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## Present Status of JENDL Project

Yasuyuki Kikuchi  
Nuclear Data Center  
Japan Atomic Energy Research Institute

### 1. JENDL-3 revision 2 (JENDL-3.2)

The second revised version of JENDL-3 (JENDL-3.2) was released in June 1994. It contains the data for 340 nuclides in the energy range from  $10^{-5}$  eV to 20 MeV. The ENDF-6 format was adopted for JENDL-3.2. The pointwise files were constructed at 0 K and 300 K by using RESEND, RECENT, LINEAR and SIGMA1.

Preliminary benchmark tests have shown that JENDL-3.2 gave better prediction of various reactor characteristics than JENDL-3.1, though some problems have been also pointed out;  $^{235}\text{U}$  fission cross section and some  $\gamma$ -ray spectra characteristics.

Though JENDL-3.2 gives much better evaluated data than JENDL-3.1, JENDL-3.2 has no covariance matrices. We recognize importance of the covariance matrices. A new working group has been organized in Japanese Nuclear Data Committee for the study of evaluation method of the covariance matrices.

The data of JENDL-3.2 will be frozen for several years. We expect its wide dissemination.

### 2. JENDL Special Purpose Files

The following special purpose files other than JENDL-3.2 general purpose file are being developed in Japan. Their status is given below.

#### JENDL Fusion File

JENDL Fusion File is made to provide precise double-differential neutron and charged particle emission data by using MF6 representation of the ENDF-6 format. The evaluation has been almost finished for the data of Li, Be, C, N, O,  $^{19}\text{F}$ ,  $^{27}\text{Al}$ , Si, Ca, Ti, Cr,  $^{55}\text{Mn}$ , Fe,  $^{59}\text{Co}$ , Ni, Cu,  $^{75}\text{As}$ , Zr,  $^{93}\text{Nb}$ , Mo, Sn, Sb, W, Pb and  $^{209}\text{Bi}$ . For Li, N and O, the data of JENDL-3.2 are directly adopted. The revision works for some nuclides except light mass nuclei have been performed by the SINCROS-II code system which consists of GNASH, DWUCK, CASTHY and several auxiliary programs. Those results are examined by comparing with DDX measured at Tohoku and Osaka Universities. For the data of light mass nuclei, individual evaluation has been done.

#### JENDL Actinoid File

This file will provide the data of about 90 nuclei in the actinoid region from  $10^{-5}$  eV to 20 MeV. Data for about 60 nuclei will be taken from JENDL-3.2 with some modification. We need new evaluation work for about 30 nuclei, among which the evaluation have been completed for  $^{235}\text{Np}$ ,  $^{237}\text{Pu}$ ,  $^{244}\text{Pu}$  and  $^{246}\text{Pu}$ . In the last year, Dr. Konshin who has been in

JAERI calculated fission, (n,2n) and (n,3n) reaction cross sections of 71 minor actinides. His results will be considered in JENDL Actinoid File. The research cooperation will start with Radiation Physics and Chemistry Problems Institute at Minsk, Belarus under framework of International Science and Technology Center.

#### JENDL Dosimetry File

The working group on dosimetry in JNDC which is working for JENDL Dosimetry File is now considering update of the file. The cross section data for more than 20 reactions will be revised and their covariance matrices will be replaced with new ones. The work is in progress.

#### JENDL Activation Cross Section File

Evaluation and compilation work for JENDL Activation Cross Section File has been almost completed. Its first version will store the data for 225 nuclei and 1158 reactions. The working group for the file is checking the file. The preliminary version of the file have been released in February 1995 for the FENDL Activation File.

#### JENDL High Energy Files

The evaluation of data for high energy neutrons and protons has been initiated in JNDC. They will make data files for neutrons and protons up to 50 MeV and about 1.5 GeV.

The former files will be used for the IFMIF project which JAERI participates. The evaluation of neutron data up to 50 MeV has been made for several structural materials. The evaluations of H, C, Cr, Fe, Ni isotopes for neutron and of Cr, Fe, Ni, Cu isotopes for proton have been almost done, and are being reviewed.

The latter files will be used for design of accelerators, transmutation systems of high-level waste and so on. The evaluations of Al, Si, Cr, Ni, Cu, Pb and Bi isotopes were made for neutron and proton induced reactions up to 1 GeV. The neutron nuclear data for hydrogen are also finished. These data will be reviewed.

#### JENDL PKA/KERMA File

This file will store the spectra of primary knock-on atoms (PKA) and KERMA factors. The data to be stored are created from the data files up to 50 MeV made for the IFMIF project. A couple of codes to create the file, by using the effective single particle emission approximation, have been developed and tested.

The test compilation has been performed from JENDL Fusion File for the 69 isotope data except light mass nuclei below 20 MeV.

#### JENDL Photonuclear Data File

The evaluation has been finished for 46 isotopes;  $^2\text{D}$ ,  $^{12}\text{C}$ ,  $^{14}\text{N}$ ,  $^{16}\text{O}$ ,  $^{23}\text{Na}$ ,  $^{24,25,26}\text{Mg}$ ,  $^{27}\text{Al}$ ,  $^{28,29,30}\text{Si}$ ,  $^{40,48}\text{Ca}$ ,  $^{46}\text{Ti}$ ,  $^{51}\text{V}$ ,  $^{52}\text{Cr}$ ,  $^{55}\text{Mn}$ ,  $^{54,56}\text{Fe}$ ,  $^{59}\text{Co}$ ,  $^{59,60}\text{Ni}$ ,  $^{63,65}\text{Cu}$ ,  $^{90}\text{Zr}$ ,  $^{93}\text{Nb}$ ,  $^{92,94,96,98,100}\text{Mo}$ ,  $^{133}\text{Cs}$ ,  $^{160}\text{Gd}$ ,  $^{182,183,184,186}\text{W}$ ,  $^{197}\text{Au}$ ,  $^{206,207,208}\text{Pb}$ ,  $^{209}\text{Bi}$  and  $^{235,238}\text{U}$  in the  $\gamma$ -ray energy range up to 140 MeV. Their compilation in the ENDF-6 format is in progress.