction has been evaluated and released in 2005 as JENDL/AN-2005. The data included in the file are expected to be used for analysis of spent fuel. The design and safety analysis of transport cask and fuel storage require the data of neutron generation. The high burn-up of right water reactor fuel and the utilization of MOX fuel are expected to produce more α-emitting nuclides than usual fuel. The (α,n) reaction data will be used for such analyses.