お 知 ら せ Ⅳ

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Contribution to Neutron Nuclear Data Evaluation Newsletter-36

Japanese Nuclear Data Committee
(Nuclear Data Center, JAERI)

Work Recently Completed and Publications:

(i) Evaluation of Neutron nuclear Data for ^{12}C
Keiichi SHIBATA

(JAERI-M 83-221(1983))

Neutron nuclear data of ^{12}C have been evaluated for JENDL-3 in the energy range from 10^{-5} eV to 20 MeV. Evaluated quantities are the total, elastic and inelastic scattering, radiative capture, photon-production, (n,p), (n,d) and (n,α) reaction cross sections and the angular or energy distribution of neutrons and photons. The total cross section below the threshold energy of the inelastic scattering has been calculated on the basis of the R-matrix theory. Three discrete levels have been taken into account for the inelastic scattering.

(ii) Evaluation of Neutron Nuclear Data for ^{246}Cm and ^{247}Cm
Yasuyuki KIKUCHI

(JAERI-M 83-127(1983))

Neutron nuclear data of ^{246}Cm and ^{247}Cm have been evaluated. Evaluated quantities are the total, elastic and inelastic scattering, fission, capture, (n,2n), (n,3n) and (n,4n) reaction cross sections, the resolved and unresolved resonance parameters, the angular and energy distributions of the emitted neutrons, and the average number of neutrons emitted per fission. The fission cross section was evaluated mainly on the basis of measured data. The other cross sections were calculated with the optical and statistical models because of scarce measured data. Discussion is given on the nuclear model calculations.

Work in Progress:

(i) Neutron-induced fission cross sections of 24 actinide nuclides are analyzed by means of the double-humped barrier model. The deduced barrier heights are interpreted in terms of a two-part approach, in which the barrier heights are decomposed into liquid-drop and shell correction parts.

(from T. Ohsawa, KYU)

(ii) Evaluation of neutron nuclear data for ^{9}Be is in progress. The (n,2n) reaction cross section is given as a sum of the inelastic scattering and (n,α) reaction cross sections.

(from K. Shibata, JAERI)

Nuclear Model Code:

(i) Two codes FAIR-DDX and DDXPLOT have been developed to calculate the energy-angle double-differential cross sections from a library in the ENDF/B format and compare them with the measured data.

(from Y. Kikuchi, JAERI)

Work Planned for the Near Future:

   (i)   Evaluation of neutron nuclear data or ^{249}Bk and ^{249}Cf is planned in the
energy range from 10^{-5} eV to 20 MeV.

                                        (from Y. Kikuchi, JAERI)

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