



ENDF Landing Pages and DOI Efforts

Donnie Mason
National Nuclear Data Center



11/13/2024

Current ENDF Pages

Consists of over 10 separate web applications

National Nuclear Data Center | Databases | Structure & Decay | Reactions | Resources | Brookhaven National Laboratory

Evaluated Nuclear Data File (ENDF)

Try the updated ENDF landing page | ENDF Library

ENDF/B VIII.1 ENDF/B-VIII.1 released August 30, 2024 | Download Here

ENDF/B-VIII.1 fully incorporates the new Neutron Data Standards, includes improved thermal neutron scattering data and uses new evaluated data from the Coordinated International Evaluation Library Organization (CIELO) pilot project for neutron reactions on ^1H , ^{16}O , ^{56}Fe , ^{235}U , ^{238}U and ^{239}Pu .

Notable advances include updated evaluated data for light nuclei, structural materials, actinides, fission energy release, prompt fission neutron and gamma-ray spectra, thermal neutron scattering data, and charged-particle reactions.

Basic Retrieval | Extended Retrieval | Advanced Retrieval | Help | **Ogma** Retrieval

Target *56fe; fe-56; 26-fe-56; fe**

Reaction *n,*; n,tot; n,g; n,f; n,inf; n,nu**

Quantity *sig; da; de; da/de; res; cov**

Library
 All Selected Reset

- ENDF/B-VIII.0 (USA, 2018)
- ENDF/B-VIII.1 (USA, 2011)
- JEFF-3.3 (Europe, 2017)
- JENDL-5 (Japan, 2021)
- CENDL-3.2 (China, 2020)
- ROSFOND (Russia, 2010)

Submit Reset

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[Acknowledgments](#) - [About Us](#) - [Comments/Questions](#) - [Disclaimer](#)

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Processing Codes
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CALENDF-2010
FRIENDY

Current ENDF Pages

Consists of over 10 separate web applications

- Main page: /endf/

National Nuclear Data Center

Databases Structure & Decay Reactions Resources Brookhaven National Laboratory

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Processing Codes

AMPX

CALENDF-2010

FRENDY

Evaluated Nuclear Data File (ENDF)

Try the updated ENDF landing page [ENDF Library](#)

ENDF/B VIII.1 ENDF/B-VIII.1 released August 30, 2024 [Download Here](#)

Nuclear Data Standards Reference paper

ENDF/B-VIII.0 fully incorporates the new Neutron Data Standards, includes improved thermal neutron scattering data and uses new evaluated data from the Coordinated International Evaluation Library Organization (CIELO) pilot project for neutron reactions on ^1H , ^{16}O , ^{56}Fe , ^{235}U , ^{238}U and ^{239}Pu .

Notable advances include updated evaluated data for light nuclei, structural materials, actinides, fission energy release, prompt fission neutron and gamma-ray spectra, thermal neutron scattering data, and charged-particle reactions.

Basic Retrieval Extended Retrieval Advanced Retrieval Help **Ogma** Retrieval

Target *56fe; fe-56; 26-fe-56; fe**

Reaction *n, *; n,tot; n,g; n,f; n,inf; n,nu**

Quantity *sig; da; de; da/de; res; cov**

Library

All Selected Reset

ENDF/B-VIII.0 (USA, 2018)

ENDF/B-VII.1 (USA, 2011)

JEFF-3.3 (Europe, 2017)

JENDL-5 (Japan, 2021)

CENDL-3.2 (China, 2020)

ROSFOND (Russia, 2010)

Submit Reset

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[Acknowledgments](#) - [About Us](#) - [Comments/Questions](#) - [Disclaimer](#)

Current ENDF Pages

Consists of over 10 separate web applications

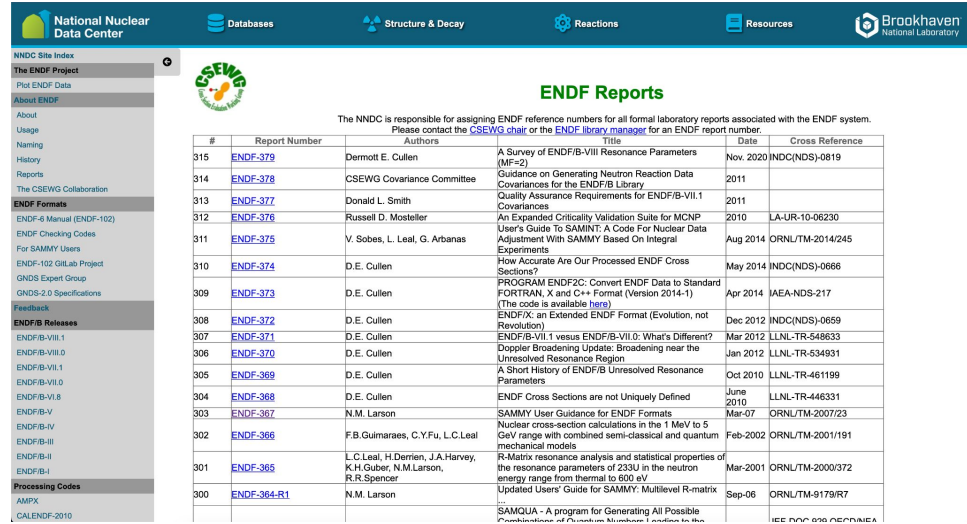
- Main page: /endf/
- Releases: /endf-b1/ to /endf-b8.0/

The screenshot displays the National Nuclear Data Center website. The top navigation bar includes links for Databases, Structure & Decay, Reactions, Resources, and the Brookhaven National Laboratory logo. A left sidebar menu lists various ENDF-related pages, including 'The ENDF Project', 'About ENDF', 'ENDF Formats', 'Feedback', 'ENDF/B Releases', and 'Processing Codes'. The main content area is titled 'Evaluated Nuclear Data File (ENDF)' and features a prominent announcement for 'ENDF/B-VIII.1 released August 30, 2024'. Below this, there is a detailed description of the release, highlighting its incorporation of new Neutron Data Standards and data from the CIELO project. A search interface is visible, with tabs for 'Basic Retrieval', 'Extended Retrieval', 'Advanced Retrieval', and 'Ogma Retrieval'. The 'Basic Retrieval' section includes fields for 'Target', 'Reaction', and 'Quantity', each with a list of options and checkboxes. A 'Library' section on the right allows users to select from various data libraries, with 'ENDF/B-VIII.1 (USA, 2011)' selected. At the bottom, there is a footer with sponsorship information and links for 'Acknowledgments', 'About Us', 'Comments/Questions', and 'Disclaimer'.

Current ENDF Pages

Consists of over 10 separate web applications

- Main page: /endf/
- Releases: /endf-b1/ to /endf-b8.0/
- Reports: /endfdocs/

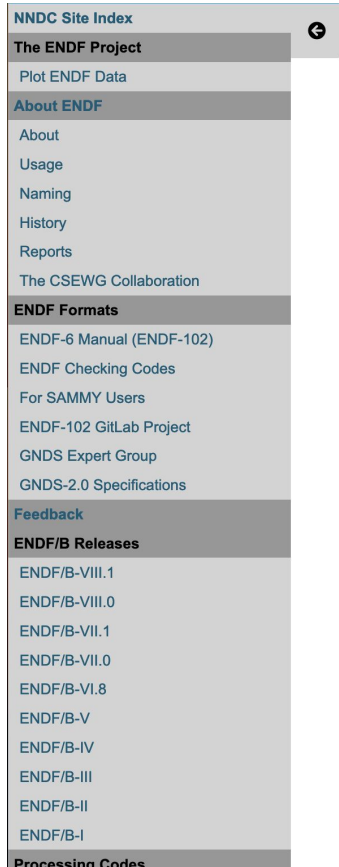


ENDF Reports

The NNDC is responsible for assigning ENDF reference numbers for all formal laboratory reports associated with the ENDF system. Please contact the [CSEWG chair](#) or the [ENDF library manager](#) for an ENDF report number.

#	Report Number	Authors	Title	Date	Cross Reference
315	ENDF-379	Dermott E. Cullen	A Survey of ENDF/B-VIII Resonance Parameters (MF=2)	Nov. 2020	NDC(NDS)-0819
314	ENDF-378	CSEWG Covariance Committee	Guidance on Generating Neutron Reaction Data Covariances for the ENDF/B Library	2011	
313	ENDF-377	Donald L. Smith	Quality Assurance Requirements for ENDF/B-VII.1 Covariances	2011	
312	ENDF-376	Russell D. Mosteller	An Expanded Criticality Validation Suite for MCNP User's Guide To SAMMY: A Code For Nuclear Data Adjustment With SAMMY Based on Integral Experiments	2010	LA-UR-10-06230
311	ENDF-375	V. Sobes, L. Leal, G. Arbanas	How Accurate Are Our Processed ENDF Cross Sections?	Aug 2014	ORNL/TM-2014/245
310	ENDF-374	D.E. Cullen	PROGRAM ENDF2C: Convert ENDF Data to Standard FORTRAN, X and C++ Format (Version 2014-1) (The code is available here)	May 2014	NDC(NDS)-0686
309	ENDF-373	D.E. Cullen	ENDF/X: an Extended ENDF Format (Evolution, not Revolution)	Apr 2014	IAEA-NDS-217
308	ENDF-372	D.E. Cullen	ENDF/B-VII.1 versus ENDF/B-VII.0: What's Different?	Dec 2012	INDC(NDS)-0659
307	ENDF-371	D.E. Cullen	Doppler Broadening Update: Broadening near the Unresolved Resonance Region	Mar 2012	LLNL-TR-548633
306	ENDF-370	D.E. Cullen	A Short History of ENDF/B Unresolved Resonance Parameters	Jan 2012	LLNL-TR-534931
305	ENDF-369	D.E. Cullen	ENDF Cross Sections are not Uniquely Defined	Oct 2010	LLNL-TR-461199
304	ENDF-368	D.E. Cullen	SAMMY User Guidance for ENDF Formats	June 2010	LLNL-TR-446331
303	ENDF-367	N.M. Larson	Nuclear cross-section calculations in the 1 MeV to 5 GeV range with combined semi-classical and quantum mechanical models	Mar-07	ORNL/TM-2007/23
302	ENDF-366	F.B. Guimarães, C.Y.Fu, L.C.Leal	R-Matrix resonance analysis and statistical properties of the resonance parameters of 233U in the neutron energy range from thermal to 500 eV	Feb-2002	ORNL/TM-2001/191
301	ENDF-365	L.C. Leal, H. Derrien, J.A. Harvey, K.H. Guber, N.M. Larson, R.R. Spencer	Updated Users' Guide for SAMMY: Multilevel R-matrix	Mar-2001	ORNL/TM-2000/372
300	ENDF-364-R1	N.M. Larson	SAMGUA - A Program for Generating All Possible Combinations of Reaction Numbers Leading to the	Sep-06	ORNL/TM-9179/R7

“Shared” Menu



- **Menu Loaded from a Static `menu.html` File**
The same `menu.html` is included on each page.
- **Separate `menu.html` for Each Web Application**
Each application manages its own version of `menu.html`, increasing redundancy.
- **Hardcoded Data in HTML**
Content such as menu items is directly embedded in the HTML, lacking flexibility.
- **Static Content Pretending to be Dynamic**
Static HTML content is used to simulate dynamic behavior, leading to potential issues.
- **Poor User Experience**
Menu items feel disjointed and unintuitive between web applications, difficult to navigate pages
- **Poor Developer Experience**
Managing separate menu files across pages creates unnecessary complexity
 - **High Maintenance Overhead**
Updating menu content across multiple `menu.html` files requires manual changes everywhere.
 - **Difficulty Implementing Updates**
Adding or modifying menu items is error-prone and time-consuming due to redundant static files.

“Shared” Menu

/endf/

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ENDF/B Releases

Motivations

- ENDF/B-VIII.1 released August 30, 2024
- Public Reusable Research (PuRe) Data Resource
 - DOE designation
 - Requires DOIs and associated permanent landing pages
- Legacy design decisions hindering progress
 1. Adhere to outdated design choices
 - a. Compounding problem
 2. Redesign based on
 - a. Application requirements
 - b. User needs
 - c. Modern practices

ENDF/B
VIII.1

**PuRe**
Data Resources

Soft Release

- ENDF Library
 - Shared resources
 - Release specific resources
- ENDF Releases
 - DOI landing pages
 - Data downloads
 - Links to library content
- Updated front facing pages and navigation
- Internal pages still need updates

The screenshot displays the National Nuclear Data Center website. The top navigation bar includes links for Databases, Structure & Decay, Reactions, Resources, and the Brookhaven National Laboratory logo. A left sidebar menu lists various ENDF-related pages, including 'The ENDF Project', 'About ENDF', 'ENDF Formats', 'Feedback', 'ENDF/B Releases', and 'Processing Codes'. The main content area is titled 'Evaluated Nuclear Data File (ENDF)' and features a prominent announcement for 'ENDF/B-VIII.1 released August 30, 2024'. Below this, there is a detailed description of the release, highlighting its incorporation of new standards and data from the CIELO project. A 'Basic Retrieval' section is visible, showing search criteria for Target, Reaction, and Quantity, along with a 'Library' selection box that includes options like 'ENDF/B-VIII.0 (USA, 2018)', 'ENDF/B-VIII.1 (USA, 2011)', 'JEFF-3.3 (Europe, 2017)', 'JENDL-5 (Japan, 2021)', 'CENDL-3.2 (China, 2020)', and 'ROSFOND (Russia, 2010)'. The page is sponsored by the Office of Nuclear Physics, Office of Science, and U.S. Department of Energy.

ENDF Library: <https://www.nndc.bnl.gov/endl-library/>

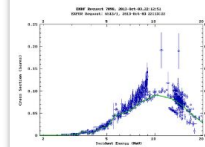
Evaluated Nuclear Data File (ENDF)

ENDF/B VIII.1

Library Releases

DOWNLOAD FULL RELEASES

- 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.



Sigma

PLOT ENDF DATA

- Retrieving and plotting reaction evaluation data from multiple libraries (e.g., ENDF).



Cross Section Evaluation Working Group

CSEWG

- A cooperative effort of the national laboratories, industry, and universities in the United States and Canada, responsible for the production of ENDF/B.

ENDF/B

ENDF Formats

VIEW FORMAT MANUALS

- View and download format manuals for ENDF-6 from the current release ENDF-102 (2023) to ENDF/A BNL-8381 (1965). GNDS specifications are also provided.



ENDF-6 Formats Manual
Data Formats and Procedures for the Evaluated Nuclear Data File
ENDF-6 (ENDF-6A, ENDF-6B, and ENDF-6C)

ENDF-6 Formats Manual
Data Formats and Procedures for the Evaluated Nuclear Data File
ENDF-6 (ENDF-6A, ENDF-6B, and ENDF-6C)

Written by the Members of the Cross Section Evaluation Working Group
Edited by
B. B. Barnes
September 28, 2023

Reports

FORMAL LABORATORY REPORTS

- The NNDC is responsible for assigning ENDF reference numbers for all formal laboratory reports associated with the ENDF system.



History

ENDF HISTORY & NAMING

- Discover the history and naming of the Evaluated Nuclear Data File (ENDF).

ENDF Library: <https://www.nndc.bnl.gov/endl-library/>



National Nuclear
Data Center



Databases



Structure & Decay



Reactions



Resources



Brookhaven
National Laboratory

Evaluated Nuclear Data File (ENDF)

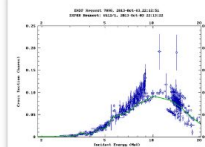


ENDF/B
VIII.1

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ENDF/B

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ENDF-6 Formats Manual
Data Formats and Procedures for the Evaluated Nuclear Data File
ENDF-6 (V.I., ENDF-6-V.I. and ENDF-6-V.II)

Written by the Members of the Cross Section Evaluation Working Group

ENDF-6
10.1.1.1

Revised 10.1.1.1

Reports

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History

ENDF HISTORY & NAMING

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ENDF Releases: <https://www.nndc.bnl.gov/endl-releases/>

National Nuclear Data Center Databases Structure & Decay Reactions Resources Brookhaven National Laboratory

Version: B-VIII.0


Full Library Neutrons Neutron Standards Thermal Scattering Photoneuclear Deuterons Tritons Helium-3 Alpha NFY SFY

ENDF B-VIII.0 Full Library

ENDF/B-VIII.0 fully incorporates the new Neutron Data Standards, includes improved thermal neutron scattering data and uses new evaluated data from the Coordinated International Evaluation Library Organization (CIELO) pilot project for neutron reactions on 1H, 16O, 56Fe, 235U, 238U and 239Pu.

The evaluations benefit from recent experimental data obtained in the U.S. and Europe, and improvements in theory and simulation. Notable advances include updated evaluated data for light nuclei, structural materials, actinides, fission energy release, prompt fission neutron and gamma-ray spectra, thermal neutron scattering data, and charged-particle reactions.

CSEWG has performed integral validation testing on a wide range of critically, reaction rate, and neutron transmission benchmarks. In general, our integral validation demonstrates that performance of the library is a noticeable improvement over the previous ENDF/B-VII.1 library.



ENDF B-VIII.0 Full Library (488 Mb)

Format Manual

Download Checksum: MD5

2e95b005a853ec378335485ff02819c9

Download

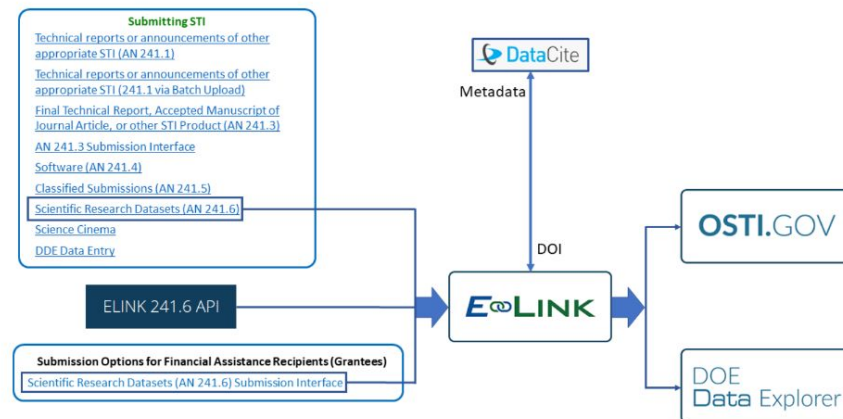
Citation ASCII Copy

D.A. Brown, M.B. Chadwick, R. Capote, A.C. Kahler, A. Trkov, M.W. Herman, A.A. Sonzogni, Y. Danon, A.D. Carlson, M. Dunn, D.L. Smith, G.M. Hale, G. Arbanas, R. Arcilla, C.R. Bates, B. Beck, B. Becker, F. Brown, R.J. Casperson, J. Conlin, D.E. Cullen, M.-A. Descalle, R. Firestone, T. Gaines, K.H. Guber, A.I. Hawari, J. Holmes, T.D. Johnson, T. Kawano, B.C. Kiedrowski, A.J. Koning, S. Kopecky, L. Leal, J.P. Lestone, C. Lubitz, J.I. Marquez Damian, C.M. Mattoon, E.A. McCutchan, S. Mughabghab, P. Navratil, D. Neudecker, G.P.A. Nobre, G. Noguere, M. Paris, M.T. Pigni, A.J. Plompen, B. Pritychenko, V.G. Pronyaev, D. Roubtsov, D. Rochman, P. Romano, P. Schillebeeckx, S. Simakov, M. Sin, I. Sirakov, B. Sieaford, V. Sobes, E.S. Soukhovitskii, I. Stetcu, P. Talou, I. Thompson, S. van der Marck, L. Welsler-Sherrill, D. Wiarda, M. White, J.L. Wormald, R.Q. Wright, M. Zerke, G. Zerovnik, Y. Zhu, "ENDF/B-VIII.0: The 8th Major Release of the Nuclear Reaction Data Library with CIELO-project Cross Sections, New Standards and Thermal Scattering Data", Nuclear Data Sheets, 148: pp. 1-142 (2018).

ENDF DOIs and Query Parameters

- **Planned DOIs for each release and sub-library**
 - **Working with BNL library**
 - **BNL > OSTI > DataCite**
 - **Assembling required metadata**
- **Will include related identifiers**
 - **Metadata used to link datasets/resources**
 - **Sublibrary to Release**
 - **Release to Sublibrary**
 - **Release to manual**
 - **Release to publication**
- **Same base landing page: /endf-releases/**
 - **Dynamically generated using query parameters**
 - **Navigate to release and sublibraries directly**

Dataset Record Submission Workflow



Data Driven Content: Dynamic HTML Generation

What is Data-Driven Content?

- Content generated dynamically from data files (e.g., JSON).
- Flexibility to adapt content based on user input or data changes.

JSON as a Data Source

- Use JSON files to store structured data for your content.
- Attributes in JSON files describe content objects (e.g., titles, images, text, links).

Query Parameters for Dynamic Content

- Use URL query parameters to select and filter specific data.
- Parameters can specify which object or data subset to display.

Building HTML with JavaScript

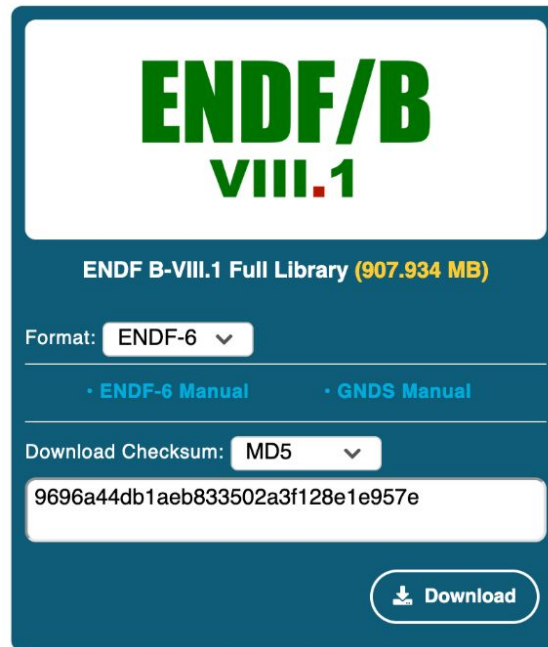
- JavaScript fetches and parses JSON data.
- Dynamically uses data to build HTML “templates”

Advantages

- **Flexibility:** Easily update content without modifying the HTML.
- **Scalability:** Efficiently manage large volumes of content.
- **Consistency:** Ensure uniform content presentation across multiple pages by centralizing the data source.

Example: Define Required Attributes

- **Attributes**
 - Image
 - File title
 - File size
 - File format
 - ENDF-6
 - GNDS
 - Links
 - ENDF-6 Manual
 - GNDS Manual
 - File checksums
 - MD5
 - SHA1
 - Download button
 - File location



Example: Define Data Schema

```
{
  "name": "ENDF B-VIII.1",
  "version": "B-VIII.1",
  "title": "ENDF B-VIII.1 Full Library",
  "image": "./images/endfb8.1.png",
  "files": {
    "ENDF-6": {
      "name": "ENDF-B-VIII.1.tar.gz",
      "size": "907.934 MB",
      "checksums": {
        "MD5": "9696a44db1aeb833502a3f128e1e957e",
        "SHA1": "11022345bd2a1313eae8be7554a7c4a88ee74867"
      }
    },
    "GNDS": {
      "name": "ENDF-B-VIII.1-GNDS.zip",
      "size": "1.24 GB",
      "checksums": {
        "MD5": "e528edd74b7ecc66fefe020e5c4c7c43",
        "SHA1": "e12380b6dcc779a64aab1b387929054b1ab2dbdc"
      }
    }
  },
  "links": [
    {
      "name": "ENDF-6 Manual",
      "href": "/endfdocs/ENDF-102-2023.pdf"
    },
    {
      "name": "GNDS Manual",
      "href": "https://www.oecd-nea.org/jcms/pl_85822/specifica"
    }
  ]
},
```

ENDF/B VIII.1

ENDF B-VIII.1 Full Library (907.934 MB)

Format:

[ENDF-6 Manual](#) [GNDS Manual](#)

Download Checksum:

[Download](#)

Example: Define HTML Structure and CSS Styling

```
<div class="downloadCard" data-sublibrary="full" data-format="ENDF-6"> flex
  <div class="imageHolder"> flex
    
  </div>
  <h1 class="cardTitle">
    ENDF B-VIII.1 Full Library
    <span>(907.934 MB)</span>
  </h1>
  <div class="cardContent">
    <div class="cksums">...</div> flex
    <div class="cardLinks">...</div> flex
    <div class="cksums cksumSelectContainer">...</div> flex
  </div>
  <button class="cardBtn" data-lib="full" data-filename="ENDF-B-VIII.1.tar.gz"> event
    <i class="fa fa-download">...</i>
    Download
  </button>
</div>
```

**ENDF/B
VIII.1**

ENDF B-VIII.1 Full Library (907.934 MB)

Format:

[ENDF-6 Manual](#) [GNDS Manual](#)

Download Checksum:

9696a44db1aeb833502a3f128e1e957e

[Download](#)

How to draw an owl

1.



1. Draw some circles

2.



2. Draw the rest of the owl

Example: Dynamically Generate HTML using JavaScript

```
function createElement(tag, classList = "", title = "") {  
  let element = document.createElement(tag);  
  if (classList) element.classList = classList;  
  if (title) element.title = title;  
  return element;  
}
```

```
buildDownloadCard(lib, data){  
  let card = createElement("div", "downloadCard");  
  let imageHolder = createElement("div", "imageHolder");  
  let img = document.createElement("img");  
  img.setAttribute("src", data.image)  
  img.setAttribute("alt", `${this.version} ${this.sublibrary}`);  
  imageHolder.appendChild(img);  
  
  let title = createElement("h1", "cardTitle");  
  title.innerHTML = `_${data.title} <span>(${data.files["ENDF-6"].size})</span>`;  
  let content = createElement("div", "cardContent");  
  let links = createElement("div", "cardLinks");  
  for(let link of data.links) {  
    let a = createElement("a");  
    a.innerHTML = link.name;  
    let href = lib == "full" ? link.href : `./releases/${this.version}/${lib}/${link.href}`;  
    a.setAttribute("href", href);  
    a.setAttribute("target", "_blank");  
    links.appendChild(a);  
  }  
}
```



ENDF/B
VIII.1

ENDF B-VIII.1 Full Library (907.934 MB)

Format:

[ENDF-6 Manual](#) [GNDS Manual](#)

Download Checksum:

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Example: Data Driven Dynamic Content

```
{
  "name": "ENDF B-VIII.1",
  "version": "B-VIII.1",
  "title": "ENDF B-VIII.1 Full Library",
  "image": "./images/endfb8.1.png",
  "files": {
    "ENDF-6": {
      "name": "ENDF-B-VIII.1.tar.gz",
      "size": "907.934 MB",
      "checksums": {
        "MD5": "9696a44db1aeb833502a3f128e1e957e",
        "SHA1": "11022345bd2a1313eae8be7554a7c4a88ee74867"
      }
    },
    "GNDS": {
      "name": "ENDF-B-VIII.1-GNDS.zip",
      "size": "1.24 GB",
      "checksums": {
        "MD5": "e528edd74b7ecc66fefe020e5c4c7c43",
        "SHA1": "e12380b6dcc779a64aab1b387929054b1ab2dbdc"
      }
    }
  },
  "links": [
    {
      "name": "ENDF-6 Manual",
      "href": "/endfdocs/ENDF-102-2023.pdf"
    },
    {
      "name": "GNDS Manual",
      "href": "https://www.oecd-neo.org/jcms/pl_85822/specifica"
    }
  ]
},
```

ENDF/B VIII.1

ENDF B-VIII.1 Full Library (907.934 MB)

Format:

[ENDF-6 Manual](#) [GNDS Manual](#)

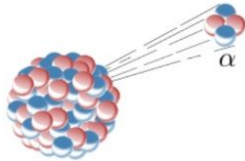
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9696a44db1aeb833502a3f128e1e957e

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Example: Data Driven Dynamic Content

```
"alphas": {
  "name": "Alpha",
  "title": "Alpha Reaction Sublibrary",
  "image": "./images/alphas.jpg",
  "files": {
    "ENDF-6": {
      "name": "alphas-version.VIII.1.tar.gz",
      "size": "181 KB",
      "checksums": {
        "MD5": "6fcf286ea16af58ce4c7dd565eb5c66a",
        "SHA1": "88145a43cb1a2656b967dfdcaa57a48e192caf9b"
      }
    },
    "GNDS": {
      "name": "alphas-version.VIII.1.gnds.zip",
      "size": "156 KB",
      "checksums": {
        "MD5": "31623a4934532a87cf9336bf1510aab7",
        "SHA1": "5ed84956bee7e7bacb99cd2e4768ca9d03a12ba6"
      }
    }
  },
  "links": [
    {
      "name": "Release Notes",
      "href": "../releasenotes.html?sublibrary=alphas"
    },
    {
      "name": "Changelog",
      "href": "../changelog.html?sublibrary=alphas"
    },
    {
      "name": "Material List",
      "href": "../materials.html?sublibrary=alphas"
    }
  ]
},
```



Alpha Reaction Sublibrary (181 KB)

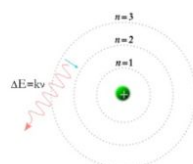
Format:

[Release Notes](#) · [Changelog](#) · [Material List](#)

Download Checksum:

Example: Data Driven Dynamic Content

```
"atomic_relax": {
  "name": "Atomic Relaxation",
  "title": "Atomic Relaxation Reaction Sublibrary",
  "image": "./images/atomic_relax.jpg",
  "files": {
    "ENDF-6": {
      "name": "atomic_relax-version.VIII.1.tar.gz",
      "size": "1.397 MB",
      "checksums": {
        "MD5": "ee61444ed4a5ae6358da9d6f170212c",
        "SHA1": "5eaaa1e530a377662b38a6e1151a37f80a129de1"
      }
    },
    "GNDS": {
      "name": "atomic_relax-version.VIII.1.gnds.zip",
      "size": "1.75 MB",
      "checksums": {
        "MD5": "70e9ca0c481236499b7a3e0a490f4ef2",
        "SHA1": "c648195fabde86fdaf4bbeaae9c83dd14b55081b"
      }
    }
  },
  "links": [
    {
      "name": "Release Notes",
      "href": "../releasenotes.html?sublibrary=atomic_relax"
    },
    {
      "name": "Changelog",
      "href": "../changelog.html?sublibrary=atomic_relax"
    },
    {
      "name": "Material List",
      "href": "../materials.html?sublibrary=atomic_relax"
    }
  ]
},
```



Atomic Relaxation Reaction Sublibrary (1.75 MB)

Format:

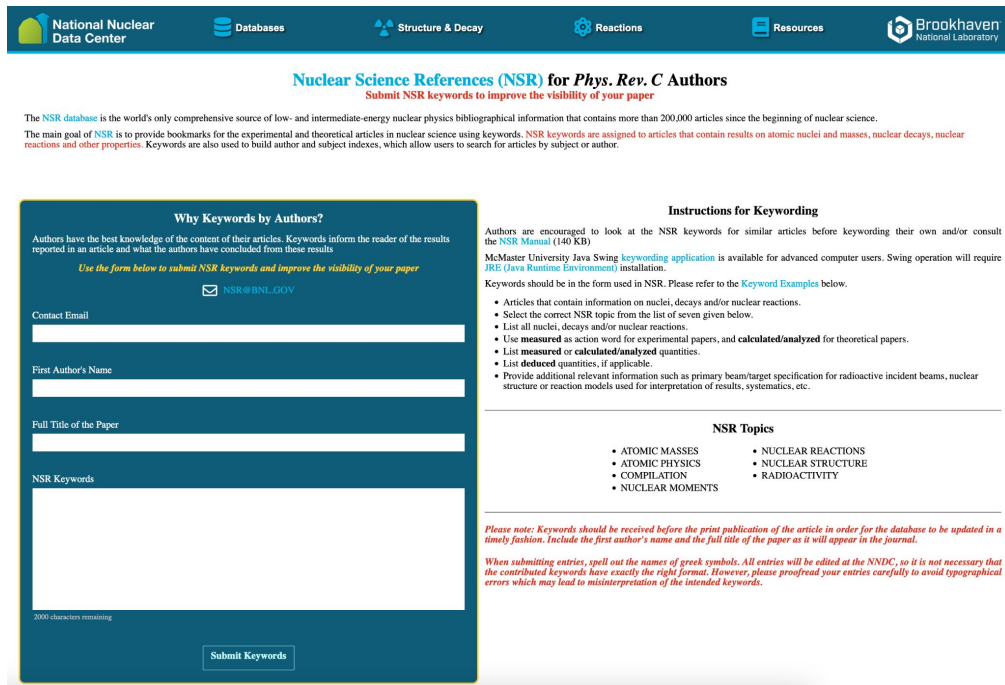
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Current NSR Keywording Page

- Current page consists of a simple web form
- PRC authors are encouraged to send keywords
- Instructions specify writing in a very specific NSR format
- A few submission per month with mixed formatting accuracy



The screenshot shows the NSR Keywording Page interface. At the top, there is a navigation bar with links for National Nuclear Data Center, Databases, Structure & Decay, Reactions, Resources, and Brookhaven National Laboratory. The main heading is "Nuclear Science References (NSR) for Phys. Rev. C Authors" with a sub-heading "Submit NSR keywords to improve the visibility of your paper". Below this, there is a brief introduction of the NSR database and its goals. The central part of the page features a form titled "Why Keywords by Authors?" with fields for Contact Email, First Author's Name, Full Title of the Paper, and NSR Keywords. To the right of the form, there are "Instructions for Keywording" and a list of "NSR Topics". At the bottom of the form, there is a "Submit Keywords" button and a character count.

Nuclear Science References (NSR) for Phys. Rev. C Authors
Submit NSR keywords to improve the visibility of your paper

The NSR database is the world's only comprehensive source of low- and intermediate-energy nuclear physics bibliographical information that contains more than 200,000 articles since the beginning of nuclear science. The main goal of NSR is to provide bookmarks for the experimental and theoretical articles in nuclear science using keywords. NSR keywords are assigned to articles that contain results on atomic nuclei and masses, nuclear decays, nuclear reactions and other properties. Keywords are also used to build author and subject indexes, which allow users to search for articles by subject or author.

Why Keywords by Authors?
Authors have the best knowledge of the content of their articles. Keywords inform the reader of the results reported in an article and what the authors have concluded from these results
Use the form below to submit NSR keywords and improve the visibility of your paper

✉ NSR@BNL.GOV

Contact Email

First Author's Name

Full Title of the Paper

NSR Keywords

2000 characters remaining

Submit Keywords

Instructions for Keywording
Authors are encouraged to look at the NSR keywords for similar articles before keywording their own and/or consult the NSR Manual (140 KB)
McMaster University Java Swing keywording application is available for advanced computer users. Swing operation will require JRE (Java Runtime Environment) installation.
Keywords should be in the form used in NSR. Please refer to the [Keyword Examples](#) below.

- Articles that contain information on nuclei, decays and/or nuclear reactions.
- Select the correct NSR topic from the list of seven given below.
- List all nuclei, decays and/or nuclear reactions.
- Use **measured** as action word for experimental papers, and **calculated/analyzed** for theoretical papers.
- List **measured** or **calculated/analyzed** quantities.
- List **deduced** quantities, if applicable.
- Provide additional relevant information such as primary beam/target specification for radioactive incident beams, nuclear structure or reaction models used for interpretation of results, systematics, etc.

NSR Topics

- ATOMIC MASSES
- ATOMIC PHYSICS
- COMPILATION
- NUCLEAR REACTIONS
- NUCLEAR STRUCTURE
- RADIOACTIVITY
- NUCLEAR MOMENTS

Please note: Keywords should be received before the print publication of the article in order for the database to be updated in a timely fashion. Include the first author's name and the full title of the paper as it will appear in the journal.

When submitting entries, spell out the names of greek symbols. All entries will be edited at the NNDC, so it is not necessary that the contributed keywords have exactly the right format. However, please proofread your entries carefully to avoid typographical errors which may lead to misinterpretation of the intended keywords.

HSRP: High School Research Program Intern

- 6 week educational program
- Jolene Cao
 - Some Python experience
 - No previous web development experience
 - Never used JSON
- Project to develop a dynamic data driven alternative



NSR Keyword Page Alternative

- Guided keywording
- Dynamically generated form
- User input determines what questions are loaded next
- Questions are dynamically rendered based on type
- Flexible to add
 - Additional questions
 - Additional question types

The screenshot shows the top navigation bar of the National Nuclear Data Center website, including links for Databases, Structure & Decay, Reactions, and Resources. Below this is the main heading "Nuclear Science References (NSR)" with a sub-heading "Submit NSR keywords to improve the visibility of your paper". A brief description of the NSR database is provided. The main content area is divided into two sections: "Generate Keywords" and "Why Generate Keywords?". The "Generate Keywords" section contains a form with four input fields: "First Author's Name:", "Email Address:", "Full Title of Paper:", and "Reference:". A "Get Started" button is located below the form. The "Why Generate Keywords?" section explains the purpose of the generator and provides instructions on how to use it. At the bottom, a light blue box contains the text: "Questions regarding the NSR database and keywording can be sent to NSR@BNL.GOV".

Nuclear Science References (NSR)
Submit NSR keywords to improve the visibility of your paper

The **NSR** database is the world's only comprehensive source of low- and intermediate-energy nuclear physics bibliographical information that contains more than 200,000 articles since the beginning of nuclear science.
The main goal of **NSR** is to provide bookmarks for the experimental and theoretical articles in nuclear science using keywords. **NSR** keywords are assigned to articles that contain results on atomic nuclei and masses, nuclear decays, nuclear reactions and other properties. Keywords are also used to build author and subject indexes, which allow users to search for articles by subject or author.

Generate Keywords

First Author's Name:

Email Address:

Full Title of Paper:

Reference:

[Get Started](#)

Why Generate Keywords?

Keywords inform the reader of the results reported in an article and what the authors have concluded from these results. Use the generator on the left to submit NSR keywords and improve the visibility of your paper.
Use the generator on the left to submit NSR keywords and improve the visibility of your paper.

Questions regarding the NSR database and keywording can be sent to NSR@BNL.GOV

NSR Keyword Page Alternative

```
"root": {
  "title": "NSR Topics",
  "instructions": "Please select the most relevant topic(s) of your paper",
  "note": "Note: If more than one topic applies to your paper, please select all the topics that apply.",
  "type": "checkbox",
  "responses": [
    {
      "label": "Atomic Masses",
      "children": ["massesNuclides"]
    },
    {
      "label": "Atomic Physics",
      "children": ["atomicSymbol"]
    },
    {
      "label": "Compilation",
      "children": ["compilationNuclides"]
    },
    {
      "label": "Nuclear Moments",
      "children": ["momentsNuclides"]
    },
    {
      "label": "Nuclear Reactions",
      "children": ["reaction"]
    },
    {
      "label": "Nuclear Structure",
      "children": ["structureNuclides"]
    },
    {
      "label": "Radioactivity",
      "children": ["radioactivity"]
    }
  ]
}
```

National Nuclear Data Center Databases Structure & Decay Reactions Resources Brookhaven National Laboratory

Nuclear Science References (NSR)

Submit NSR keywords to improve the visibility of your paper

The NSR database is the world's only comprehensive source of low- and intermediate-energy nuclear physics bibliographical information that contains more than 200,000 articles since the beginning of nuclear science.

The main goal of NSR is to provide bookmarks for the experimental and theoretical articles in nuclear science using keywords. NSR keywords are assigned to articles that contain results on atomic nuclei and masses, nuclear decays, nuclear reactions and other properties. Keywords are also used to build author and subject indexes, which allow users to search for articles by subject or author.

NSR Topics

Please select the most relevant topic(s) of your paper

Note: If more than one topic applies to your paper, please select all the topics that apply. You will be asked to go through the keyword generation process one time for each topic you select.

Atomic Masses Atomic Physics Compilation Nuclear Moments Nuclear Reactions Nuclear Structure Radioactivity

[Back](#) [Next](#)

Questions regarding the NSR database and keywording can be sent to NSR@BNL.GOV

Demonstrations

Thank you