IAEA
International Atomic Energy Agency
Atoms for Peace and Development

IAEA Nuclear Data Section

May 2024- May 2025 Status Report

Arjan Koning, Roberto Capote, Naohiko Otsuka, Alejandra Martinez, Lidija Vrapcenjak

Nuclear Data Section, IAEA, Vienna

NRDC Meeting, 17-20 June 2025, Universidad Politécnica de Madrid, Spain

Staff Changes

The authorized staff level consists of a total of 16 professionals and support staff.

The latest staff changes include:

- **Christian Hill** (Head of Atomic Data and Molecular Data Unit) rotated out in September 2024.
- **Alejandra Martinez** (Software Engineer) joined in July 2024.
- **Marco Verpelli** (Nuclear Data Analyst/Programmer) retired in April 2025.

EXFOR Transmission

Between May 2024 and May 2025, NDS finalized

- 5 neutron transmission (48 new entries+25 revised entries)
- 7 CPND transmission (39 new entries+37 revised entries)
- 3 PhND transmission (11 new entries and 6 revised entries)
- 2 EXFOR/CINDA dictionary transmission

including contributions from five centres (**ATOMKI**, **CNDC**, **KNDC**, **NDPCI**, **UkrNDC**) and two regular compilers (**Myagmarjav Odsuren**, **Timur Zholdybayev**).

EXFOR Transmission (cont)

Number of new entries finalized in May 2024 – May 2025
(TZ: Timur Zholdybayev, MO: Myagmarjav Odsuren)

	NDS	ATOMKI	CNDC	KNDC	NDPCI	UkrNDC	TZ	MO	Sum
Neutron	0	-	33	1	10	4	-	-	48
CPND	0	1	*	1	8	7	1	21	39
PhND	0	-	-	0	1	10	-	-	11
Sum	0	1	33	2	19	21	1	21	98

* Area S entries are transmitted by CNDC and therefore not included in these statistics.

EXFOR Quality Control

- Between May 2024 and May 2025, NDS reviewed 78 preliminary files.
- Regular checking now includes **spell checking** by the newly developed EXFOR spell checker in Python (SPELL)
- Comments received from end users are being added to the **EXFOR Feedback List**.

EXFOR Entries for Corrections (Feedback List)

Send your comment on EXFOR entry

pink: very urgent (Data, Common, Heading, Unit); yellow: urgent (REACTION, pointer); green: other

Last updated: 2025-05-17

Area	1	2	3	4	A	B	C	D	E	F	G	J	K	L	M	O	P	R	S	T	V	Total
Centre	NNDC	NEADB	NDS	CJD	CNPD	NDS	NNDC	NDS	JCPRG	CNPD	NDS	JCPRG	JCPRG	NNDC	CDFE	NEADB	NNDC	JCPRG	CNDC	NNDC	NDS	
Total	333	208	47	0	37	13	139	66	52	23	3	0	5	3	8	180	12	2	0	36	3	1170
Very urgent	44	56	22	0	19	0	31	17	4	0	1	0	0	0	0	44	1	0	0	24	0	263
Urgent	65	20	4	0	10	6	38	21	5	0	0	0	0	0	4	120	4	0	0	6	0	303
Normal	224	132	21	0	8	7	70	28	43	23	2	0	5	3	4	16	7	2	0	6	3	604

Entry #	From	Keyword	Comment	Reference	Registered
10052.002	M.Mikhailiukova	Data	Add reduced neutron widths in Table III.	N/A	2023-01-16
10052.005	M.Mikhailiukova	Data	Add reduced neutron widths in Table II.	N/A	2023-01-16
10052.008	M.Mikhailiukova	Data	Add reduced neutron widths in Table III.	N/A	2023-01-16
10052.011	M.Mikhailiukova	Data	Add reduced neutron widths in Table II.	N/A	2023-01-16

EXFOR Coverage Control

- 19 journals are regularly scanned.
- Additional 17 journals and conf. proc. (e.g., EPJ Web Conf.) were scanned until Dec. 2023. Delay in scanning of later ones.
- Record of scanning by NDS and at other centres (20 journals) are registered in X4CoCoS. **NNDC** started scanning of **Phys. Rev. Lett.**

Articles for EXFOR Compilation (Allocation List)

Send your request of compilation

pink: allocated more than 2 years ago. yellow: allocated 1 - 2 years ago. grey: conf. proc. published within 5 years.

Last updated: 2025-05-20

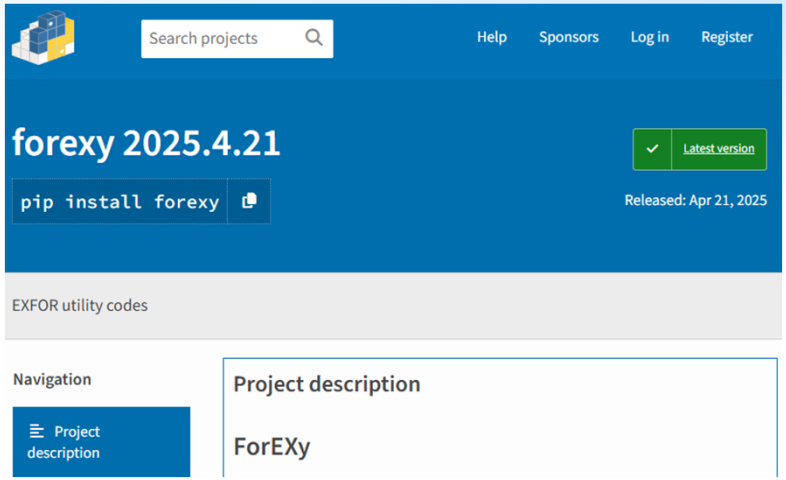
Centre	ATOMKI	CDFE	CJD	CNDC	CNPD	JAEA	JCPRG	KAZMON	KNDC	NDPCI	NDS	NEADB	NNDC	UKRNDC	Total	TRANS analyzed
New entries since last meeting[2]	1	9	9	35	34	0	29	22	2	19	0	11	162	21	354	1510, 1511, 1512, 1513, 1514, 1515, 1 2320, 3213, 3214, 3215, 3216, 3217, 4 4220, 4221, 4222, 4223, A110, A111, A A115, A116, A117, A118, A119, A120, C236, C237, C238, C239, C240, C241,
Revised entries since last meeting[2]	24	49	163	13	225	0	85	2	0	12	17	5	299	8	902	C245, C246, C247, C248, D143, D144, D147, E142, E143, E144, E145, E146, E150, E151, F099, F100, G053, G054, L054, L055, M130, M131, M132, M133, M136, R031, S034
Articles not transmitted yet in EXFOR entries[1]	4	1	2	155	42	11	176	29	25	64	42	428	437	4	1436[3]	

1. Number of articles excluding conference proceedings published within 5 years. (Conference = Articles registered with conference as APP/BS, EPJ/CS, JP/CS, NSTP, NSTS, AIP-, JAEA-C-)
2. Number of entries transmitted after preparation of the full summary (WP2024-02) for the last NRDC meeting (2024-05-01). The uploading to the NDS Open area is considered as the date of the transmission.
3. Including 16 articles not assigned to any centre.

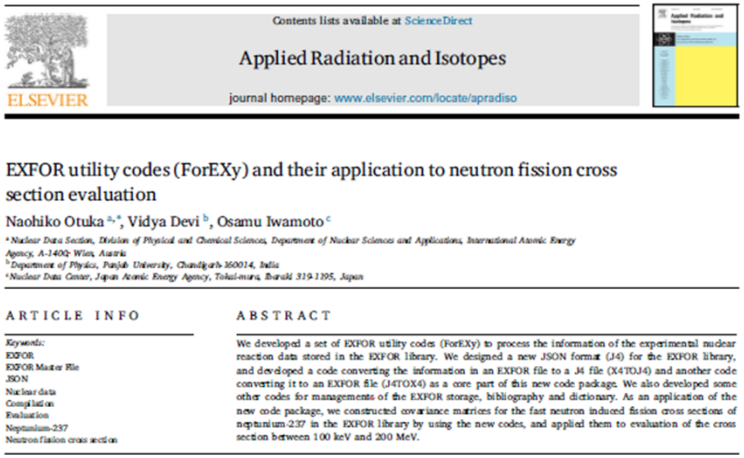
Entry#	1st author	Reference	Published	Centre	Registered	Memo	Comment
20000	BÃ¶ttger	J,NSE,106,377,1990	1990	NEADB	2022-09-27		Requestor: Denise Neudecker (see also S,IAEA and C,82ANTWER,,484,1982)

EXFOR Master File

- EXFOR Master File Ver. 2024 (**EXFOR-2024**) was released on its landing page with a **DOI**.
- Anyone can update EXFOR-2024 with the TRANS files released on the NRDC website.
- The latest snapshot (**EXFOR Entry File**) is maintained with a version control system.
- The tools for these file operations (**ForEXy**) is distributed from PyPI as an Open Source.



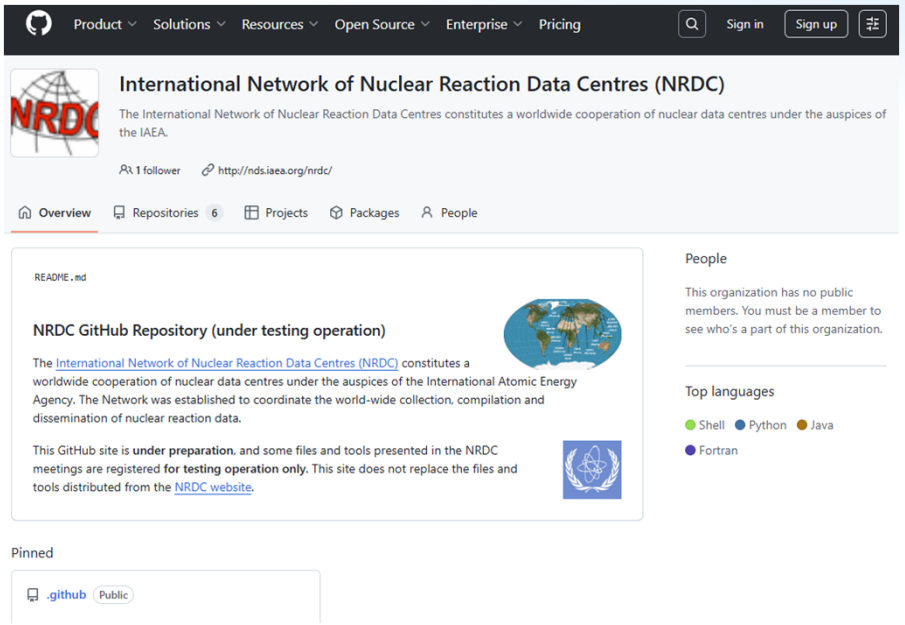
https://pypi.org/project/forexy/



ForEXy article (accepted by ARI)

Experimental NRDC GitHub site

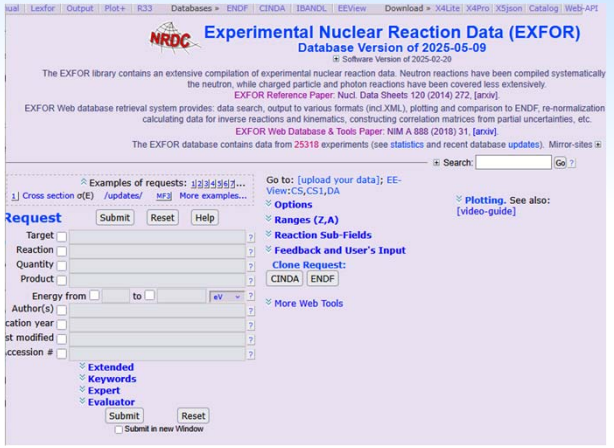
- We opened an experimental NRDC GitHub site to see if it is useful for exchange of tools etc.
- EXFOR Entry Files on the NRDC website are now synchronized with the repository on this GitHub site.
- A few other files and tools are deposited. This GitHub site is open for your contribution.



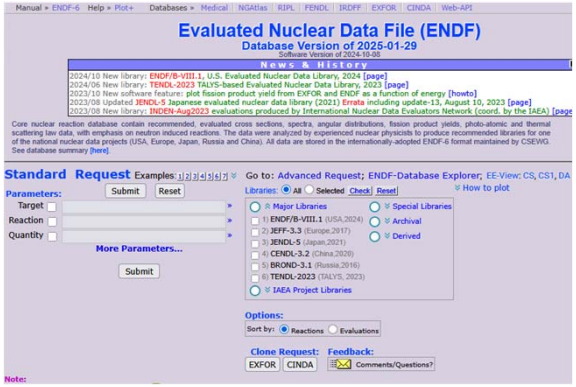
https://github.com/iaea-nrdcnetwork

Databases for web retrievals

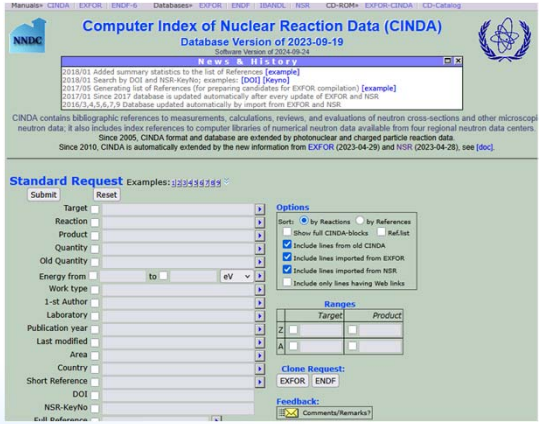
- **EXFOR**: Updated when a new TRANS file is released (i.e., synchronized with EXFOR Entry File)



- **ENDF**: Updated twice for **TENDL-2023** and **ENDF/B-VIII.1**.



- **CINDA**: Last update: October 2023.

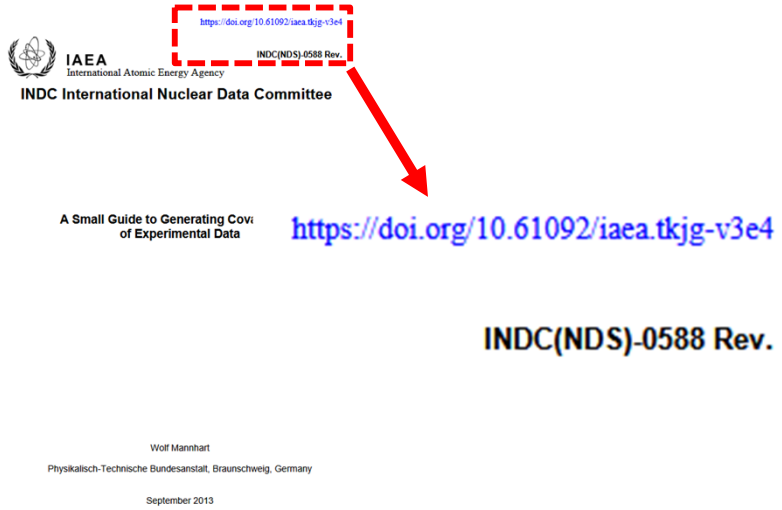


Document Services

- 27 **reports** were published. Retroactive registration of **DOI** is ongoing.

Report code	Origin	Reports
IAEA-NDS	NDS	6
INDC(BLR)	Belarus	2
INDC(EUR)	European Commission	1
INDC(JPN)	Japan	1
INDC(NDS)	NDS	17

- 2 **Newsletters** (#77 and #78) were published and distributed (82 hard copies and 1176 electronic copies)



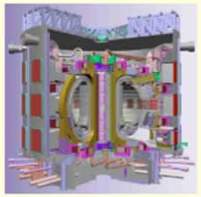
Nuclear Data Development

FENDL-3.2c Fusion Evaluated Nuclear Data Library

https://www-nds.iaea.org/fendl

GitHub - IAEA-NDS/FENDL-ENDF: ENDF files

Coordinators: G. Schnabel, R. Capote, and A. Trkov



Fusion Evaluated Nuclear Data Library - FENDL-3.2c

(Nuclear data supersede all previous versions of FENDL-2.x and 3.x libraries)

Coordinators: Georg Schnabel, and Roberto Capote, and Andrej Trkov

LAST WEBPAGE UPDATE: May 31, 2025

FENDL REFERENCE PAPER:

FENDL: A library for fusion research and applications, Nuclear Data Sheets 193 (2024), 1-78

Important note: Due to a a synchronization error between the Github repository and this website, the evaluations of the tungsten isotopes in the neutron sublibrary did not match the FENDL-3.2c release, as the RRR section from ENDF/B-VIII.0 was not included. This issue was corrected on 31 May 2025. All other files, such as ACE and other application files, were correct the entire time.

The Fusion Evaluated Nuclear Data Library contains reaction data with a focus on the data requirements of fusion research facilities. Both operating and future facilities (e.g., ITER,DEMO, IFMIF) data needs are covered with current data extended up to 150 MeV. Development of FENDL libraries is described in the document links provided in the left column; links to previous FENDL releases are also listed.

ELSEVIER

Check for updates

Available online at www.sciencedirect.com

ScienceDirect

Nuclear Data Sheets

Nuclear Data Sheets 193 (2024) 1–78

www.elsevier.com/locate/nds

FENDL: A library for fusion research and applications

G. Schnabel,[1,*] D.L. Aldama,[2] T. Bohm,[3] U. Fischer,[4] S. Kunieda,[5] A. Trkov,[6] C. Konno,[5] R. Capote,[1] A.J. Koning,[1] S. Breidokaite,[7] T. Eade,[8] M. Fabbri,[9] D. Flammini,[10] L. Isolan,[11] I. Kodeli,[6] M. Košťál,[12] S. Kwon,[13] D. Laghi,[14,11] D. Leichtle,[4] S. Nakayama,[5] M. Ohta,[13] L.W. Packer,[8] Y. Qiu,[4] S. Sato,[13] M. Sawan,[3] M. Schulc,[12] G. Stankunas,[7] M. Sumini,[11] A. Valentine,[8] R. Villari,[10] and A. Žohar[6]

Nuclear Data Development

INDEN: International Nuclear Data Evaluation Network

International Network of Nuclear Data Evaluators

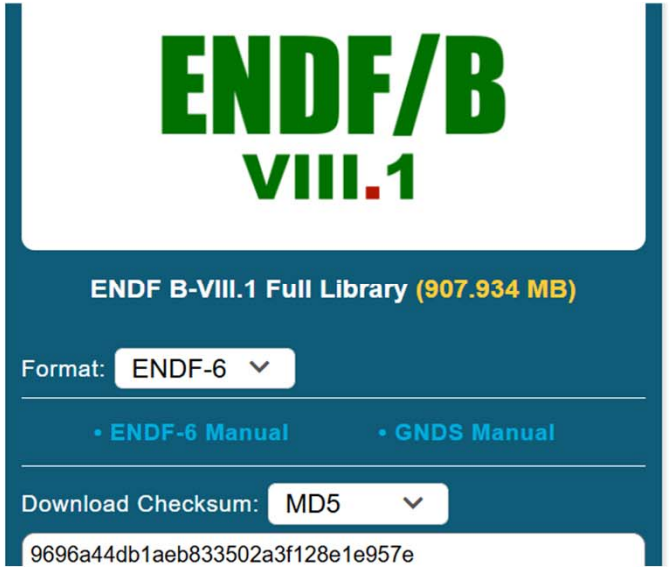
https://www-nds.iaea.org/INDEN

Coordinators: R. Capote, G. Schnabel, P. Dimitriou

- Developed new/updated evaluations of actinides and structural materials ^{239,240,241}Pu, ^{233,235,238}U, ^{232}Th (actinides) and Fe, Si, Cr, Mn, Cu, B, F-19
- All INDEN evaluations were adopted by the ENDF/B-VIII.1
- ^{233}U, ^{232}Th, Fe, Si, Mn, Cu, and F-19 were adopted for the future JEFF-4.0

ENDF B-VIII.1 Full Library

The ENDF/B-VIII.1 release is the newest evaluated nuclear data library produced, distributed, and recommended by CSEWG for use in nuclear science and technology applications. Among the many key advances, relative to the previous version ENDF/B-VIII.0, are: re-evaluation of ^{239}Pu file by a joint international effort; updated 16,18O, 19F, $^{28\text{-}30}$Si, $^{50\text{-}54}$Cr, ^{55}Mn, ^{54,56,57}Fe, ^{63,65}Cu, ^{139}La, ^{233,235,238}U, and ^{240,241}Pu neutron nuclear data by the IAEA-coordinated INDEN collaboration; significant changes for ^{3}He, ^{6}Li, ^{9}Be, ^{51}V, ^{88}Sr, ^{103}Rh, ^{140,142}Ce, Dy, ^{181}Ta, Pt, $^{206\text{-}208}$Pb, and ^{234,236}U neutron data; new nuclear data for the photo-nuclear, being 196 adopted from the IAEA2019 Photonuclear Data Library and one new file from JENDL-5; and new evaluations for the charged-particle and atomic sublibraries.



Nuclear Data Development

International Network of Nuclear Structure and Decay Data Evaluators (NSDD)

Coordinator: P. Dimitriou

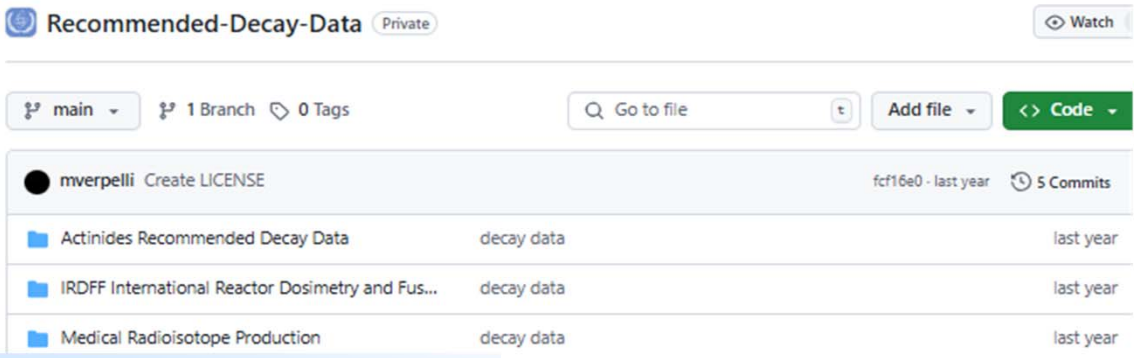
- 25th TM, 15-19 April 2024; 50th Anniversary; INDC(NDS)-0901
- Update of Electromagnetic Nuclear Moments (N.J. Stone): INDC(NDS)-0915 Rev. 2
- Decay Porta (Live Chart)l: comparison of evaluated structure and decay data from all available sources: ENSDF, IAEA CRPs, DDEP, ENDF decay-data sub-libraries

#1. ENDF/B-VIII.0 Nd-147		#2. JEFF-3.3 Nd-147		#3. JENDL-5 Nd-147		#4. DDEP-2021 Nd-147		#5. ENSDF-2025 Nd-147	
Nucleus:	Nd-147 ZA=60147	Nucleus:	Nd-147 ZA=60147	Nucleus:	Nd-147 ZA=60147	Nucleus:	Nd-147 ZA=60147	Nucleus:	Nd-147 ZA=60147
Library:	ENDF/B-VIII.0, MAT=2034	Library:	JEFF-3.3, MAT=2047	Library:	JENDL-5, MAT=2165	Library:	DDEP-2021 LNHB, 2013-01-04	Library:	ENSDF-2025
AUTH:	Conversion from ENSDF	AUTH:	A.L. NICHOLS	AUTH:	Conversion from ENSDF		Laboratoire National Henri Becquerel	↗Half life:	11.03 ± 0.03(d)
EDATE:	EVAL-NOV05	EDATE:	EVAL-JUN94	EDATE:	EVAL-NOV21	↗Half life:	10.987 ± 0.011(d)	Spin & Parity:	5/2-
Half life:	10.98 ± 0.01(d)	↗Half life:	11.02 ± 0.02(d)	↘Half life:	10.98 ± 0.01(d)	Spin & Parity:	unknown	Library ; ENSDF 202503 by livechart20241016	LARA
AWR:	145.654	AWR:	145.654	AWR:	145.654	Nuclide ; Nd-147	LARA	Nuclide ; Nd-147	
Isomer number:	LISO=0	Isomer number:	LISO=0	Isomer number:	LISO=0	Element ; Neodymium		Element ; Neodymium	
Level number:	LIS=0	Level number:	LIS=0	Level number:	LIS=0	Z ; 60		Z ; 60	
Spin & Parity:	5/2-	Spin & Parity:	5/2-	Spin & Parity:	5/2-	Daughter(s) ; (B-) ; Pm-147 ; 100		Daughter(s) ; (B-) ; Pm-147 ; 100	
Ebeta:	268.0441 ± 4.939273 (keV)	↗Ebeta:	270.598 ± 15.5005 (keV)	↗Ebeta:	295.9469 ± 6.593113 (keV)	Q- ; 895.7		Q- ; 895.2	
Egamma:	144.1973 ± 5.807435 (keV)	↘Egamma:	138.133 ± 7.8428 (keV)	↘Egamma:	126.056 ± 1.614941 (keV)	Possible parent(s) ; (B-) ; Pr-147 ; 100		Possible parent(s) ;	
Ealpha:	0 ± 0 (keV)	Ealpha:	0 ± 0 (keV)	Ealpha:	0 ± 0 (keV)	Half-life (d) ; 10.987 ; 0.011		Jp ; 5/2-	
Decay modes:	1	Decay modes:	1	Decay modes:	1	Half-life (s) ; 949.3E3 ; 1.0E3		Half-life (d) ; 11.03 ; 0.03	
Radiation types:	4	Radiation types:	4	Radiation types:	4	Decay constant (1/s) ; 730.2E-9 ; 0.7E-9		Half-life (s) ; 9.53E5 ; 2.592E3	
						Specific activity (Bq/g) ; 2.9913E15 ; 0.0030E15		Decay constant (1/s) ; 7.272E-7 ; 2E-9	
						Reference : CEA/LNE-LNHB - 2011		Specific activity (Bq/g) ; 2.981E15 ; 8.198E12	

- IAEA Adopted Decay Data Library on GitHub:

Recommended decay data evaluations from CRPs and Technical Projects

https://github.com/IAEA-NDS/Recommended-Decay-Data



Nuclear Data Development

(alpha,n) neutron yield data for applications

Technical Officer: P. Dimitriou

- Series of Technical Meetings on (alpha,n) nuclear data evaluation and data needs for applications
  - 8-12 Nov 2021: INDC(NDS)-0836
  - 27 Nov-1 Dec 2023: INDC(NDS)-0894

- **White Paper** on (alpha,n) neutron yield data for applications

arXiv:2405.07952v3 [nucl-ex] 20 Jan 2025; to be published in J. Phys. G, 2025:

Review of Neutron Yield from (α, n) Reactions: Data, Methods, and Prospects

D. Cano-Ott,[1] S. Cebrián,[2] P. Dimitriou,[3] M. Gromov,[4,5] M. Harańczyk,[6] A. Kish,[7] H. Kluck,[8] V. A. Kudryavtsev,[9] I. Lazanu,[10] V. Lozza,[11,12] G. Luzón,[2] E. Mendoza,[1] M. Parvu,[10] V. Pesudo,[1] A. Pocar,[13] R. Santorelli,[1,*] M. Selvi,[14] S. Westerdale,[15] and G. Zuzel[6]

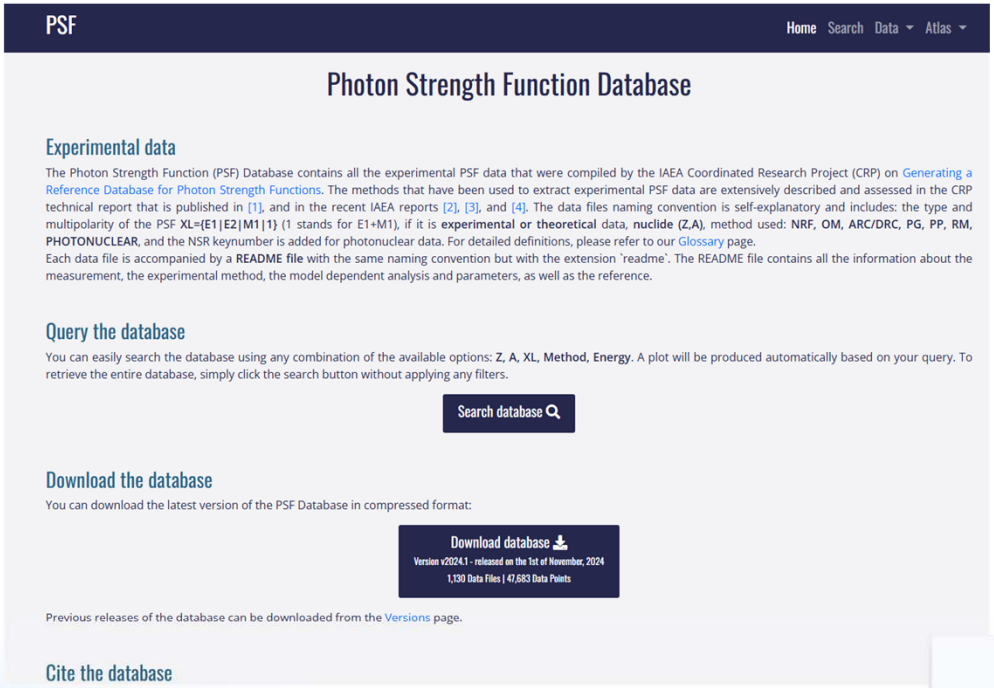
Nuclear Data Development

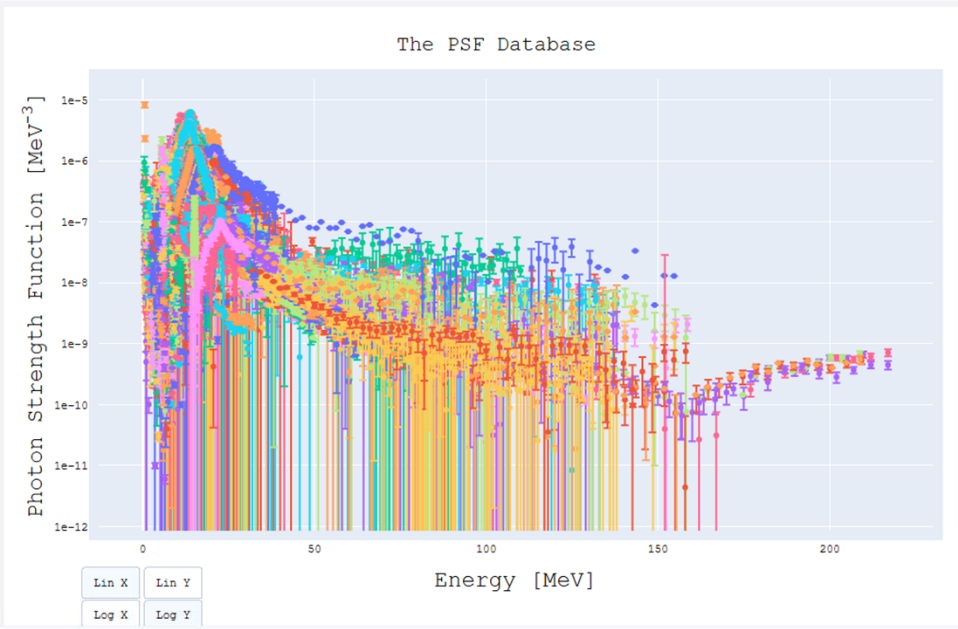
Photon Strength Function (PSF)

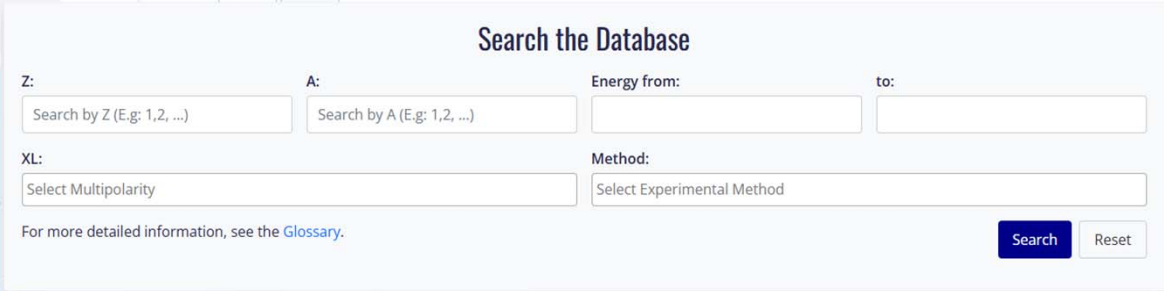
Technical Officer: P. Dimitriou

Database programming: Sandile Jongile (iThemba LABS), Ludmila Marian

New interactive PSF database (all available experimentally derived PSF: photonuclear, NRF, neutron capture, proton capture, Oslo method: 1130 data files)







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Thank you!