

$^{154}\text{Gd}(\text{d,t})$ 1973Lo14,1967Tj01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

E=15 MeV, magnetic spectrograph, FWHM \approx 8 keV (1973Lo14). E=12.1 MeV, magnetic spectrograph, FWHM \approx 9 keV (1967Tj01).

 ^{153}Gd Levels

E(level) [†]	J ^π ‡#	L@	dσ/dΩ (45°)(μb/sr)	Comments
0 ^a	3/2 ⁻	1	207	
43 ^a 2	5/2 ⁻	3	7	
94 ^a 2	7/2 ⁻	3,4	335	L: Authors expect this peak to contain some contribution from the (9/2) ⁺ level with L=4.
109 2	5/2 ⁻ &	3	72	
129 2	3/2 ⁻	1	9	
138 2	(13/2 ⁺)	6	45	
172 ^b 2	(11/2 ⁻)	5	63	
183 2	5/2 ⁺	2	29	
212 ^c 2	3/2 ⁺	2	646	
250 2	5/2 ⁻	2,3	46	
303 ^c 2	5/2 ⁺	2	27	
315 2		1	≈40	J ^π : Assigned 1/2 ⁻ in ^{153}Gd Adopted Levels.
328 ^d 2	1/2 ⁺	0	1063	
362 2		1	361	J ^π : Assigned 3/2 ⁻ in ^{153}Gd Adopted Levels.
395 2			29	J ^π : Assigned (7/2 ⁺) in ^{153}Gd Adopted Levels.
413 ^d 2	3/2 ⁺ &	2,(3)	71	
≈436		(1)	≈65	J ^π : Assigned 1/2 ⁻ in ^{153}Gd Adopted Levels.
≈442	5/2 ⁺ &	(2)	≈40	
483 ^e 2	1/2 ⁺ &	0	23	
504 ^f 2	(3/2 ⁺)&	2	112	J ^π : Assigned 5/2 ⁺ in ^{153}Gd Adopted Levels.
530 2	3/2 ⁻	1	21	
549 2	(5/2 ⁻ , 7/2 ⁻)		5	
578 2		3,4	26	J ^π : Assigned (7/2) ⁻ in ^{153}Gd Adopted Levels.
606 2			3	J ^π : Assigned 5/2 ⁻ in ^{153}Gd Adopted Levels.
633 2		5,6	3	
647 2			10	
682 2			12	J ^π : Assigned (3/2) ⁻ in ^{153}Gd Adopted Levels.
773 2		(3)	35	
857 2			10	J ^π : Assigned 3/2 ⁻ in ^{153}Gd Adopted Levels.
884 2		1	35	
904 2			8	J ^π : Assigned 5/2 ⁺ in ^{153}Gd Adopted Levels.
932 2			10	J ^π : Assigned 5/2 ⁻ in ^{153}Gd Adopted Levels.
986 2			24	J ^π : Assigned (3/2 ⁺) in ^{153}Gd Adopted Levels.
1035 2			6	
1082 2			15	
1096 2			8	J ^π : Assigned (3/2) ⁺ at 1101 in ^{153}Gd Adopted Levels.
1116 2		2	53	
1152 2		2,3	113	
1250 2			7	
1280 2			4	dσ/dΩ value is for angle of 40°.
1298 2			13	
1366 2			8	dσ/dΩ value is for angle of 50°.
				J ^π : Assigned (1/2,3/2) ⁻ in ^{153}Gd Adopted Levels.
1380 2			6	

Continued on next page (footnotes at end of table)

$^{154}\text{Gd(d,t)}$ [1973Lo14,1967Tj01](#) (continued) ^{153}Gd Levels (continued)

E(level) [†]	J ^π [‡]	L [@]	dσ/dΩ (45°)(μb/sr)	Comments
1389 2			7	
1400 2			5	J ^π : Assigned (3/2) ⁺ in ^{153}Gd Adopted Levels.
1455 2			12	
1474 2	9/2 ⁻ , 11/2 ⁻ ^{&}	5	16	J ^π : 1970Lo14 suggest 11/2, 9/2[514]; bandhead not identified.
1509 2	(7/2 ⁺) ^{&}	3, 4	48	L: 1970Lo14 listed L=4?, based upon their expectation that this is the 7/2[404] Nilsson state. Their σ(θ) data are consistent with L=3 and their cross-section ratio data are consistent with L=3,4.

[†] Values are from [1973Lo14](#) and uncertainties are from their general statement.

[‡] From earlier charged-particle reaction studies ([1967Tj01,1972Lo04,1973Lo08](#)) and ^{153}Tb ε decay ([1970Bo02](#) and T. Tuurnala as quoted in [1970Lo14](#)) unless noted as from this study. Assignments that differ significantly from those in ^{153}Gd Adopted Level are noted.

[#] The only band assignments given here that are included in the ^{153}Gd Adopted Levels are for the 3/2[521] and 11/2[505] bands.

[@] Deduced from DWBA analysis of angular distributions and ratio of ($^3\text{He},\alpha$) and (d,t) cross sections ([1973Lo14](#)).

[&] From this study.

^a Band(A): 3/2[521] band.

^b Band(B): 11/2[505] band.

^c Band(C): 3/2[402] band.

^d Band(D): 1/2[400] band.

^e Band(E): 1/2[660] band.

^f Band(F): 3/2[651] band.

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Band(F): 3/2[651] band

(3/2)⁺ 504

Band(E): 1/2[660] band

1/2⁺ 483

Band(D): 1/2[400] band

3/2⁺ 413

1/2⁺ 328

Band(C): 3/2[402] band

5/2⁺ 303

3/2⁺ 212

Band(B): 11/2[505] band

(11/2⁻) 172

Band(A): 3/2[521] band

7/2⁻ 94

5/2⁻ 43

3/2⁻ 0