



USNDP Web Services

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USNDP Web & Database Services

The screenshot shows the National Nuclear Data Center (NNDC) website in a Mozilla Firefox browser window. The browser's address bar displays the URL <http://www.nndc.bnl.gov/>. The website features a navigation menu with links to various databases and services, including NSR, XUNDL, ENSDF, NuDat, Databases, MIRD, Sigma, CSISRS, ENDF, Chart of Nuclides, Empire, Atlas of n Resonances, Nuclear Wallet Cards, Nuclear Data Sheets, Networks, CSEWG, and USNDP. A prominent banner for "Nuclear Data Week at BNL, Nov 2-6" and "New Google Atlas of Neutron Resonances" is visible. Below the banner, there is a search bar and a grid of links to various services and databases, such as AMDC, Atlas of Neutron Resonances, CapGam, Chart of Nuclides, Covariances, CSEWG, CSISRS, ENDF, IRDF, MIRD, NMMSS & DoE NMIRDC, NSR, Nuclear Data Sheets, Nuclear Wallet Cards, NucRates, NuDat, USNDP, and XUNDL. The footer of the website includes sponsorship information from the Office of Nuclear Physics, Office of Science, and the U.S. Department of Energy, along with links for Acknowledgments, Comments/Questions, and Disclaimer.

FY09 Summary

- 2,324,729 retrievals, 15.7% increase compare with FY08
- NuDat/Chart contribution is 1,309,260 retrivals
- Hardware migration, 2 -> 4 processors, more memory and disk space
- NNDC databases and Web Services have been migrated form Sybase to MySQL relational database software
- NNDC /BNL passed DOE cyber security audit
- Web products improvements: NSR, Sigma, NuDat, ENSDF Codes, ENDF/EXFOR/CINDA

Databases & Web Services

- In 2009 NNDC went through scheduled Web (2) and database (2) server migration project
- In May of 2009 we were informed by Sybase, Inc. that license fee will go up from \$3,500 to \$80,000 /processor
- Decision has been made to move from Sybase to MySQL by August 1, 2009
- Database migration (external users) has been accomplished by July 31, 2009 (Pritychenko, Arcilla, Zerkin, Sonzogni)
- Internal services migration is still going on in collaboration with external developers (Pritychenko, Arcilla, Winchell)

DOE Cyber Security Audit

- In September 2009 BNL had a cyber security audit
- NNDC Web Services had to be updated and several thousand vulnerabilities were fixed
- This task was accomplished in two weeks by four people
- BNL passed the audit for the first time!!!

Sigma 3.0

NNDC National Nuclear Data Center **BROOKHAVEN NATIONAL LABORATORY**

NNDC Databases: NuDat | NSR | XUNDL | ENSDF | MIRD | ENDF | CSISRS | Sigma

Oigma Evaluated Nuclear Data File (ENDF) Retrieval & Plotting

New in 3.0: spectra (MF=6), covariances (MF=33), thermal cs & resonance integrals.

[Periodic Table Browse](#) |
 [Directory Tree Browse](#) |
 [Basic Retrieval](#) |
 [Advanced Retrieval](#) |
 [Plot Cart](#) |
 [Computations](#)

Select first a library, then a sublibrary and finally click on a chemical element to obtain results.
Data is available for materials with a cyan background.

Library: Sublibrary:

0	1																	2
n	H																	He
3	4											5	6	7	8	9	10	
Li	Be											B	C	N	O	F	Ne	
11	12											13	14	15	16	17	18	
Na	Mg											Al	Si	P	S	Cl	Ar	
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
87	88	89	104	105	106	107	108	109	110	111								
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg								
58	59	60	61	62	63	64	65	66	67	68	69	70	71					
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu					
90	91	92	93	94	95	96	97	98	99	100	101	102	103					
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr					

Version History:

- New in version 3.0 (February 2009)
 - Energy-angle distributions (MF=6).
 - Visualization of covariances (MF=33 with LB=1.5; applies to ~80% of cases). Visualization of resonance data (MF=32) is not yet available.
 - Thermal neutron cross sections & resonance integrals for (n,γ), (n,total fission).
- New in version 2.0 (April 2008)
- New in version 1.0 (April 2007)

Database Manager: Mike Herman, NNDC, Brookhaven National Laboratory
 Web and Programming: B. Pritychenko, A.A. Sonzogni, NNDC, Brookhaven National Laboratory
 Data Source: CSEWG and NEA-WPEC

Results for Z=92

	ENDF-6 format	Human-readable
232	Whole file -	
	introduction	Interpreted
	(n,total nubar)	Interpreted Plot
234	(n,delayed nubar)	Interpreted Plot
	(n,prompt nubar)	Interpreted Plot
235	(n,fs.ene.release)	Interpreted
236	res. param.	Interpreted
237	Cross sections:	
	(n,total)	Interpreted Plot
238	(n,elastic)	Interpreted Plot
239	(n,non-elastic)	Interpreted Plot
240	(n,inelastic)	Interpreted Plot
	(n,2n)	Interpreted Plot
	(n,3n)	Interpreted Plot
	(n,total fission)	Interpreted Plot
	(n,1st ch.fission)	Interpreted Plot
	(n,nf)	Interpreted Plot
	(n,2nf)	Interpreted Plot
241	(n,4n)	Interpreted Plot

- Energy-angle distributions
- Covariances (MF=33)
- Thermal cross sections & Resonance Integrals

NSR

NNDC National Nuclear Data Center

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Home

NNDC Databases: NuDat | NSR | XUNDL | ENSDF | MIRD | ENDF | CSISRS | Sigma

Nuclear Science References (NSR)

[The previous version of Web Interface is here.](#)
Database version of October 29, 2009

The NSR database is a bibliography of nuclear physics articles, indexed according to content and spanning nearly 100 years of research. Over 80 journals are checked on a regular basis for articles to be included. For more information, see the help page. The NSR database schema and web applications have undergone some recent changes. This is a revised version of the previous NSR Web Interface.

Quick Search | Text Search | Indexed Search | Keynumber Search | Combine View | Recent References

Author
Brown, B.A. Brown

Nuclide
31Na, na-31

Output format HTML BibTex Text

Publication Year from to

Database Manager: Boris Pritychenko, NNDC, Brookhaven National Laboratory
Web Programming: Boris Pritychenko, NNDC, Brookhaven National Laboratory
Data Source: NNDC, Brookhaven National Laboratory,
NDS, International Atomic Energy Agency,
NDG, McMaster University

- Improved Web Interface
- Many new features

NuDat 2.5

NuDat 2.5
Search and plot nuclear structure and decay data interactively. More.

Levels and Gammas Search
Ground and excited states (energy, $T_{1/2}$, spin/parity, decay modes), gamma rays (energy, intensity, multipolarity, coinc.)

Nuclear Wallet Cards Search
Latest Ground and isomeric states properties

Decay Radiation Search
Radiation type, energy, intensity and dose following nuclear decay

Color code	Half-life	Decay Mode	S_n	S_p	Q_α	S_{2n}	S_{2p}	$Q_{2\beta^-}$	Q_{2EC}	Q_{ECp}	Q_{β^-n}
BE/A	(BE-LDM Fit)/A	E_{2+}	E_{3-}	E_{4+}	E_{4+}/E_{2+}	β_2	$B(E2)_{42}/B(E2)_{20}$	$\alpha(n,\gamma)$	$\alpha(n,F)$	235U FY	239Pu FY

Interactive Chart of Nudides
Click on a nucleus to obtain information

Tooltips: On, Off

Zoom: 1 (NDS), 2 (Standard), 3, 4 (Screen Size), 5 (Narrow), 6, 7 (Wide)

Uncertainty: NDS, Standard

Screen Size: Screen, Narrow, Wide

Nucleus:

Seconds: $> 10+15$, $10+10$, $10+07$, $10+05$, $10+04$, $10+03$, $10+02$, $10+01$, $10+00$, unknown, $10-01$, $10-02$, $10-03$, $10-04$, $10-05$, $10-06$, $10-07$, $10-15$, $< 10-15$

NNDC ENSDF NSR Nuclear Wallet Cards

This site is better seen using the latest version of internet browsers.
Database Manager and Web Programming: Alejandro Sonzogni, NNDC, Brookhaven National Laboratory, sonzogni@bnl.gov
Data Source: National Nuclear Data Center, Brookhaven National Laboratory, based on ENSDF and the Nuclear Wallet Cards.

- New graphic capabilities
- Nuclear physics views

ENSDF Analysis & Utility Codes

The screenshot shows the National Nuclear Data Center (NNDC) website. The header includes the NNDC logo and the Brookhaven National Laboratory logo. Below the header is a navigation bar with links to various databases: ENDF, CSISRS, CINDA, NuDat, NSR, XUNDL, ENSDF, and MIRD. A search bar is present with a 'go' button. The main content area is titled 'ENSDF Analysis and Utility Programs'. It contains a sidebar with navigation links, a main text area with a description of the programs, a 'Documentation' section with links to 'Status', 'Sample input', and 'Distribution Notes', and a list of programs: ENSDF Analysis Programs, NSDFLIB, SETMDC, and ENSDF Utility Programs. Below the list, there is a brief description of the programs and a table of subdirectories: ANS, VAX, WIN or Win32, Linux, Unix, or UNX, each with a description of the source program and extensions.

Search the NNDC:

ENSDF Analysis and Utility Programs

The National Nuclear Data Center maintains and distributes various programs in support of the International Atomic Energy Agency sponsored Nuclear Structure and Decay Data Network. These programs generally use as input files in the Evaluated Nuclear Structure Data File (ENSDF) format.^[1]

Documentation

- ▶ [Status](#) of the ENSDF Analysis and Utility Programs
- ▶ [Sample input](#)
- ▶ [ENSDF Program Library Distribution Notes](#)

- ◆ **ENSDF Analysis Programs**
- ◆ **NSDFLIB** - Subprogram library used by many of the ENSDF Analysis & Utility Programs
- ◆ **SETMDC** - Converts programs containing machine dependent coding
- ◆ **ENSDF Utility Programs**

A brief description of the programs is given in the PDF file [distrm-mem.pdf](#) and the current status of the programs is available in [CODE_STATUS.HTML](#).

Each program, associated test input and output files, and documentation is contained in its own subdirectory. If the source program is ANSI-standard FORTRAN 77 or FORTRAN 90/95, it will also reside in this subdirectory with an FOR or F or F90 mime type, respectively. Below this subdirectory will be up to FOUR subdirectories:

ANS	If the program contains FORTRAN 77 or FORTRAN 90/95 extensions, the ANSI standard version of the source program resides here.
VAX	OpenVMS executable and source program if there are FORTRAN 77 or FORTRAN 90/95 extensions.
WIN or Win32	Windows 95+ executable and source program (HP/Compaq/Digital Visual FORTRAN) if there are FORTRAN 77 or FORTRAN 90/95 extensions.
Linux, Unix, or UNX	Linux or Unix executable and source program (GNU f77 FORTRAN, INTEL FORTRAN 90, or Lahey/Fujitsu FORTRAN 95) if there are FORTRAN 77 or FORTRAN 90/95 extensions.

- Overall upgrade
- Modern look & feel

ENDF/EXFOR/CINDA

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Search the NNDC:

Evaluated Nuclear Data File (ENDF)

Database version of December 15, 2006

ENDF/B-VII.0 officially released

Core nuclear reaction database containing evaluated (recommended) cross sections, spectra, angular distributions, fission product yields, thermal neutron scattering, photo-atomic and other data, with emphasis on neutron-induced reactions. All data are stored in the internationally adopted format (ENDF-6) maintained by CSEWG.

Basic Retrieval | Extended Retrieval | Advanced Retrieval | Help | **Sigma** Retrieval

Target:

Reaction:

Quantity:

Library:

- All
- Selected
- Reset
- ENDF/B-VII.0 (USA, 2006)
- JEFF-3.1 (Europe, 2005)
- JENDL-3.3 (Japan, 2002)
- ENDF/B-VI.8 (USA, 2001)
- ROSFOND (Russia, 2008)

Database Manager: Michal Herman, NNDC, Brookhaven National Laboratory (mwherman@bnl.gov)
 Web and Database Programming: Viktor Zerkov, NDS, International Atomic Energy Agency (V.Zerkov@iaea.org)
 Web Programming: Boris Pritychenko, NNDC, Brookhaven National Laboratory (bndcweb@bnl.gov)
 Data Source: CSEWG (www.nndc.bnl.gov/csewg) and NEA MPEC (www.iaea.org/infocentre/mpec)

- IAEA/NNDC collaboration
- Web/Databases updates
- First implementation of ROSFOND

systematically since the discovery of the neutron.

includes index

Feedback

Database Manager: Viktor Zerkov, NDS, International Atomic Energy Agency (V.Zerkov@iaea.org)
 Web and Database Programming: Viktor Zerkov, NDS, International Atomic Energy Agency (V.Zerkov@iaea.org)
 Web Programming: Boris Pritychenko, NNDC, Brookhaven National Laboratory (bndcweb@bnl.gov)
 Data Source: Network of Nuclear Reaction Data Centres, coordinator: Otto Schwerer, NDS, IAEA (O.Schwerer@iaea.org)

Conclusion & Outlook

- FY09 was a very challenging year
- NNDC Web & Database Services performed really well
- Many challenges still remain
- Work on new products and services improvements will continue (Sigma, NSR, User requests)