

$^{160}\text{Gd}(n,\gamma)$ E=th 1971Gr42

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 112,2497 (2011)	1-Jun-2011

Additional information 1.

All data are from 1971Gr42. Enriched sample (98.6%) with ^{160}Gd contribution to capture further enhanced from 0.01% to 51% by burnout of ^{157}Gd by prior irradiation. γ 's measured after thermal-n capture with Ge detector with FWHM=10 keV at 6 MeV.

 ^{161}Gd Levels

Resonance parameters are given in 2006MuZX, which lists 57 neutron resonances, mostly having $J^\pi=1/2^+$.

E(level)	J^π †	Comments
0.0	$5/2^-$	
314 <i>I</i>	$3/2^-$	
355 <i>I</i>	$1/2^-$	
394.7 <i>IO</i>	$3/2^-$	
804.3 <i>IO</i>		
824 <i>I</i>		
851 <i>I</i>		
898 <i>2</i>		
1036 <i>I</i>		
1128 <i>I</i>		
1273 <i>I</i>		
1311 <i>I</i>	$1/2^-$	
1338 <i>I</i>	$3/2^-$	
1380 <i>I</i>		
1408 <i>I</i>		
1490 <i>I</i>	$1/2^+$	
1523 <i>I</i>		
1545 <i>I</i>		
1751 <i>I</i>		
1803 <i>I</i>		
1848 <i>I</i>		
1923 <i>I</i>		
(5635.4 <i>IO</i>)	$1/2^+$	neutron-capture state. E(level): From the measured S(n)=5635.4 keV <i>IO</i> . J^π : from predominantly s-wave capture on $J^\pi=0^+$ target.

† From ^{161}Gd Adopted Levels; these agree with those proposed by 1971Gr42. For band assignments, see Adopted Levels.

 $\gamma(^{161}\text{Gd})$

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π
394.7 <i>IO</i>	4.3	394.7	$3/2^-$	0.0	$5/2^-$	4090 <i>I</i>	0.61	(5635.4)	$1/2^+$	1545	
469.0 <i>IO</i>	4.3	824		355	$1/2^-$	4112 <i>I</i>	0.28	(5635.4)	$1/2^+$	1523	
804.3 <i>IO</i>	0.79	804.3		0.0	$5/2^-$	4145 <i>I</i>	0.35	(5635.4)	$1/2^+$	1490	$1/2^+$
1273 <i>I</i>	1.0	1273		0.0	$5/2^-$	4227 <i>I</i>	<0.91	(5635.4)	$1/2^+$	1408	
1338 <i>I</i>	0.53	1338	$3/2^-$	0.0	$5/2^-$	4255 <i>I</i>	1.0	(5635.4)	$1/2^+$	1380	
1490 <i>I</i>	1.4	1490	$1/2^+$	0.0	$5/2^-$	4298 <i>I</i>	1.6	(5635.4)	$1/2^+$	1338	$3/2^-$
3712 <i>I</i>	0.71	(5635.4)	$1/2^+$	1923		4324 <i>I</i>	0.98	(5635.4)	$1/2^+$	1311	$1/2^-$
3787 <i>I</i>	<1.1	(5635.4)	$1/2^+$	1848		4362 <i>2</i>	<0.18	(5635.4)	$1/2^+$	1273	
3832 <i>I</i>	0.65	(5635.4)	$1/2^+$	1803		4507 <i>I</i>	0.24	(5635.4)	$1/2^+$	1128	
3884 <i>I</i>	0.51	(5635.4)	$1/2^+$	1751		4599 <i>I</i>	0.24	(5635.4)	$1/2^+$	1036	

Continued on next page (footnotes at end of table)

$^{160}\text{Gd}(n,\gamma)$ E=th 1971Gr42 (continued) $\gamma(^{161}\text{Gd})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π
4737 2	<0.14	(5635.4)	1/2 ⁺	898	
4784 [#] 1	0.20	(5635.4)	1/2 ⁺	851	
4811 1	0.22	(5635.4)	1/2 ⁺	824	
5241 1	<0.57	(5635.4)	1/2 ⁺	394.7	3/2 ⁻
5280 1	4.7	(5635.4)	1/2 ⁺	355	1/2 ⁻
5321 1	<0.87	(5635.4)	1/2 ⁺	314	3/2 ⁻

† Energies from authors' level scheme, not separately tabulated by authors. Uncertainties assigned by evaluator from authors' general statement of 2 keV for γ 's with intensity of <0.2 and \approx 1 keV for stronger γ 's.

‡ γ 's per 100 n captures. Data from authors' level scheme, not separately tabulated by them. .

Authors' value of 4874 corrected to 4784 by evaluator to agree with placement.

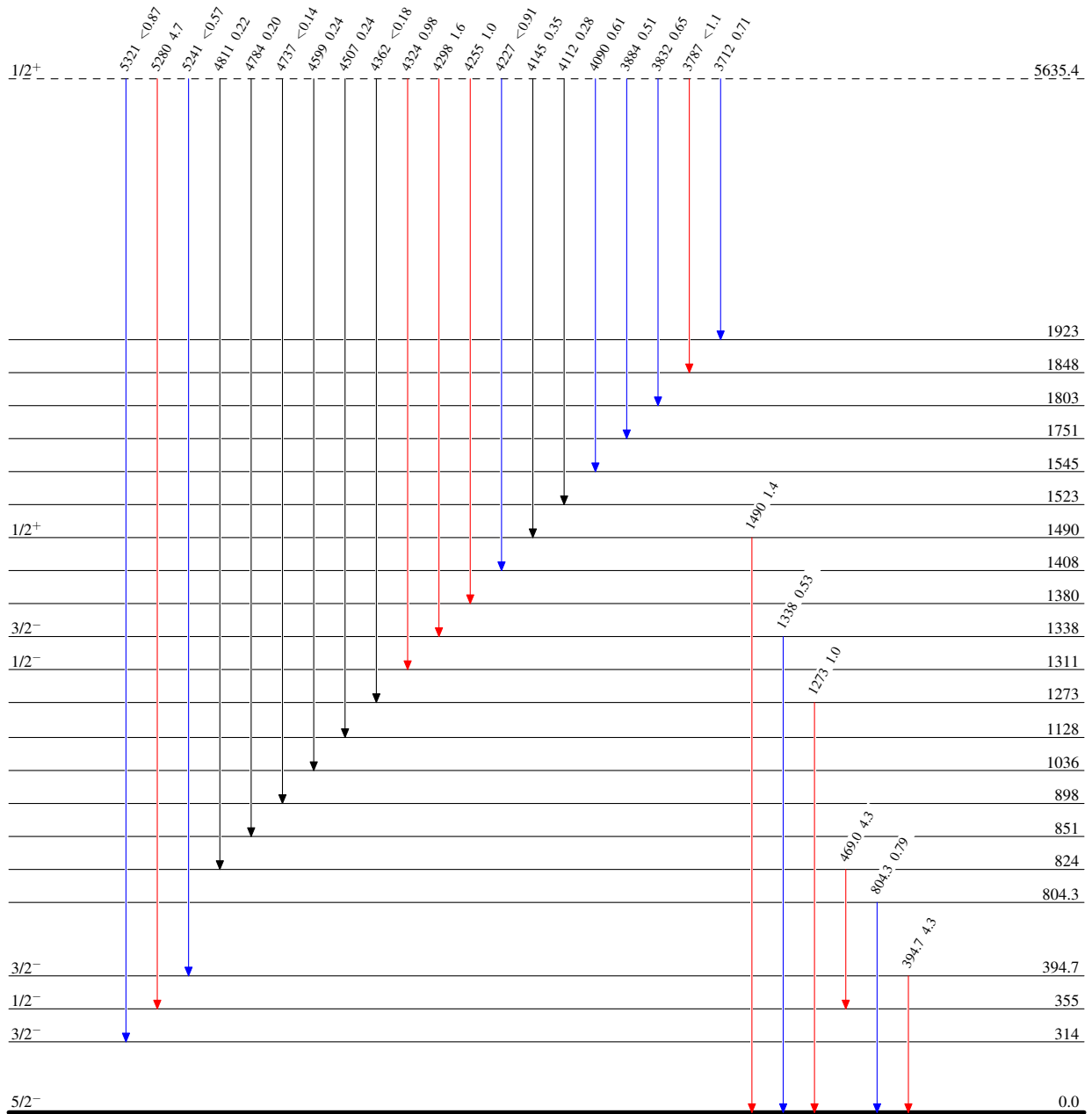
$^{160}\text{Gd}(n,\gamma)\text{E=th}$ 1971Gr42

Level Scheme

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

 $^{161}_{64}\text{Gd}_{97}$