

お知らせ (そのⅢ)

NNDEN への投稿

Contribution to Neutron Nuclear Data Evaluation Newsletter-26

Japanese Nuclear Data Committee
(Nuclear Data Center, JAERI)

Work recently completed and publication:

- (i) Japanese Evaluated Nuclear Data Library, Version-1, JENDL-1
S. Igarasi, T. Nakagawa, Y. Kikuchi, T. Asami and
T. Narita (JAERI), JAERI 1261

The first version of Japanese Evaluated Nuclear Data Library, JENDL-1, was compiled as one of the most important activities of Japanese Nuclear Data Committee (JNDC) and JAERI Nuclear Data Center. JENDL-1 includes 72 nuclides most of which are needed for the study of the fast breeder reactors. This report presents a record on compilation of these nuclides, except for the data of the fission product nuclides. Compilation work on JENDL-1 was performed by a JENDL-1 compilation group which was organized in JNDC. The compilation-group members worked to select the most reliable data from among available evaluation works. When there were no relevant data, they made reevaluation and recalculation. In particular, unresolved resonance parameters for ^{235}U , ^{238}U , ^{239}Pu , ^{240}Pu , and ^{241}Pu were carefully investigated and provided. Data compiled in JENDL-1 were taken mainly from evaluation works done by working groups of JNDC and by individuals in various organizations in Japan. When the data in ENDF/B-IV are judged to be the best, the JENDL-1 compilation group recommends the use of ENDF/B-IV for those data. Therefore, they are excluded from JENDL-1. JENDL-1 was released in autumn 1977, after its reliability had been examined through benchmark tests on the integral data.

- (ii) Graphs of Neutron Cross Section Data for Fusion Reactor Development

Japanese Nuclear Data Committee: Edited by T. Asami
and S. Tanaka (JAERI) JAERI-M8136

Graphs of neutron cross section data relevant to fusion reactor development are presented. Nuclides and reaction types in the present compilation are based on a WRENDA request list from Japan for fusion reactor development. The compilation contains various partial cross sections for 55 nuclides from ^6Li to ^{237}Np in the energy range up to 20 MeV.

- (iii) Proceedings of the 1978 Seminar on Nuclear Data
Japanese Nuclear Data Committee (JAERI), JAERI-M8163
(reported in Japanese)

A seminar on Nuclear Data was held on December 20 and 21, 1978 in Tokai Research Establishment, JAERI, by Japanese Nuclear Data Committee (JNDC). The seminar concerned: (1) activities of working groups of JNDC, and (2) approach to neutron cross section data in MeV region. Three invited papers were presented on the latter. Given are papers presented and discussions made at the seminar.

Work in progress:

- (i) Compilation work of Japanese Evaluated Nuclear Data Library Version-2 (JENDL-2) is in progress. Evaluations mentioned below are mainly for its compilation. (from T. Fuketa, JAERI)
- (ii) Simultaneous evaluation work is in progress on ^{233}U , ^{235}U , ^{238}U , ^{239}Pu , ^{240}Pu , ^{241}Pu in the energy region above resolved resonances for JENDL-2. (from H. Matsunobu, SAEI)
- (iii) Resonance parameters are evaluated for ^{233}U , ^{235}U , ^{238}U , ^{239}Pu , ^{240}Pu and ^{241}Pu . The cross sections calculated from the parameters are compared and checked with measured ones by using the NDES code system. (from A. Asami)
- (iv) Neutron nuclear data of ^{242}Cm is evaluated. Evaluation is mainly made by using the model calculation and the systematic trends of neighboring nuclides, since measured data are very scarce. (from S. Igarasi, JAERI)
- (v) Evaluation of neutron nuclear data of ^{236}Pu and ^{238}Pu is nearly finished. The results will be stored in JENDL-2. (from T. Hojuyama, MAPI)
- (vi) Evaluation work is in progress on ^{242}Pu and ^{236}U for JENDL-2. The optical potential parameters are consistent with those for other heavy nuclides. (from T. Murata, NAIG)
- (vii) Preliminary results of the evaluated neutron data on ^{237}Np are obtained below 20 MeV for JENDL-2. Since the fission cross sections of ^{237}Np are important data in neutron dosimetry, a main theme in this work is evaluation of the threshold energy and cross sections of ^{237}Np (n,f). The evaluated values are determined by using the reported experimental works. The results are examined for fitness in the integral cross sections measured with the fission neutrons from ^{235}U and ^{252}Cf . The cross sections except for (n,f) are evaluated mainly by estimations based on the models of the nuclear reactions. (from Y. Kanda, KYU)
- (viii) Reevaluation work is almost completed for ^{232}Th . Evaluation of neutron nuclear data is in progress for ^{228}Th , ^{230}Th , ^{233}Th and ^{234}Th . (from T. Ohsawa, KYU)
- (ix) Evaluation work of the neutron nuclear data for ^{40}Ca in the energy range from 10^{-5} eV to 20 MeV is performed. And, evaluation of the neutron threshold reaction data for ^{42}Ca , ^{43}Ca , ^{44}Ca , ^{46}Ca and ^{48}Ca is made. The evaluated neutron data will be compiled in JENDL-2. (from M. Hatchya, MES)
- (x) Evaluation work is in progress on resonance parameters and potential scattering cross section of ^{19}F in the energy range from 10^{-5} eV to 100 keV for JENDL-2. (from T. Sugi, JAERI)

- (xi) Neutron nuclear data are evaluated for ^{152}Gd , ^{154}Gd , ^{158}Gd , ^{160}Gd . (from T. Watanabe, KHI)
- (xii) Evaluation of neutron cross sections is in progress for V, Cr, Mn, Fe, Co and Ni. The structure observed in the measured total cross section up to a few MeV is taken into account. The optical potential parameters are determined so as to reproduce the total cross section above 1 MeV. (from S. Tanaka, JAERI)
- (xiii) Benchmark test of JENDL-1 is performed on sophisticated problems such as reaction rate distribution, Na void coefficient and control rod worth. The drawbacks of JENDL-1 pointed out in this test are taken into account in compilation of JENDL-2. (from Y. Kikuchi, JAERI)
- (xiv) The cross sections of fission products evaluated by JNDC have been tested with the sample reactivity worths measured at the STEK facility, Petten, The Netherlands, and capture rates measured at CFRMF, Idaho, U. S. A. (from H. Nishimura, JAERI)

Work planned for the near future:

- (i) Benchmark test of JENDL-2 will be started. (from Y. Kikuchi, JAERI)

Work about codes:

- (i) Neutron Data Evaluation System (NDES)
A modular code system NDES has been developed by using the conversational processing system of FACOM 230-75. The main functions of NDES are: (1) calculation of cross sections with the optical model or from the resonance parameters, (2) fitting the data with spline function or resonance formula, and (3) display of the calculated, evaluated and/or experimental data on a cathode ray tube. (from T. Nakagawa, JAERI)

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