

Sigma Web interface

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SIXTY YEARS
OF DISCOVERY
1947-2007

BROOKHAVEN
NATIONAL LABORATORY



Project Motivation

- ❑ Produce user-friendly ENDF Web Services
- ❑ Web dissemination of ENDF/B-VII.0 library that was released on 12/15/06
- ❑ Nuclear Data Services are part of the NNDC mission



Sigma Web Interface I

- Sigma Web Interface
- 2007
- It includes data from several libraries
- ENDF/B-VI.8
- Search and plot
- Access to the data and its interpretation

The screenshot displays the NNDC Sigma Web Interface. At the top, it features the NNDC logo and the Brookhaven National Laboratory logo. Below the navigation bar, there are links for "Retrieval", "Sigma", and "Plotting". The main content area shows a plot titled "64-Gd-157(n,gamma)". The plot is a log-log graph of Cross Section (b) versus Incident Neutron Energy (eV). The y-axis ranges from 10⁻⁶ to 10⁷ b, and the x-axis ranges from 10⁻⁵ to 10⁷ eV. The plot shows a complex structure with several peaks and valleys, particularly between 10⁰ and 10³ eV. To the left of the plot is a periodic table with the element Gd highlighted. To the right of the plot is a control panel with "Update Plot" and "Reset" buttons, and two input fields for energy and cross-section ranges. Below the plot is a list of references, each with a checkbox and a color-coded line corresponding to the plot.

64-Gd-157(n,gamma)

Library: ENDF/B

Cursor at : x = (eV) y = (b)

To Zoom, left click on one of the limits and release the button on the other limit. Zooming will work with the latest versions of FireFox and Internet Explorer. Cross sections plots are reconstructed using the code PREPRO at T=300 K.

#	Reference
<input checked="" type="checkbox"/>	— ENDF/B-VII.0 Library
<input checked="" type="checkbox"/>	— JEFF-3.1 Library
<input checked="" type="checkbox"/>	— JENDL-3.3 Library
<input checked="" type="checkbox"/>	— ENDF/B-VI.8 Library
<input checked="" type="checkbox"/>	1 Kim 2006
<input checked="" type="checkbox"/>	2 Kim 2006
<input checked="" type="checkbox"/>	3 Wisshak 1995
<input checked="" type="checkbox"/>	4 Wisshak 1995
<input checked="" type="checkbox"/>	5 Voignier 1992
<input checked="" type="checkbox"/>	6 Beer 1988
<input checked="" type="checkbox"/>	7 Nakajima 1984
<input checked="" type="checkbox"/>	8 Joly 1981
<input checked="" type="checkbox"/>	9 Shorin 1974
<input checked="" type="checkbox"/>	10 Groshev 1962
<input checked="" type="checkbox"/>	11 Tattersall 1960
<input checked="" type="checkbox"/>	12 Pattenden 1958

Sigma Web Interface II

- ❑ PREPRO, ENDF Interpreted, X4toC4 codes were implemented in Sigma
- ❑ Zooming, credit to A. Sonzogni
- ❑ User response (X4 improvements & mathematical operations)
- ❑ Current Sigma usage comparable with previous version of ENDF and keeps growing

Present Development I



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

EXFOR Retrieval Web appli

Periodic Table Browse
Direct

Target:

Reaction:

or Projectile:

Quantity:

National Nuclear Data Center

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

Li-6(n,p)

Cursor at : x = (eV) y = (b)

To Zoom, left click on one of the limits and release the button on the other limit. Zooming will work with the latest versions of Firefox and Internet Explorer. Cross sections plots are reconstructed using the code PREPRO at T=300 K.

Retrieval Plotting

Update Plot
Reset

1.92E6	≤ E (eV) ≤	2.80E7	Log ▾
1.20E-4	≤ σ (b) ≤	5.22E-2	Log ▾

[View evaluated data](#)
[View experimental data](#)
[View X4 format](#)
[Add your data](#)

#	Reaction	Reference
<input checked="" type="checkbox"/>	n,p	ENDF/B-VII.0 Library
<input checked="" type="checkbox"/>	n,p	JEFF-3.1 Library
<input checked="" type="checkbox"/>	n,p	JENDL-3.3 Library
<input checked="" type="checkbox"/>	n,p	ENDF/B-VI.8 Library
<input checked="" type="checkbox"/>	n,particle emission	Garg 1979
<input checked="" type="checkbox"/>	n,p	Prasad 1971
<input checked="" type="checkbox"/>	n,p	Schantl 1970
<input checked="" type="checkbox"/>	n,p	Presser 1969
<input checked="" type="checkbox"/>	n,p	Barry 1963
<input checked="" type="checkbox"/>	n,p	Mainsbridge 1961
<input checked="" type="checkbox"/>	n,p	Mikhaylina 1961
<input checked="" type="checkbox"/>	n,p	Frye Jr 1954
<input checked="" type="checkbox"/>	n,p	Battat 1953



Present Development II

- A
- C
- b
- V

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

Retrieval Plotting

Evaluated

Periodic Table Browser | Directory Tree Browser

National Nuclear Data Center

NNDC Databases:

Select a single entry for plotting. E processing multiple entries may slow

<input type="checkbox"/>	#	Target	Reaction	Qu
<input type="checkbox"/>	1	3-Li- 6	n, p	
<input type="checkbox"/>	2	3-Li- 6	n, p	
<input type="checkbox"/>	3	3-Li- 6	n, p	
<input type="checkbox"/>	4	3-Li- 6	n, p	
<input checked="" type="checkbox"/>	5	3-Li- 6	n, p	

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

Retrieval Plotting

1.20E1	≤ E (eV) ≤	1.68E2	Log ▾
7.26E-5	≤ σ (b) ≤	1.40E-3	Log ▾

View experimental data
Add your data

<input type="checkbox"/>	#	Reaction	Reference
<input checked="" type="checkbox"/>	1	n, p	Frye Jr 1954

3-Li-6(n,p) Angular

Cursor at : x = (eV) y = (degrees)

To Zoom, left click on one of the limits and release the button on the other limit. Zooming will work with the latest versions of FireFox and Internet Explorer. Angular distributions plots are reconstructed using PTLTST and LSTTAB codes.

Brookhaven Science Associates

Boris Pritychenko

6

2007 CSEWG Annual Meeting,
BNL, November 6-8

Present & Future Development

- ❑ Nuclear Data Covariances
- ❑ Mathematical Operations



Conclusion & Outlook

- ❑ Sigma Web Interface v.1.0 was released on April 15, 2007
- ❑ Direct X4 Retrievals & Angular Distributions are under development
- ❑ Nuclear Data Covariances Web Interfaces just started
- ❑ Work on mathematical operations will start in 2008
- ❑ Suggestions from the CSEWG?