^{157}Gd(d,d′) 1971St03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 132, 1 (2016)	4-Dec-2015

E_d=12.1 MeV. Cross sections measured at 60°, 90°, and 125°. From spectra, evaluator estimates that FWHM is of the order of 10 keV.

^{157}Gd Levels

BE2 calculated (1971St03) from measured cross section at 90°, assuming (dσ/dΩ)/B(E2)=1.12 (mb/sr)/e^2b^2 for rotational transitions and 0.9 (mb/sr)e^2b^2 for other transitions. The relationship between these cross sections and the B(E2) values is complex for odd-A nuclei, so these values may be questioned. See Coulomb excitation data for other values for many of these levels.
BE3 calculated (1971St03) from measured cross sections at 90°, assuming 1.38 mb/sr per B(E3) unit.
Additional information 1.

E(level)‡	Jπ†	Comments
0.0#	3/2−	
54# 2	5/2−	B(E2)↑=2.52
131# 2	7/2−	B(E2)↑=1.36
181@ 2	9/2+	
227# 2	9/2−	
346# 2	11/2−	
432& 2	5/2−	B(E2)↑=0.013
477# 2	13/2−	
477a 2	3/2+	
512& 2	7/2−	B(E2)↑=0.014
639# 2	15/2−	
700b 2	1/2−	B(E2)↑=0.007
723 2		B(E2)↑=0.009
748b 2	3/2−	B(E2)↑=0.002
786b 2	5/2−	B(E2)↑=0.004
811c 2	3/2−	B(E2)↑=0.007
842c 2	5/2−	
889 2		B(E2)↑=0.012
914 2		
961 2		
1015 2		
1094 2		
1111 2		B(E2)↑=0.009
1136 2		B(E2)↑=0.006
1227 2		
1282 2		
1314 2		B(E3)↑=0.0072 B(E3)↑: Possible E2 excitation (1971St03).
1333 2		B(E3)↑=0.0282
1349 2		B(E2)↑=0.014
1381 2		B(E3)↑=0.0152
1403 2		B(E3)↑=0.0094 B(E3)↑: Possible E4 excitation (1971St03).
1433 2		
1455 2		

Continued on next page (footnotes at end of table)

^{157}Gd(d,d′) 1971St03 (continued)

^{157}Gd Levels (continued)

E(level)‡	Comments
1482 *2*	B(E3)↑=0.0029
1510 *2*	

† Assignments are those of 1971St03, but authors state "most of the assignments are from study of the (d,p) or (d,t) reactions" (1967Tj01). The only additional assignments are the 13/2$^-$ to the 477 level and the 15/2$^-$ to the 639 level based on $\sigma(90°)/\sigma(125°)$ and fit to 3/2[521] band. All assignments agree with those for the Adopted Levels.

‡ 1971St03 give uncertainty of 2 keV as a general statement; this is value assigned by evaluator to each level.

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

@ Band(B): 5/2[642] band.

& Band(C): 5/2[523] band.

a Band(D): 3/2[402] band.

b Band(E): 1/2[521] band.

c Band(F): 1/2[530] band.

^{157}Gd(d,d′) 1971St03

Band(F): 1/2[530] band

5/2⁻ 842

3/2⁻ 811

Band(E): 1/2[521] band

5/2⁻ 786

3/2⁻ 748

1/2⁻ 700

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

15/2⁻ 639

Band(C): 5/2[523] band

7/2⁻ 512

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

13/2⁻ 477

3/2⁺ 477

5/2⁻ 432

11/2⁻ 346

9/2⁻ 227

Band(B): 5/2[642] band

9/2⁺ 181

7/2⁻ 131

5/2⁻ 54

3/2⁻ 0.0

$^{157}_{64}Gd_{93}$