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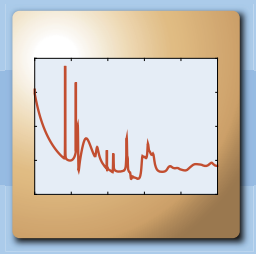
Nuclear Data Newsletter



A newsletter of the Nuclear Data Section (NDS)
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In This Issue

All services provided to users are free of charge. Please contact us on the following addresses:

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On-line News

Ongoing Service

The Nuclear Data Section is currently compiling an accessible electronic library of all documents produced by the IAEA pertaining to our Nuclear Data Services. These documents include IAEA-NDS, INDC and other NDS technical reports. Many only existed on microfiche or in paper form. All known documents will eventually be converted to PDF and placed on our web site.

This project continues to be ongoing and can be accessed on:

http://www-nds.iaea.org/reports-new/

Staff Items

Otto Schwerer retired from the Nuclear Data Section at the end of August 2007 after over 31 years of service with the Agency, covering his full working life. Over recent years, Otto has been extensively involved with improvements to and maintenance of the EXFOR nuclear reaction cross-section database and the associated CINDA bibliographic database. Much of this work has been undertaken through the cooperative studies of members of the IAEA-sponsored International Network of Nuclear Reaction Data Centres (NRDC), for which he was the IAEA representative, sometime chairman and most recently the coordinator of all database entries. His day-to-day input to this work will be sorely missed, although the Section is hoping to retain his expertise through a series of Special Service Agreements as appropriate, with Otto and his family planning to remain in Vienna.

Coordinated Research Projects

IAEA Coordinated Research Projects (CRPs) are a valuable mechanism for stimulating research in IAEA Member States of relevance to IAEA programmes. CRPs of the Nuclear Data Section, both active and recently completed, can be found at:

http://www.iaea.org/programmes/ripc/nd/crps.htm

In Memoriam

We report with deep regret of the death of Feliks Evgen'evich Chukreev on 29 June 2007, who contributed so much to the worldwide nuclear physics/nuclear data communities for over forty years. Working at the Center for Nuclear Structure and Reaction Data, Kurchatov Institute of Atomic Energy, Moscow, Feliks was involved in the extension of the EXFOR library to charged particle data in the 1970s, and continued to contribute to this database on a regular basis. His expertise in this field and his nuclear structure activities were well recognized by his many colleagues and friends. He will be remembered by NDS staff as an extremely competent nuclear physicist and friend.

We were saddened to learn of the untimely death of Enzo Menapace (ENEA, Bologna, Italy) on 23rd June 2007. For many years, Enzo contributed to the international cooperation efforts on nuclear data, particularly as the Italian representative and chairman of the International Nuclear Data Committee (in the early/mid-1990s), and as a member of the Atomic and Molecular Subcommittee of the International Fusion Research Council and the Atomic Data Centres Network, all three bodies organized under the auspices of the IAEA. He was involved in a series of annual debates on our programmes, helped shape their contents, and we will remember him as an extremely sociable co-worker.

Database News

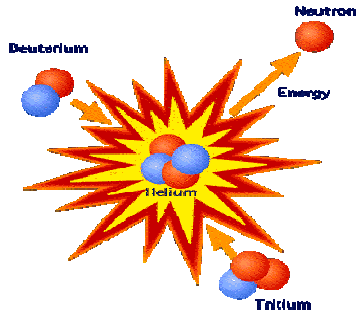
CINDA — Bibliographical references to experimental nuclear reaction data, and calculations, reviews, compilations and evaluations of neutron reaction and spontaneous fission data.

- Extended by information from EXFOR
- Available via retrieval systems on CD and the Web:
  http://www-nds.iaea.org/cinda/
- Contains 439,462 lines, 55,823 publications and 186,205 blocks.

EXFOR — Comprehensive library of experimental nuclear reaction data induced by neutrons, charged particles and photons.

- Available via retrieval systems on CD and the Web:
  http://www-nds.iaea.org/exfor/
- Contains 16,744 entries and 112,435 data tables
- Full EXFOR in C4 (computational format)
  http://www-nds.iaea.org/exfor-master/x4toc4/
- New features of the Web retrieval system:
  - Output of angular distributions in R33 format Standard in Ion Beam Analysis Nuclear Data Library) with plotting
  - Interactive web plotting: zoom by mouse, actions by one click etc.

Computer Codes and Data Libraries



The following databases and libraries are available cost-free on CD-ROM on request:

EXFOR-CINDA Database and Retrieval Systems, version 1.95, data updated to January 2007:

- Integrated CINDA and EXFOR
- Advanced interactive search
- Help based on dictionaries
- Interactive graphics with ZVView
- Can run from the CD without installation
- Works with local and remote databases
- Includes non-interactive EXFOR retrievals

Two CD-ROMs are available:

- for Windows with MS-Access databases
- for Applications on Linux and Windows with MySQL databases

Developed by V. Zerkin, Nuclear Data Section, IAEA, 2001-2007.

EndVer/GUI and EXFOR-CINDA package, September 2007:

An integrated software package for comparison of evaluated nuclear data files with experimental data from the EXFOR database (also contains interactive plotting).
Features:

- EndVer with software graphics and user interface
- Integrated EndVer-EXFOR-CINDA

- PostScript graphics with PlotC4
- Interactive graphics with ZVView
- Non-interactive EXFOR retrievals
- Can run from the CD without installation
- Advanced interactive search
- Help based on dictionaries
- Works with local and remote databases
- CINDA with charged particle and photonuclear reactions
- Works on Windows, Linux and Mac

Developed by V. Zerkin (in conjunction with A. Trkov), Nuclear Data Section, IAEA, 2004-2007.

ENDF: 14 Evaluated Data Libraries for Nuclear Applications in original and pointwise formats:

- BROND-2-2
- CENDL-2
- ENDF6-Manual
- ENDF-B-VI-8
- ENDF-B-VII-0
- ENDF-B-VII-0-300
- ENDF-HE-VI
- IAEA-MEDICAL
- IAEA-STD
- INDL-TSL
- IRDF-2002
- IRDF-2002-G
- JEFF-3-1
- JEFF-3-1-A
- JENDL-3-3
- README

Janis 3.0 — NEA Data Bank 2007:

A Java-based Nuclear Data Display Program. The DVD contains the Janis-3.0 libraries and a selection of nuclear data including:

- Evaluated data libraries
- Experimental data: EXFOR
- Bibliographical data: CINDA
- Nuclear and decay properties: NUBASE

The Proton Activation Data File: PADF-2007

The evaluation and compilation of data for nuclear reactions induced by intermediate energy protons. The Proton Activation Data File contains 418,575 excitation functions for nuclear reactions at proton energies up to 150 MeV. By Yu. Konobeyev, C.H.M. Broeders, U. Fischer, L. Mercatali, I. Schmuck and S.P. Simakov. These data are available on CD on request.

Selected Charts, Reports and Documents

Chart of the Nuclides *Prepared by Knolls Atomic Power Laboratory and distributed by Lockheed Martin (16th edition, revised to 2002).* Available cost-free on request **only for teachers and scientists from developing countries.**

Chart of the Nuclides Book *Prepared by Knolls Atomic Power Laboratory and distributed by Lockheed Martin (16th edition, revised to 2002).* This book form of the Nuclides Chart is available cost-free on request **only for teachers and scientists from developing countries.**

Karlsruher Nuklidkarte. *Wall Chart of the Nuclides from Karlsruhe, 7th edition (2006).* Available cost free on request **only for teachers and scientists from developing countries.**

Karlsruher Nuklidkarte Desk Chart *of the Nuclides from Karlsruhe, 6th edition (1995). Updates from 1998.* Available cost-free on request **only for teachers and scientists from developing countries**.

INDC(JPN)-196 *Proceedings of the 2005 Symposium on Nuclear Data,* edited by Yoshihisa Tahara and Tokioi Fukahori, February 2006. This report is available only on CD Rom on request.

INDC(NDS)-0509 *Summary Report of Consultants' Meeting on IAEA International Database on Irradiated Nuclear Graphite Properties, 9th Meeting of the Technical Steering Committee,* Vienna, 26–27 March 2007, prepared by D. Humbert and A.J. Wickham, June 2007. This report is available as hardcopy or on-line at:

http://www-nds.iaea.org/indc_sel.html

INDC(NDS)-0511 *Summary Report of the Second Research Coordination Meeting on Development of a Reference Database for Ion Beam Analysis,* Vienna, 18–21 June 2007, prepared by I. Vickridge and O. Schwerer, July 2007. This report is available as hardcopy or on-line at:

http://www-nds.iaea.org/indc_sel.html

INDC(NDS)-0512 *Summary Report of Consultants' Meeting on Minor Actinide Nuclear Reaction Data (MANREAD),* Vienna, 23–24 November 2006, prepared by A. Plompen and Alberto Mengoni,

September 2007. This report is available as hardcopy or on-line at:

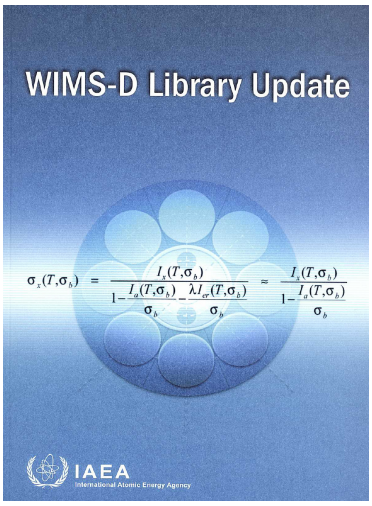
http://www-nds.iaea.org/indc_sel.html

INDC(NDS)-0513 *Summary Report of an IAEA Technical Meeting,* St. Petersburg, 11–15 June 2007, prepared by A.L. Nichols and J.K.Tuli, September 2007. This report is available as hardcopy or on-line at:

http://www-nds.iaea.org/indc_sel.html

Nuclear Data Sheets *Special Issue on Evaluated Nuclear Data File ENDF/B-VII.0*, Special Issue
Editors:
P. Oblozinsky and M. Herman.
Limited hard copies available on request. Also available on CD-ROM.

Nuclear Wallet Cards 2005 7th Edition, by Jagdish K. Tuli, National Nuclear Data Center. These pocket size wallet cards are available as hardcopy on request



WIMS-D Library Update

F. Leszczynski, D. López Aldama, A. Trkov, STI/PUB/1264, ISBN 92-105006-2. IAEA, Vienna, Austria, May 2007,

WIMSD-5B is an extremely popular reactor lattice code used in many nuclear laboratories for research and power reactor calculations. One major limitation has been the associated nuclear constants library, which was based on nuclear data originating from the 1960s combined with a series of empirical adjustments to improve performance. A new library has now been generated to remove this deficiency, based on the most recent evaluated nuclear data files. The definition of the constants and the data processing methods are described in this report, along with consideration of an extensive set of more than 200 analysed benchmarks that have been used to validate the new library. While the report has been primarily prepared to support the newly generated library, the detailed descriptions of the methods adopted will also make the task of updating the library easier as new data become available.

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International Atomic Energy Agency
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Fax: (43) 1 2600 29302
email: sales.publications@iaea.org
http://www.iaea.org/books

Meeting Reports

Coordination of the International Network of Nuclear Structure and Decay Data Evaluators, 11–15 June 2007, St. Petersburg, Russian Federation

The IAEA Nuclear Data Section convened the 17th Meeting of the International Network of Nuclear Structure and Decay Data Evaluators, 11-15 June 2007, in St. Petersburg, Russian Federation. This meeting was attended by 27 scientists from 13 Member States concerned with the compilation, evaluation and dissemination of nuclear structure and decay data. A summary of the meeting, recommendations/conclusions, data centre reports, and various proposals considered, modified and agreed by the participants are contained within INDC(NDS)-0513.

The first two days were dedicated to a combination of technical reviews and discussion papers, addressing particular topics in which progress has been made and problems have been experienced over the previous two years. Specific mass chain activities and administrative issues were debated over the final three days. Problems are being experienced in maintaining suitable numbers of mass chain evaluators, and these difficulties were extensively discussed during the course of the meeting (particularly with respect to an observed decline in the European commitment).

A list of actions was prepared for implementation during the course of the next two years. NSDD members also prepared recommendations for implementation by the IAEA and the major evaluation centres, which are aimed at improving financial and technical support towards the network. These recommendations include: the development of stronger links and understanding between key financial organizations and research facilities; planning of IAEA and ICTP workshops designed to train new NSDD evaluators; support by the major NSDD centres of the evaluation work undertaken by new groups through mentoring; and maintenance of the list of horizontal evaluations required by users or covered by on-going activities. The next meeting of the International Network of Nuclear Structure and Decay Data Evaluators will be held in April or May 2009, at IAEA Headquarters.

Second Research Coordination Meeting on Development of a Reference Database for Ion Beam Analysis, 18–21 June 2007, IAEA Headquarters, Vienna, Austria

Participants: M. Chiari (Instituto Nazionale Fisica Nucleare, Firenze, Italy); A. Gurbich (IPPE, Obninsk, Russian Federation); C. Jeynes (University of Surrey, Guildford, UK); M. Kokkoris (National Technical University of Athens, Greece); M. Mayer (Max-Planck-Institut für Plasmaphysik, Garching, Germany); I.B. Radovic (Rudjer Boskovic Institute, Zagreb, Croatia); Liqun Shi (Fudan University, Shanghai, China); I. Vickridge (Institut des Nano Sciences de Paris, France); A.R.L. Ramos Wahl (Departamento de Fisica Nuclear and Technological Institute, Sacavem, Portugal). NDS Scientific Officer: O. Schwerer (replaced by D. Abriola)

A Coordinated Research Project (CRP) on Development of a Reference Database for Ion Beam Analysis was initiated in 2005 by the IAEA after consultation with the ion beam analysis (IBA) community, with the aim to produce a nuclear reaction cross-section database containing recommended data of relevance to IBA. This second RCM was scheduled in order to assess progress at the half-way mark and define actions necessary to meet the goals of the CRP. During the second RCM all of the participants presented summaries of their work for comment and discussion by all participants, which has resulted in the development of a continued coordinated research plan.

Lively and productive discussions took place concerning technical issues such as accelerator energy calibration, error reporting, accuracy of the existing IBANDL and EXFOR datasets for IBA, and procedures for producing recommended cross-section data. Although the participants expect to produce a set of recommended cross-sections based on existing experimental data and cross-sections measured in the framework of the CRP, it has become apparent that benchmark experiments play a much greater role for the validation of the recommended cross-sections than initially foreseen. An extensive set of benchmark experiments with thick targets followed by spectral simulation will add substantial value to the recommended database with incorporation of the results in the recommended data sets that constitute the final output of the CRP. These considerations led to the proposal for an extension of the CRP by one year.

Furthermore, a significant number of particle-induced gamma-ray emission (PIGE) cross-section data have been uploaded to IBANDL by members of the IBA community other than participants of the CRP. Thus, the IBA community has shown by this action that there is an overwhelming need for the compilation, assessment and evaluation of PIGE data which would require the constitution of a new CRP.

Nuclear Data Services — contact points

For services to customers in USA and Canada:
US National Nuclear Data Center, Bldg. 197D, Brookhaven National Laboratory, P.O. Box 5000, Upton, NY 11973-5000, USA. Tel. +1 631-344-2902; Fax +1 631-344-2806; Email: nndc@bnl.gov; Worldwide Web: http//www.nndc.bnl.gov/ For information regarding on-line services, contact: B. Pritychenko: pritychenko@bnl.gov. For information regarding general NNDC services, contact M. Blennau: blennau@bnl.gov

For services to customers in OECD/NEA Data Bank member countries:
NEA Data Bank: OECD Nuclear Energy Agency, Le Seine Saint-Germain, 12 blvd des Iles, F-92130 Issy-les-Moulineaux, France. Tel. +33 1 4524 (plus extension); Fax +33 1 45241110; Email: (name)@nea.fr or nea@nea.fr; Worldwide Web: http://www.nea.fr Contact: A. Hasegawa, ext. 1080.

For services to the countries of the former USSR:
Neutron data: Russia Nuclear Data Center, Centr Jadernykh Dannykh (CJD), Fiziko-Energeticheskij Institut, Ploschad Bondarenko, 249020 Obninsk, Kaluga Region, Russia. Tel. +7 08439-9-8982; Fax +7 095-230-2326; E-mail: manokhin@ippe.obninsk.ru. Worldwide Web http://rndc.ippe.obninsk.ru/ Contact: V.N. Manokhin.
Charged-particle data: Russia Nuclear Structure and Reaction Data Center (CAJAD), Kurchatov Institute, Kurchatov Square 1, 123 182 Moscow, Russia. Tel. +7 095-196-9968; Fax +7 095-882-5804; Email: chukreev@polyn.kiae.su Contact: F.E. Chukreev.
Photonuclear data: Centre for Photonuclear Experiments Data, Centr Dannykh Fotoyadernykh Eksperimentov (CDFE), Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Leninskie Gory, 119 922 Moscow, Russia. Tel. +7 095-939-3483; Fax +7 095-939-0896; Email: varlamov@depni.sinp.msu.ru or varlamov@depni.npi.msu.su. Worldwide Web http://depni.sinp.msu.ru/cdfe/ Contact: V.V. Varlamov.

For services to customers in China:
China Nuclear Data Center, China Institute of Atomic Energy, P.O. Box 275(41), Beijing 102413, China. Tel. +86 10-6935-7275; Fax +86 10-6935-7008; Email: gezg@iris.ciae.ac.cn Contact: Ge Zhigang.

Computer codes of US origin to all countries:
Radiation Safety Information Computational Center (RSICC), Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6362, USA. Tel. +1 865-574-6176; Fax +1 865-574-6182; Email: pdc@ornl.gov. Worldwide Web http://epicws.epm.ornl.gov/ (there are charges and release restrictions)

Computer codes of non-US origin to all countries:
NEA Data Bank, see above, contact: E. Sartori, ext. 1072; Email: sartori@nea.fr (there may be release restrictions)
IAEA Nuclear Data Section offers data centre services primarily to non-OECD countries (except Russia and China, see above). However, most products advertised in this Newsletter, specifically INDC reports, IAEA-NDS-documents, etc., are provided upon request to customers in all countries. For on-line services see the first page of this Newsletter.
Users of countries in Latin America and Caribbean may use IAEA-NDS mirror at Worldwide Web http://www-nds.ipen.br
Users in India and neighbouring countries may use IAEA-NDS mirror at Worldwide Web http://www-nds.indcentre.org.in

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