



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

International cooperation on nuclear data for basic sciences and applications at the IAEA

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How did it all start?

- Eisenhower's historical speech "Atoms for Peace" on 8 December 1953
- First International Conference on **Peaceful Uses of Atomic Energy**, Geneva, 1955
- IAEA is founded in 1957
- **UK, USSR and US discuss making nuclear data public** at Geneva conferences 1955, 1958
- Carl Westcott was hired in 1963 by the Agency to oversee the Nuclear Data Program
- International Nuclear Data Committee guides the Nuclear Data Section in **promoting research and exchange of data among member states**



1953 Eisenhower: "Atoms for Peace"

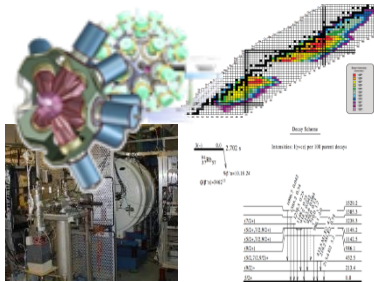


Nuclear Data Section

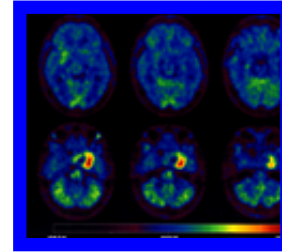


- Develops nuclear data worldwide through networks and international coordinated projects
- Promotes research through international cooperation (coordinated research projects, technical meetings)
- Enhances capacity building through training workshops and mentoring schemes
- Disseminates databases, reports and technical documents online and offline to all 174 member states

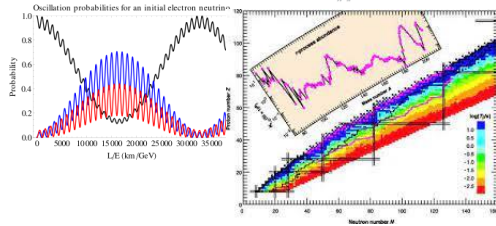
Nuclear Data for Basic Science and Applications



Radiation Safety



Medicine



Basic Research



Energy



Cultural Heritage

IAEA Networks



- Nuclear Reaction Data Centers (NRDC) – since 1975:
13 data centers maintaining EXFOR – exp. nuclear reaction data
 - **USA/BNL**, NEA Data Bank, IAEA, Russia (3), China, Hungary, Japan (2), Korea, India, Ukraine



- Nuclear Structure and Decay Data (NSDD) – since 1976:
17 data centers contributing to ENSDF database
 - **USA (ANL, BNL, FRIB/MSU, LBNL, ORNL, TAMU, TUNL)**, Australia, Bulgaria, Canada, China (2), Hungary, India, Japan, Romania, Russia
- International Nuclear Data Evaluation Network (INDEN) – since 2018: international cooperation on nuclear reaction data evaluation
 - **USA (BNL, LANL, LLNL, Notre-Dame, ORNL, RPI)**, IAEA, JRC/EU, Austria, Czech Rep., China, France, Germany, Greece, Japan, Slovenia, Spain, Switzerland, Romania, Russia



INDEN - International Nuclear Data Evaluation Network

Network managed by the International Atomic Energy Agency

Coordinators: [R. Capote](#), [P. Dimitriou](#), and [G. Schnabel](#)



Coordinated Research Programs



- 3-4-year international projects aimed at promoting research and addressing data needs for basic science and applications
- Outputs include databases, data files, IAEA reports, and publications in international peer-reviewed journals
- US national labs and academic institutions have and are making important contributions to these projects but they are also benefiting from them (⇄)

CRPs completed



- Reference Input Parameter Library (RIPL): widely used library of input parameters for nuclear reaction modelling
- Reference Database for beta-delayed neutron emission:
 - comprehensive compilation of experimental $T_{1/2}$, P_n data; recommended values; systematics; models;
 - compilation of; systematics and recommended aggregate data: total delayed neutron yields, 6- and 8-group constants
- Photonuclear Data Library and Photon Strength Functions:
 - Updated recommended photonuclear cross sections and spectra
 - Compilation of Photon Strength Functions (photonuclear; neutron capture; charged-particle reaction; NRF); global models

Available online at www.sciencedirect.com



Nuclear Data Sheets 110 (2009) 3107–3214

Nuclear Data Sheets

www.elsevier.com/locate/nds

RIPL – Reference Input Parameter Library for Calculation of Nuclear Reactions and Nuclear Data Evaluations

R. Capote,^{1*} M. Herman,^{1,2} P. Obložinský,^{1,2} P.G. Young,³ S. Goriely,⁴ T. Belgya,⁵ A.V. Ignatyuk,⁶ A.J. Koning,⁷ S. Hilaire,⁸ V.A. Plujko,⁹ M. Avrigeanu,¹⁰ O. Bersillon,¹¹ M.B. Chadwick,³ T. Fukahori,¹¹ Zhaizang Ge,¹² Yunlu Han,¹² S. Kailas,¹³ J. Kopecky,¹⁴ V.M. Maslov,¹⁵ G. Reffo,¹⁶ M. Sin,¹⁷ E.Sh. Soukhovitskii,¹⁵ P. Talou⁸

Available online at www.sciencedirect.com



Nuclear Data Sheets 173 (2021) 144–238

Nuclear Data Sheets

www.elsevier.com/locate/nds

Development of a Reference Database for Beta-Delayed Neutron Emission

P. Dimitriou,^{1,*} I. Dillmann,^{2,3} B. Singh,⁴ V. Pitsaikin,⁵ K.P. Rykaczewski,⁶ J.L. Tam,⁷ A. Algora,⁷ K. Banerjee,⁸ L.N. Borzov,^{9,10} D. Cano-Ott,¹¹ S. Chiba,¹² M. Fallot,¹³ D. Folguera,¹⁴ R. Gargueta,^{15,6} X. Huang,¹⁶ T. Markstin,¹⁷ P. Minato,¹⁸ G. Mukherjee,⁶ B.C. Basc,^{16,15,20} A. Szozoni,²¹ M. Verpecki,¹ A. Egorov,² M. Estienne,¹³ L. Giot,¹³ D. Gromyachkin,⁵ M. Madurga,¹⁵ E.A. McCutchan,²¹ E. Mendoza,¹¹ K.V. Mitrofanov,⁵ M. Narbonne,¹³ P. Ronzojaro,¹¹ A. Sanchez-Caballero,¹¹ and N.D. Scodrozzi²²

Eur. Phys. J. A (2019) 55: 172
DOI 10.1140/epja/i2019-12840-1

Review

THE EUROPEAN
PHYSICAL JOURNAL A

Reference database for photon strength functions

S. Goriely,¹ P. Dimitriou,^{2,*} M. Wiedeking,³ T. Belgya,⁴ R. Firestone,⁵ J. Kopecky,⁶ M. Krtilka,⁷ V. Plujko,⁸ R. Schwengner,⁹ S. Siem,¹⁰ H. Utsunomiya,¹¹ S. Hilaire,¹² S. Péru,¹² Y.S. Cho,¹³ D.M. Filipescu,¹⁴ N. Iwanoto,¹⁵ T. Kawano,¹⁶ V. Varlamov,¹⁷ and R. Xu¹⁸

Available online at www.sciencedirect.com



Nuclear Data Sheets 163 (2020) 109–162

Nuclear Data Sheets

www.elsevier.com/locate/nds

IAEA Photonuclear Data Library 2019

T. Kawano,^{1,*} Y. S. Cho,² P. Dimitriou,³ D. Filipescu,⁴ N. Iwanoto,⁵ V. Plujko,⁶ X. Tao,⁷ H. Utsunomiya,⁸ V. Varlamov,⁹ R. Xu,² R. Capote,³ I. Gheorghe,⁴ O. Gorbachenko,⁵ Y.L. Jin,⁷ T. Renstrom,¹⁰ M. Sin,¹¹ K. Stopani,⁹ Y. Tian,¹⁰ G.M. Tveten,¹⁰ J.M. Wang,⁷ T. Belgya,¹² R. Firestone,¹³ S. Goriely,¹⁴ J. Kopecky,¹⁵ M. Krtilka,¹⁶ R. Schwengner,¹⁷ S. Siem,¹⁹ and M. Wiedeking¹⁸

Nuclear Data Services



<https://www-nds.iaea.org/>

International Atomic Energy Agency
Nuclear Data Services
Sección Datos Nucleares, OIEA

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Decay Data Library for Actinides
EMPIRE-3.2
ENDF Archive
ENDF Retrieval
ENDF-6 Codes
ENDF-6 Format
ENDVER
ENSDF
ENSDF ASCII Files
ENSDF programs
EPICS Electron & photon interaction data

NEW
TENDL-2021 TALYS-based Evaluated Nuclear Data Library, 2021: [[page](#)] [[list](#)] [[retrieve](#)]
JENDL-5 Japanese evaluated nuclear data library, 2021: [[page](#)] [[errata](#)] [[list](#)] [[retrieve](#)]
 β -delayed neutrons reference database for beta-delayed neutron emission [[page](#)]

Main | All | Reaction Data | Structure & Decay | by Applications | Doc & Codes | Index | Events | Links | News

EXFOR Experimental nuclear reaction data
LiveChart of Nuclides Interactive Chart of Nuclides
Mobile App: Isotope Browser
CINDA Nuclear reaction bibliography
ENDF Evaluated nuclear reaction libraries
ENSDF evaluated nuclear structure and decay data (+XUNDL) **
NSR Nuclear Science References **

NuDat-3 selected evaluated nuclear structure data **
RIPL reference parameters for nuclear model calculations
IBANDL Ion Beam Analysis Nuclear Data Library
Charged particle reference cross section Beam monitor reactions
PGAA Prompt gamma rays from neutron capture
FENDL Fusion Evaluated Nuclear Data Library
Photonuclear - IAEA Photonuclear Data Library, 2019
- EPICS Electron & Photon Interaction Data, 2017
IRDFF-II International Reactor Dosimetry and Fusion File
NAA Neutron Activation Analysis Portal
Safeguards Data Last updated: May 2021
Medical Portal Medical Portal
Standards - Neutron cross-sections, 2017
- Decay data, 2005

*Database at the IAEA, Vienna **Database at the US NNDC

IAEA Nuclear Data Section

IAEA-NDS Mission
Atomic and Molecular Data
Meetings Workshops
Newsletters
Coordinated Research Projects
Nuclear Reaction Data Center Network
Nuclear Structure & Decay Data Network
International Network of Nuclear Data Evaluators
INDEN
Technical Documents INDC Reports Publications
Computer Codes
IAEA-NA Department of Nuclear Sciences and Applications

Data products are the result of international cooperation



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Thank you!

