

¹⁵⁷Gd(³He,d), (α,t) **1974EIZW**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 141, 1 (2017)	1-Feb-2017

J^π(¹⁵⁷Gd)=3/2⁻.

E(³He)=25.5 MeV, FWHM=15 keV; E(α)=28.5 MeV, FWHM=15 keV.

¹⁵⁸Tb Levels

All of the levels are reported in both reactions and cross sections are reported for both reactions. Some cross section values listed in the table are reported without uncertainties.

E(level)	J ^π †	dσ/dΩ(μb/sr) at 60°‡	dσ/dΩ(μb/sr) at 30°#	dσ/dΩ(μb/sr) at 60°#
0@	3 ⁻	16.8 12	22.1	14.4 8
79@	4 ⁻	34.0 17	27.8	22.1 11
115&	1 ⁻	13.9 11	16.8	9.5 8
167&	2 ⁻	24.8 15	23.1	17.1 10
208&	3 ⁻	18.3 13	20.8	13.1 9
298&	4 ⁻	10.7 10	7.9	5.2 6
324		2.7	8.9	3.1
379		11.6	14.2	10.4
439		4.0	2.0	3.0
459 ^a	5 ⁺	2.8 7	6.0	4.1 7
499		3.4	7.0	3.3
531 ^a	6 ⁺	10.1 11	22.0	11.5 10
571		7.7	7.5	5.9
588		4.2	9.8	9.9
627 ^a	7 ⁺	17.2 12	35.2	19.8 16
662 ^b	4 ⁺	5.5 8	10.5	8.2 11
709 ^c	2 ⁻	16.6 15	22.1	20.0 16
749 ^b	5 ⁺	10.5 13	17.1	11.3 12
782 ^c	3 ⁻	7.9 9	5.1	7.1 10
817 ^d	5 ⁻	20.2 50	30.5	18.5 30
832		22.7	10.9	10.9
862 ^b	6 ⁺	9.7 40	13.9	11.1 30
885		17.8	13.1	5.9
936		14.7	9.9	8.7
962 ^e	4 ⁻	82.9 50	31.1	47.1 60
1001		43.0	7.3	
1030		34.5	4.3	
1068 ^f	1 ⁻	65.4 50	16.4	26.1 40
1110 ^f	2 ⁻	48.7 40	26.7	22.1 40

† J^π assignments are from the author, who also gives band assignments, based on analysis of spectroscopic information.

‡ Cross section for (³He,d) reaction.

Cross section for (α,t) reaction.

@ Band(A): K^π=3⁻ band. Based on Configuration=((π 3/2(411))+(ν 3/2(521))).

& Band(B): K^π=0⁻ band. Based on Configuration=((π 3/2(411))-(ν 3/2(521))).

^a Band(C): K^π=4⁺ band. Based on Configuration=((π 5/2(532))+(ν 3/2(521))).

^b Band(D): K^π=1⁺ band. Based on Configuration=((π 5/2(532))-(ν 3/2(521))).

 $^{157}\text{Gd}(\text{}^3\text{He,d}, (\alpha,\text{t})$ **1974EIZW (continued)**

 ^{158}Tb Levels (continued)

- ^c Band(E): $K^\pi=2^-$ band. Based on Configuration= $((\pi 7/2(404))-(\nu 3/2(521)))$.
^d Band(F): $K^\pi=5^-$ band. Based on Configuration= $((\pi 7/2(404))+(\nu 3/2(521)))$.
^e Band(G): $K^\pi=4^-$ band. Based on Configuration= $((\pi 5/2(402))+(\nu 3/2(521)))$.
^f Band(H): $K^\pi=1^-$ band. Based on Configuration= $((\pi 5/2(402))-(\nu 3/2(521)))$.

$^{157}\text{Gd}(^3\text{He,d), }(\alpha,t)$ 1974EIZW

	Band(D): $K^\pi=1^+$ band				Band(F): $K^\pi=5^-$ band	
	<u>6⁺</u>	<u>862</u>			<u>5⁻</u>	<u>817</u>
				Band(E): $K^\pi=2^-$ band		
				<u>3⁻</u>	<u>782</u>	
	<u>5⁺</u>	<u>749</u>				
				<u>2⁻</u>	<u>709</u>	
			Band(C): $K^\pi=4^+$ band	<u>4⁺</u>	<u>662</u>	
			<u>7⁺</u>	<u>627</u>		
			<u>6⁺</u>	<u>531</u>		
			<u>5⁺</u>	<u>459</u>		
			Band(B): $K^\pi=0^-$ band			
			<u>4⁻</u>	<u>298</u>		
			<u>3⁻</u>	<u>208</u>		
			<u>2⁻</u>	<u>167</u>		
			Band(A): $K^\pi=3^-$ band	<u>1⁻</u>	<u>115</u>	
			<u>4⁻</u>	<u>79</u>		
			<u>3⁻</u>	<u>0</u>		

 $^{157}\text{Gd}(\text{}^3\text{He,d}, (\alpha,t)$ **1974ElZW (continued)**Band(H): $K^\pi=1^-$ band2⁻ 1110Band(G): $K^\pi=4^-$ band 1⁻ 10684⁻ 962 $^{158}\text{Tb}_{93}$