



Enhancing User Experience to Facilitate Nuclear Physics Research through NuDat

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National Nuclear Data Center
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Alejandro A. Sonzogni



04/06/2022

Evaluated Nuclear Structure Data File

ENSDF landing page:

www.nndc.bnl.gov/ensdfarchivals

DOI:

10.18139/nndc.ensdf/1845010

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

Evaluated Nuclear Structure Data File (ENSDF)

Contains recommended nuclear structure and decay data for all the known nuclides, which are obtained following a critical review of all available experimental data, supplemented with systematic trend studies and theoretical models. ENSDF data include (i) nuclear level properties, such as observation source, energy, half-life, decay modes, spin and parity; (ii) gamma ray energies, intensities, multipolarities, mixing ratios and conversion coefficients; (iii) nuclear radiation energy and intensity as well as radiation-specific data for different radiation types, such as such as gammas, alphas, betas and neutrons. Data for about 220 nuclides are fully evaluated each year; additionally, many datasets are partially updated each year. Nearly all the evaluation work is supported by the US Nuclear Data Program. The National Nuclear Data Center at Brookhaven National Laboratory is responsible for coordinating the evaluation effort as well as its web and journal dissemination.

19,591 Datasets **3,408** Nuclides **4,447** Decays **10,813** Reactions **300** Mass Chains

Deposition Summary		Dataset Details	
Depositor:	Elizabeth Ricard-McCutchan	Total Datasets:	19591
Contact:	mcCutchan@bnl.gov	Nuclides:	3408
Deposition date:	2022/02/14	Decay Radiations:	4447
Last modified:	2022/04/05	Reactions:	10813
DOI:	10.18139/nndc.ensdf/1845010	Mass Chains:	300

Latest Dataset **Publication Details**

Experimental Unevaluated Nuclear Data List

XUNDL landing page:

www.nndc.bnl.gov/xundlarchivals

DOI:

10.18139/nndc.ensdf/1860326

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

Experimental Unevaluated Nuclear Data List (XUNDL)

Contains nuclear structure and decay data from published articles. Data include nuclear level properties, such as energy, half-life, decay modes, spin and parity, as well as energy and intensity for radiation types such as gammas, alphas, betas and neutrons. For articles published in Physical Review C and the European Physical Journal, compilation takes place during the article submission process. Data from approximately 250 articles are added per year. All the compilation effort is supported by the US Nuclear Data Program and coordinated by the National Nuclear Data Center at Brookhaven National Laboratory, which is also responsible for its web dissemination.

Category	Count
Datasets	9,796
Nuclides	2,796
Decays	2,221
Reactions	7,575
Publications	5,620

Deposition Summary		Dataset Details	
Depositor:	Elizabeth Ricard-McCutchan	Total Datasets:	9796
Contact:	mccutchan@bnl.gov	Nuclides:	2796
Deposition date:	2022/03/29	Decay Radiations:	2221
Last modified:	2022/03/29	Reactions:	7575
DOI:	10.18139/nndc.ensdf/1860326	Publications:	5620

Latest Dataset		Publication Details	
File	Date	Journal:	Nuclear Data Sheets
xundl_220329_all.zip	2022/03/29	Editor:	E.A. McCutchan
		URL:	www.nndc.bnl.gov/ndc

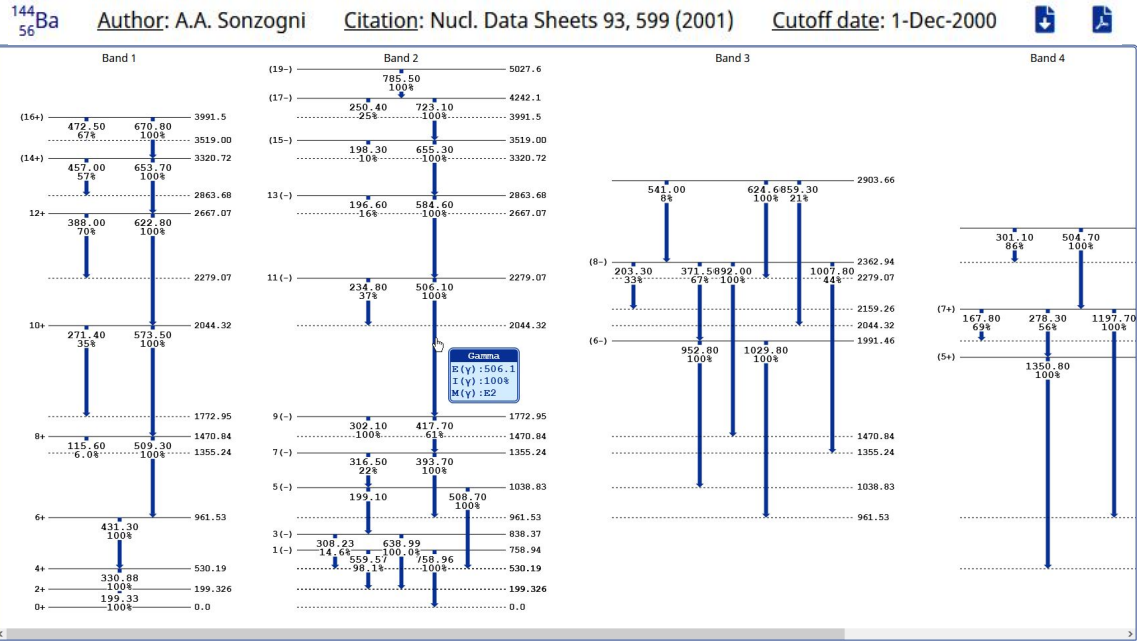
Archived Datasets	
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Level Schemes

Preliminary work for a future NuDat update

Interactive level schemes:

- Smooth pan and zoom
- Selectable levels/gammas

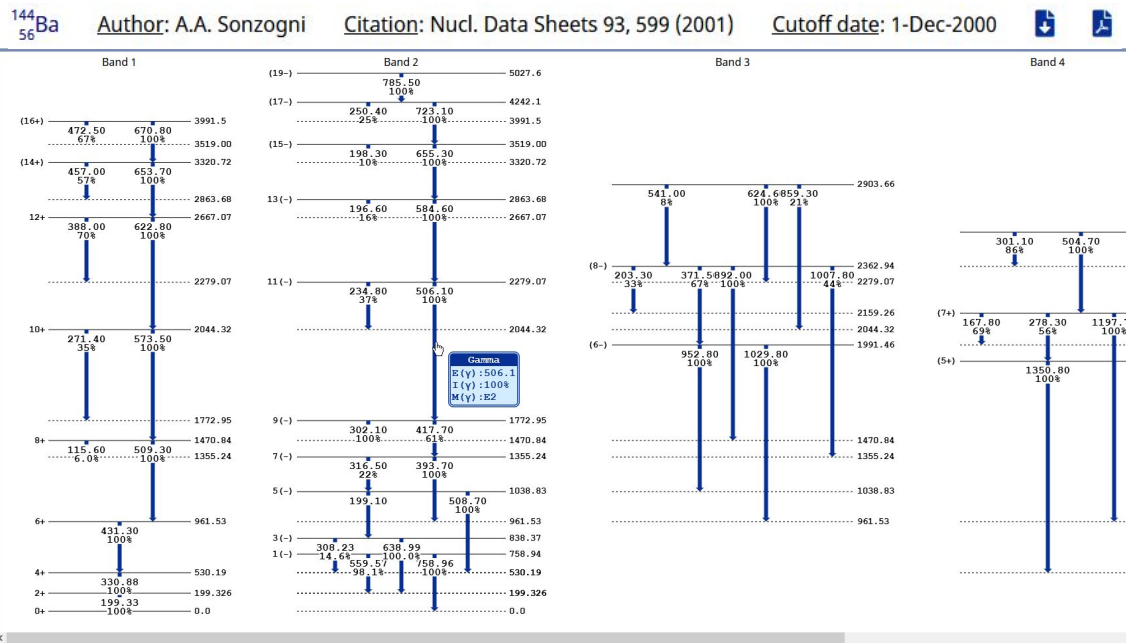


Level Schemes

Preliminary work for a future NuDat update

Interactive level schemes:

- Smooth pan and zoom
- Selectable levels/gammas
- γ - γ Coincidences
 - Highlighting
 - Table
 - Histograms
- γ Cascades
 - Filtering/Sorting
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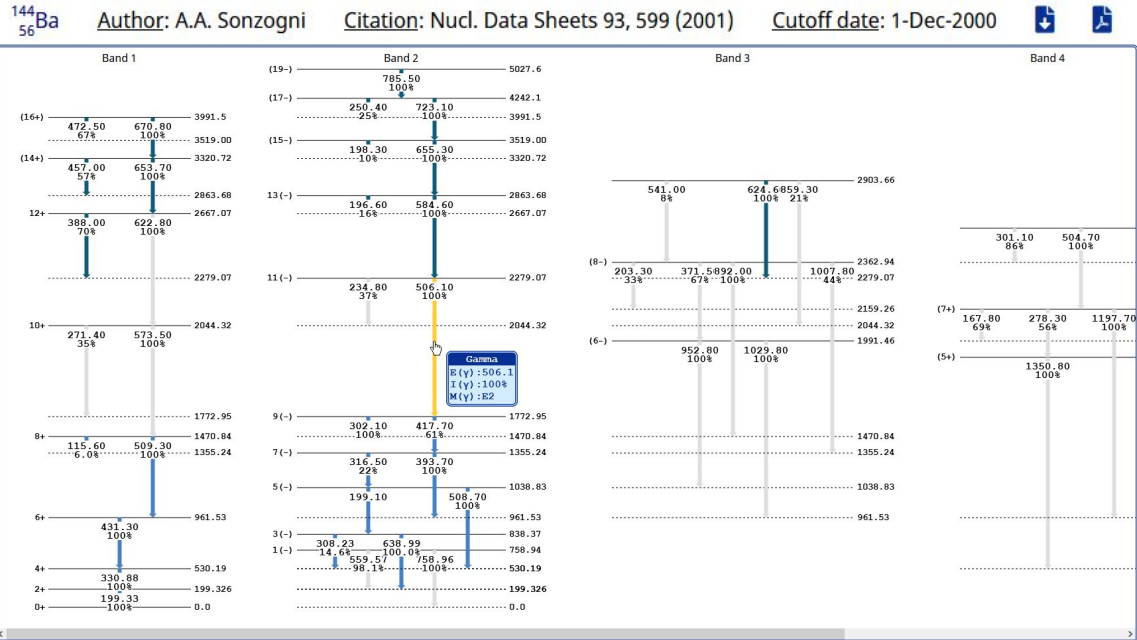


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$^{144}_{56}\text{Ba}$

Author: A.A. Sonzogni

Citation: Nucl. Data Sheets 93, 599 (2001)

Cutoff date: 1-Dec-2000



26 Gammas in Coincidence with E(γ): 506.1 7 keV

Show Histogram

Export as CSV

Export as JSON

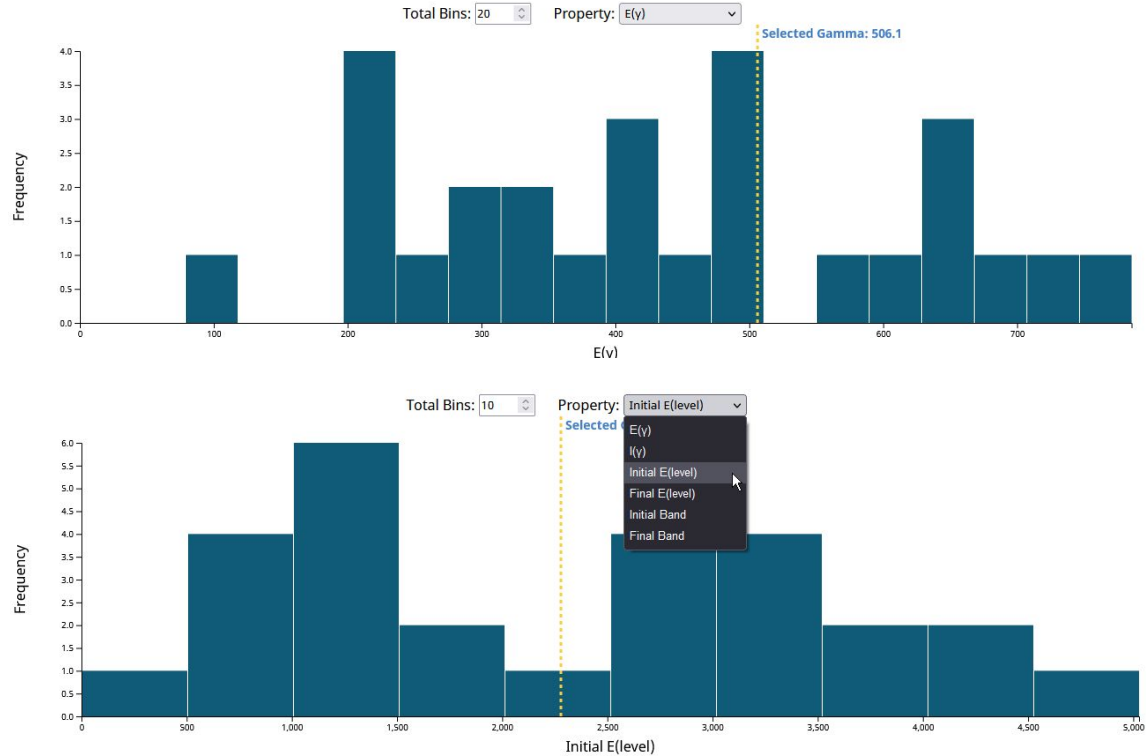
Gamma					Initial Level				Final Level			
E(γ) (keV)	I(γ)	M(γ)	Mixing Ratio	Conversion Coefficient	Band	E(level)	J π	T $\frac{1}{2}$	Band	E(level)	J π	T $\frac{1}{2}$
115.6 2	6.0 7	E1		0.153	1	1470.84	8+		2	1355.24	7(-)	
196.6 2	16 4	E1		0.0352	2	2863.68	13(-)		1	2667.07	12+	
198.3 3	10 3				2	3519.00	(15-)		1	3320.72	(14+)	
199.1					2	1038.83	5(-)		2	838.37	3(-)	10 PS LT
199.326 6	100	E2		0.175	1	199.326	2+	0.71 NS 2	1	0.0	0+	11.5 S 2
250.4 3	25 LE				2	4242.1	(17-)		1	3991.5	(16+)	
302.1 1	100 9	E1		0.0112	2	1772.95	9(-)		1	1470.84	8+	
308.23 9	14.6 7	D(+Q)	+0.06 5		2	838.37	3(-)	10 PS LT	1	530.19	4+	34 PS 5
316.5 2	22 3	E2		0.0383	2	1355.24	7(-)		2	1038.83	5(-)	
330.88 9	100	E2		0.0333	1	530.19	4+	34 PS 5	1	199.326	2+	0.71 NS 2
388.0 2	70 13	E1		0.00596	1	2667.07	12+		2	2279.07	11(-)	
393.7 1	100 8	E1		0.00575	2	1355.24	7(-)		1	961.53	6+	
417.7 1	61 4	E2		0.0164	2	1772.95	9(-)		2	1355.24	7(-)	
421.2 1	100	E2		0.0150	1	530.19	4+		1	530.19	4+	34 PS 5

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✓ 0 / 101 Selected Cascade(s)

Filter

Highlight Show Histogram Export as CSV Export as JSON Create Clear

Total Gammas	Average I(γ)	Band(s)	Initial E(level)	Initial $J\pi$	Final E(level)	Final $J\pi$	
10	96.10	2, 1	5027.6	(19-)	0.0	0+	+
7	94.43	3, 2, 1	2903.66		0.0	0+	+
11	91.45	2, 1	5027.6	(19-)	0.0	0+	+
6	88.33	4, 3, 2, 1	2664.0		0.0	0+	+
8	88.25	3, 2, 1	2903.66		0.0	0+	+
11	86.91	2, 1	5027.6	(19-)	0.0	0+	+
11	86.64	2, 1	5027.6	(19-)	0.0	0+	+
11	86.09	2, 1	5027.6	(19-)	0.0	0+	+
11	85.73	2, 1	5027.6	(19-)	0.0	0+	+
11	85.73	2, 1	5027.6	(19-)	0.0	0+	+

< 1 2 3 4 5 6 7 8 9 ... 11 >

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✓ 0 / 101 Selected Cascade(s) Filter

Highlight Show Histogram Export as CSV Export as JSON Create Clear

Total Gammas													Average I(γ)	Band(s)	Initial E(level)	Initial J π	Final E(level)	Final J π
10													96.10	2, 1	5027.6	(19-)	0.0	0+
Gamma					Initial Level				Final Level									
E(γ) (keV)	I(γ)	M(γ)	Mixing Ratio	Conversion Coefficient	Band	E(level)	J π	T $\frac{1}{2}$	Band	E(level)	J π	T $\frac{1}{2}$						
785.5	100				2	5027.6	(19-)		2	4242.1	(17-)							
723.1 2	100 25				2	4242.1	(17-)		2	3519.00	(15-)							
655.3 2	100 16			0.00488	2	3519.00	(15-)		2	2863.68	13(-)							
584.6 1	100 10	E2		0.00654	2	2863.68	13(-)		2	2279.07	11(-)							
506.1 1	100 11	E2		0.0096	2	2279.07	11(-)		2	1772.95	9(-)							
417.7 1	61 4	E2		0.0164	2	1772.95	9(-)		2	1355.24	7(-)							
393.7 1	100 8	E1		0.00575	2	1355.24	7(-)		1	961.53	6+							
431.3 1	100	E2		0.0150	1	961.53	6+		1	530.19	4+	34 PS 5						
330.88 9	100	E2		0.0333	1	530.19	4+	34 PS 5	1	199.326	2+	0.71 NS 2						
199.326 6	100	E2		0.175	1	199.326	2+	0.71 NS 2	1	0.0	0+	11.5 S 2						
7													94.43	3, 2, 1	2903.66		0.0	0+
11													91.45	2, 1	5027.6	(19-)	0.0	0+
6													88.33	4, 3, 2, 1	2664.0		0.0	0+
8													88.25	3, 2, 1	2903.66		0.0	0+
11													86.91	2, 1	5027.6	(19-)	0.0	0+

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 - **Highlighting**

✓ 2 / 101 Selected Cascade(s)

Filter

Highlight Show Histogram Export as CSV Export as JSON Create Clear

	Total Gammas	Average I(γ)	Band(s)	Initial E(level)	Initial $J\pi$	Final E(level)	Final $J\pi$	
✓	10	96.10	2, 1	5027.6	(19-)	0.0	0+	+
✓	7	94.43	3, 2, 1	2903.66		0.0	0+	+
	11	91.45	2, 1	5027.6	(19-)	0.0	0+	+
	6	88.33	4, 3, 2, 1	2664.0		0.0	0+	+
	8	88.25	3, 2, 1	2903.66		0.0	0+	+
	11	86.91	2, 1	5027.6	(19-)	0.0	0+	+
	11	86.64	2, 1	5027.6	(19-)	0.0	0+	+
	11	86.09	2, 1	5027.6	(19-)	0.0	0+	+
	11	85.73	2, 1	5027.6	(19-)	0.0	0+	+
	11	85.73	2, 1	5027.6	(19-)	0.0	0+	+

< 1 2 3 4 5 6 7 8 9 ... 11 >

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Level Schemes

Preliminary work for a future NuDat update

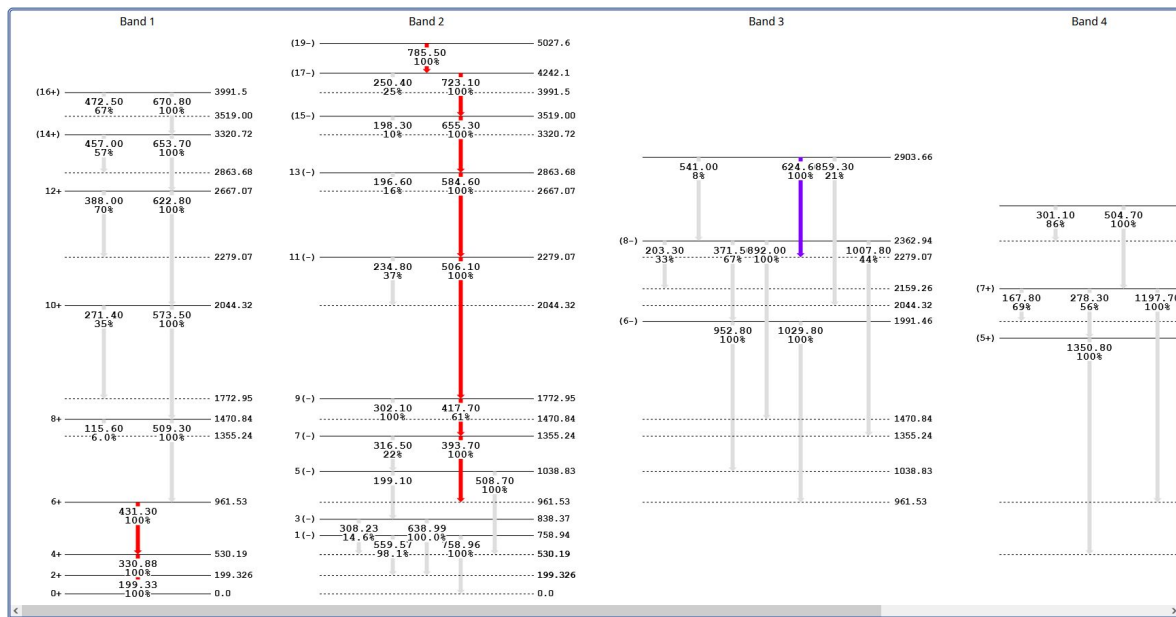
Interactive level schemes:

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✓ 2 / 101 Selected Cascade(s) Filter

Highlight Show Histogram Export as CSV Export as JSON Create Clear

	Total Gammas	Average I(γ)	Band(s)	Initial E(level)	Initial J^{π}	Final E(level)	Final J^{π}
✓	10	96.10	2, 1	5027.6	(19-)	0.0	0+
✓	7	94.43	3, 2, 1	2903.66		0.0	0+

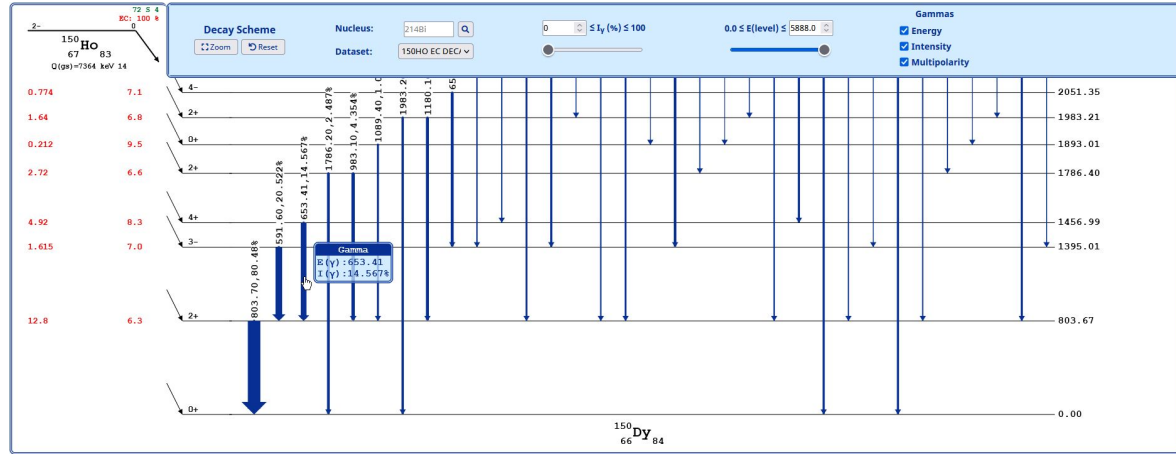


Decay Schemes

Preliminary work for a future NuDat update

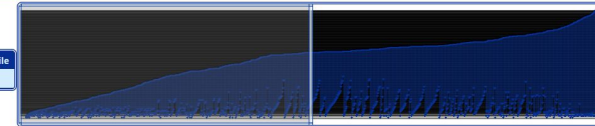
Interactive decay schemes:

- Smooth pan and zoom
- Selectable levels/gammas
- γ - γ Coincidences
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 - Histograms
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Author: Author Name Citation: Nuclear Data Sheets 122, 377 (2014)

Parent Nucleus	Parent E(level)	Parent J π	Parent T $_{1/2}$	Decay Mode	GS-GS Q-value (keV)	Daughter Nucleus	ENSDF File
$^{150}_{67}\text{Ho}$	0	2-	72.5 d	EC: 100 %	7364.74	$^{150}_{66}\text{Dy}$	

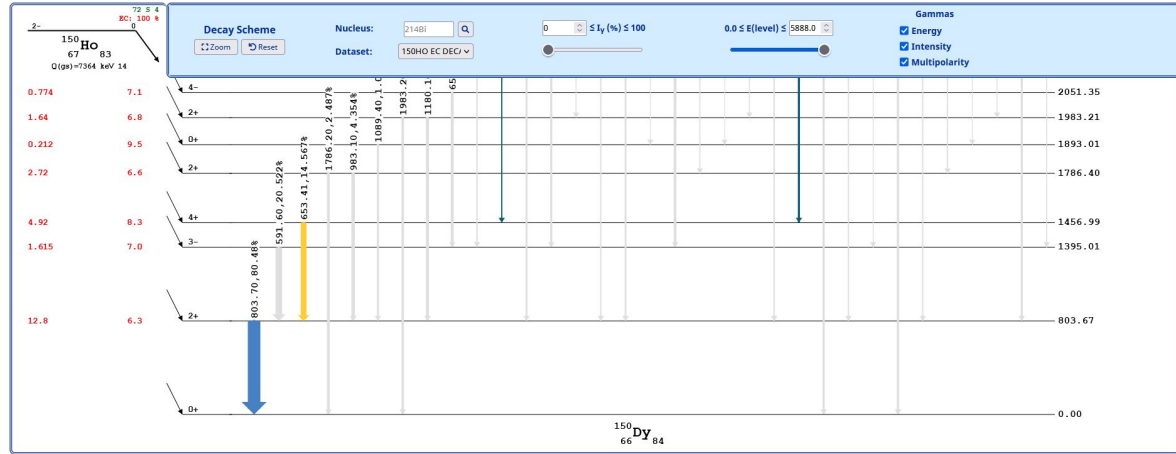


Decay Schemes

Preliminary work for a future NuDat update

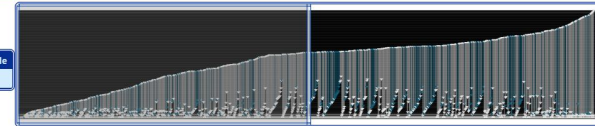
Interactive decay schemes:

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Author: Author Name Citation: Nuclear Data Sheets 122, 377 (2014)

Parent Nucleus	Parent E(level)	Parent J π	Parent T $_{1/2}$	Decay Mode	GS-GS Q-value (keV)	Daughter Nucleus	ENSDF File
$^{150}_{67}\text{Ho}$	0	2-	72 S 4	EC: 100 %	7364 74	$^{150}_{66}\text{Dy}$	



Decay Schemes

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0 / 122 Selected Path(s)

Filter

Highlight Export as CSV Export as JSON Create Clear

Total Gammas	Average I(γ)	Initial E(level)	Initial J^{π}	Final E(level)	Final J^{π}
8	6.4982	3000.00	(1-,2+)	0.0	0+
7	7.6440	2826.82	(1,2+)	0.0	0+
7	7.5926	2728.617	(0+,1,2)	0.0	0+
7	7.5898	2826.82	(1,2+)	0.0	0+
7	7.5890	2728.617	(0+,1,2)	0.0	0+
7	7.5838	2423.25	(1,2+)	0.0	0+
7	7.5819	2694.62	(1-,2+)	0.0	0+
7	7.5819	2869.63	(2-,3-)	0.0	0+
7	7.5819	3000.00	(1-,2+)	0.0	0+
7	7.5807	2482.460	(1-,2+)	0.0	0+

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Demonstration & Discussion

Level / Decay Schemes

Feedback / Suggestions?

dmason@bnl.gov