^{155}Gd(^{28}Si,4nγ) 1990MaYY

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 110, 265 (2009)	15-Nov-2008

Additional information 1.

E=150 MeV; 96% ^{155}Gd target, 20 HPGe + 71 BGO detector 8π array; measured Eγ, Iγ, $\gamma\gamma$ coin ($\leq$140 ns time window), DCO ratios (θ=37° and 79°).

^{179}Pt Levels

E(level)‡	Jπ†	E(level)‡	Jπ†	E(level)‡	Jπ†	E(level)‡	Jπ†
0.0#	1/2−	925.6a	19/2+	2434.3a	31/2+	4019.5&	
87.2#	5/2−	926.8@	(17/2−)	2458.0@	(29/2−)	4144.0#	41/2−
144.8&	(7/2−)	1050.4b	21/2+	2616.3bd	33/2+	4476.8a	43/2+
255.5@	(9/2−)	1139.6&	(19/2−)	2746.9&	(31/2−)	4571.5@	(41/2−)
277.2#	9/2−	1339.0#	21/2−	2950.9#	33/2−	4729.5b	45/2+
298.5b	9/2+	1358.2a	23/2+	3059.8a	35/2+	4799.8#	45/2−
355.8a	11/2+	1375.1@	(21/2−)	3098.7@	(33/2−)	5264.1a	47/2+
391.4&	(11/2−)	1503.0b	25/2+	3266.6b	37/2+	5504.1#	49/2−
417.5b	13/2+	1618.9&	(23/2−)	3341.2&		5526.3b	49/2+
548.4@	(13/2−)	1830.8#	25/2−	3359.7&		6255.5#	53/2−
556.9#	13/2−	1864.7a	27/2+	3533.7#	37/2−	6367.1b	53/2+
582.3a	15/2+	1888.2@e	(25/2−)	3741.4a	39/2+	7253.0?b	57/2+
680.6b	17/2+	2026.9b	29/2+	3815.5@	(37/2−)	8174.8?b	61/2+c
727.3&	(15/2−)	2157.6&	(27/2−)	3969.1&			
910.2#	17/2−	2375.1#	29/2−	3973.2b	41/2+		

† Authors′ values from figure 26 of 1990MaYY; based on measured DCO ratios and on rotational structure, assuming Jπ=1/2− and 5/2− for the first two members of the 1/2[521], α=+1/2 band.

‡ From least-squares fit to Eγ, allowing equal weights for all Eγ, and omitting 355.3γ (from 910 level) because its Eγ may have been misprinted.

Band(A): 1/2[521], α=+1/2 g.s. band. Alignment gain: 7.0$\hbar$. band crossing At $\hbar\omega$=0.28 MeV.

@ Band(B): 5/2[512], α=+1/2 band. Alignment gain: 5.1$\hbar$. band crossing At $\hbar\omega$=0.30 MeV.

& Band(b): 5/2[512], α=−1/2 band. 1990MaYY include the 3341, 3360, 3969 and 4020 levels In this band, As shown here, but the evaluator does not adopt this assignment because it leads to an energy progression that seems inconsistent with the structure of the lower part of the band; the relevant transition multipolarities are unknown and 1990MaYY assign No Jπ to these four levels.

a Band(c): 7/2[633], α=−1/2 band. Band crossing At $\hbar\omega$>0.4 MeV.

b Band(C): 7/2[633], α=+1/2 band.

c From table 3 of 1990MaYY.

d Misprinted as 2613.3 in 1990MaYY.

e Misprinted as 1882.1 in table 3 of 1990MaYY.

γ(^{179}Pt)

Eγ†	Iγ	Ei(level)	Jiπ	Ef	Jfπ	Comments
87.2	14.1 *9*	87.2	5/2−	0.0	1/2−	
98.3	2.2 *2*	680.6	17/2+	582.3	15/2+	
110.7	6.1 *8*	255.5	(9/2−)	144.8	(7/2−)	Mult.: DCO =0.8 *3*.
119.0	4.3 *2*	417.5	13/2+	298.5	9/2+	Mult.: DCO=0.9 *3*.

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^{155}Gd(^{28}Si,4nγ) 1990MaYY (continued)

$\gamma(^{179}Pt)$ (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
124.8	5.4 *3*	1050.4	21/2$^+$	925.6	19/2$^+$	D		Mult.: DCO=0.4 *2*.
135.9	7.3 *6*	391.4	(11/2$^-$)	255.5	(9/2$^-$)	D		Mult.: DCO=0.5 *1*.
144.8[&]	3.3 *2*	1503.0	25/2$^+$	1358.2	23/2$^+$			Mult.: DCO=0.7 *5*.
153.7	13.3 *3*	298.5	9/2$^+$	144.8	(7/2$^-$)	D+Q		Mult.: DCO =0.8 *1*.
157.0	8.9 *6*	548.4	(13/2$^-$)	391.4	(11/2$^-$)	D		Mult.: DCO=0.6 *2*.
162.2[&]		2026.9	29/2$^+$	1864.7	27/2$^+$			E_γ: from fig. 26 of 1990MaYY; absent from table 3.
164.8	22.7 *3*	582.3	15/2$^+$	417.5	13/2$^+$	D		Mult.: DCO=0.47 *6*.
178.9	10.7 *5*	727.3	(15/2$^-$)	548.4	(13/2$^-$)	D		Mult.: DCO=0.5 *1*.
190.0	35.9 *4*	277.2	9/2$^-$	87.2	5/2$^-$	(E2)[#]	0.428	Mult.: DCO =0.87 *6*.
199.5	9.6 *4*	926.8	(17/2$^-$)	727.3	(15/2$^-$)	D+Q		Mult.: DCO=0.70 *14*.
212.8	6.3 *3*	1139.6	(19/2$^-$)	926.8	(17/2$^-$)	D+Q		Mult.: DCO=0.3 *1*.
226.5	21.2 *2*	582.3	15/2$^+$	355.8	11/2$^+$	E2[#]	0.237	Mult.: DCO=0.9 *1*.
235.5		1375.1	(21/2$^-$)	1139.6	(19/2$^-$)			
243.8		1618.9	(23/2$^-$)	1375.1	(21/2$^-$)			
245.0	15.7 *3*	925.6	19/2$^+$	680.6	17/2$^+$			
246.6	20.4 *6*	391.4	(11/2$^-$)	144.8	(7/2$^-$)			Mult.: DCO=1.3 *3*.
263.1	50.0 *3*	680.6	17/2$^+$	417.5	13/2$^+$	E2[#]	0.1468	Mult.: DCO=0.89 *5*.
269.4	4 *1*	2157.6	(27/2$^-$)	1888.2	(25/2$^-$)			
279.7	37.4 *4*	556.9	13/2$^-$	277.2	9/2$^-$			Mult.: DCO=0.82 *6*.
288.9	3.5 *9*	2746.9	(31/2$^-$)	2458.0	(29/2$^-$)			E_γ: from table 3 of 1990MaYY; 288.8 in fig. 26.
292.9	30.6 *3*	548.4	(13/2$^-$)	255.5	(9/2$^-$)			
307.8	13.5 *3*	1358.2	23/2$^+$	1050.4	21/2$^+$	D+Q		Mult.: DCO=0.3 *1*.
335.9	44.9 *4*	727.3	(15/2$^-$)	391.4	(11/2$^-$)			Mult.: DCO=1.3 *2*.
343.3	30.8 *2*	925.6	19/2$^+$	582.3	15/2$^+$	Q		Mult.: DCO=0.9 *1*.
355.3	32.5 *2*	910.2	17/2$^-$	556.9	13/2$^-$	Q		DCO=0.96 *9*. E_γ: 2 keV higher than expected from level energy difference; possible misprint.
361.7		1864.7	27/2$^+$	1503.0	25/2$^+$			E_γ: from fig. 26 of 1990MaYY; absent from table 3.
361.8	9.8 *3*	910.2	17/2$^-$	548.4	(13/2$^-$)			Mult.: DCO=0.7 *4*.
369.8	100.0 *2*	1050.4	21/2$^+$	680.6	17/2$^+$			
369.9	13.4 *2*	926.8	(17/2$^-$)	556.9	13/2$^-$	[E2]	0.0541	
378.4		926.8	(17/2$^-$)	548.4	(13/2$^-$)			
407.4	11.9 *3*	2434.3	31/2$^+$	2026.9	29/2$^+$			
412.3	42.9 *5*	1139.6	(19/2$^-$)	727.3	(15/2$^-$)			DCO=0.8 *15* in table 3; probable misprint of 0.80 *15*.
428.8	37.9 *2*	1339.0	21/2$^-$	910.2	17/2$^-$	Q		Mult.: DCO=0.96 *10*.
432.6	39.7 *5*	1358.2	23/2$^+$	925.6	19/2$^+$	Q		Mult.: DCO=1.1 *1*.
448.3		1375.1	(21/2$^-$)	926.8	(17/2$^-$)			
452.6	86.0 *9*	1503.0	25/2$^+$	1050.4	21/2$^+$			Mult.: DCO=0.86 *6*.
479.3	38.9 *5*	1618.9	(23/2$^-$)	1139.6	(19/2$^-$)	Q		Mult.: DCO=0.99 *9*.
491.8	32.5 *2*	1830.8	25/2$^-$	1339.0	21/2$^-$	Q		Mult.: DCO=1.05 *13*.
506.5	26.8 *2*	1864.7	27/2$^+$	1358.2	23/2$^+$	Q		Mult.: DCO=1.16 *12*.
513.1		1888.2	(25/2$^-$)	1375.1	(21/2$^-$)			
523.9	68.1 *10*	2026.9	29/2$^+$	1503.0	25/2$^+$	Q		Mult.: DCO=0.99 *11*.
538.7		2157.6	(27/2$^-$)	1618.9	(23/2$^-$)			
544.3	24.4 *2*	2375.1	29/2$^-$	1830.8	25/2$^-$	(Q)		Mult.: DCO=1.1 *2*.
569.6	33.9 *3*	2434.3	31/2$^+$	1864.7	27/2$^+$			
569.8		2458.0	(29/2$^-$)	1888.2	(25/2$^-$)			
575.8	18.9 *2*	2950.9	33/2$^-$	2375.1	29/2$^-$	(Q)		Mult.: DCO=1.0 *2*.
582.8	14.1 *2*	3533.7	37/2$^-$	2950.9	33/2$^-$			Mult.: DCO=1.3 *5*.
589.2		2746.9	(31/2$^-$)	2157.6	(27/2$^-$)			
589.4	47.3 *3*	2616.3	33/2$^+$	2026.9	29/2$^+$			
594.3		3341.2		2746.9	(31/2$^-$)			

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^{155}Gd(^{28}Si,4nγ) 1990MaYY (continued)

$\gamma(^{179}Pt)$ (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
609.4		3969.1		3359.7		
610.3	14.1 *3*	4144.0	$41/2^-$	3533.7	$37/2^-$	
612.8		3359.7		2746.9	$(31/2^-)$	
625.5	26.6 *2*	3059.8	$35/2^+$	2434.3	$31/2^+$	
640.7		3098.7	$(33/2^-)$	2458.0	$(29/2^-)$	
650.3	34.2 *2*	3266.6	$37/2^+$	2616.3	$33/2^+$	Mult.: DCO=0.8 *2*.
655.8	13.7 *6*	4799.8	$45/2^-$	4144.0	$41/2^-$	Mult.: DCO=1.4 *7*.
678.3		4019.5		3341.2		E_γ: from fig. 26; misprinted as 678.0 in table 3 of 1990MaYY.
681.6	13.7 *3*	3741.4	$39/2^+$	3059.8	$35/2^+$	
704.3	10.1 *3*	5504.1	$49/2^-$	4799.8	$45/2^-$	Mult.: DCO=0.7 *4*.
706.6	19.0 *2*	3973.2	$41/2^+$	3266.6	$37/2^+$	Mult.: DCO=1.5 *7*.
716.8		3815.5	$(37/2^-)$	3098.7	$(33/2^-)$	
735.4	8.3 *4*	4476.8	$43/2^+$	3741.4	$39/2^+$	
751.4	5.9 *3*	6255.5	$53/2^-$	5504.1	$49/2^-$	
756.0		4571.5	$(41/2^-)$	3815.5	$(37/2^-)$	
756.3	11.4 *3*	4729.5	$45/2^+$	3973.2	$41/2^+$	
787.3	4.6 *5*	5264.1	$47/2^+$	4476.8	$43/2^+$	
796.8	6.1 *4*	5526.3	$49/2^+$	4729.5	$45/2^+$	
840.8	3.0 *6*	6367.1	$53/2^+$	5526.3	$49/2^+$	
885.9[&]	3.8 *5*	7253.0?	$57/2^+$	6367.1	$53/2^+$	
921.8[&]	2.3 *7*	8174.8?	$61/2^+$	7253.0?	$57/2^+$	

[†] Uncertainty not stated by 1990MaYY.
[‡] Based on DCO ratio. for Q γ In gate, expected values are 0.6 for pure stretched D transitions and 1.0 for stretched Q (or D, $\Delta J=0$) transitions.
[#] Q or (Q) from DCO ratio; not M2 from RUL based on≤140 ns time window for $\gamma\gamma$ coin.
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[&] Placement of transition in the level scheme is uncertain.

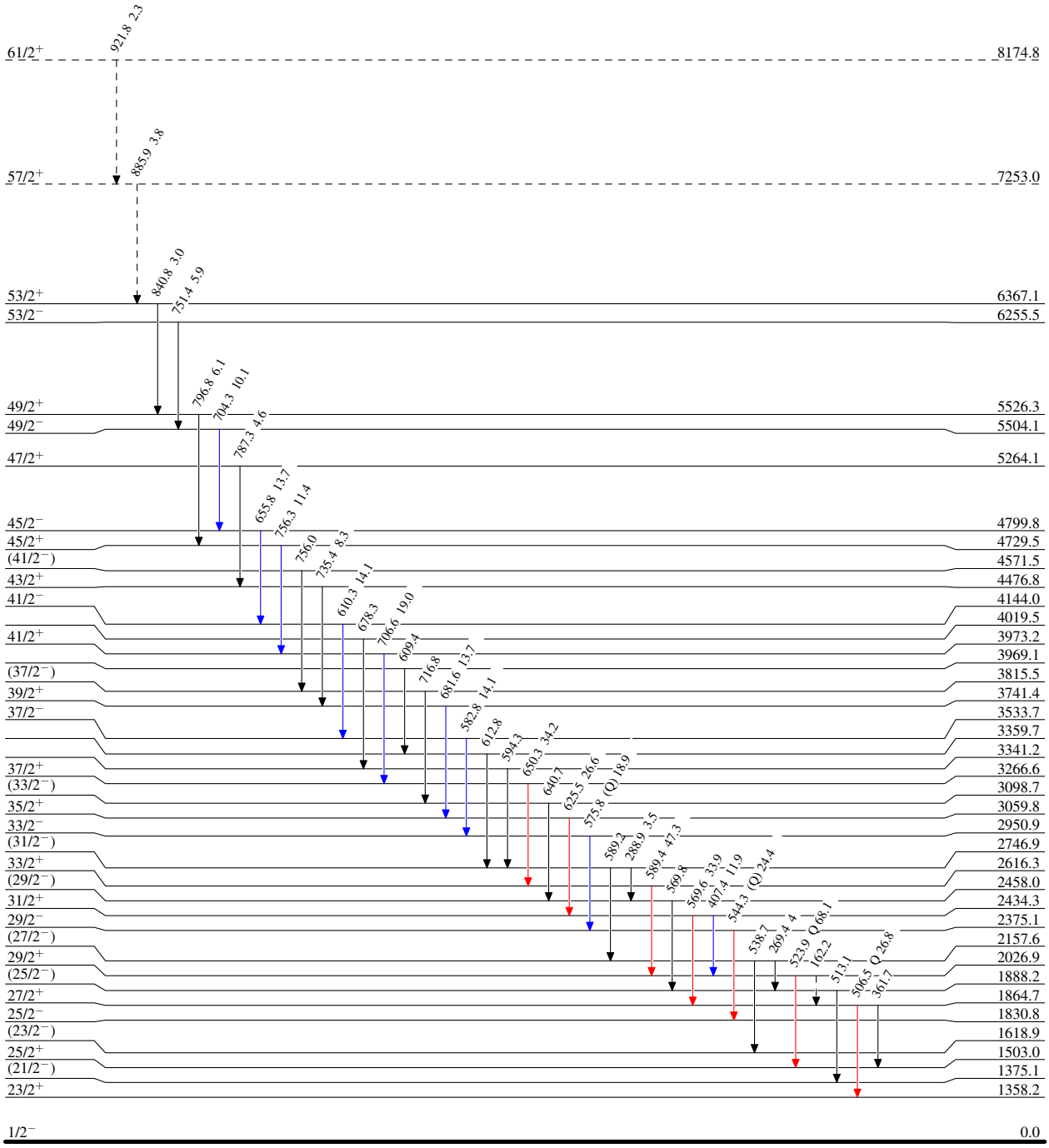
^{155}Gd(^{28}Si,4nγ) 1990MaYY

Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{179}_{78}Pt_{101}$

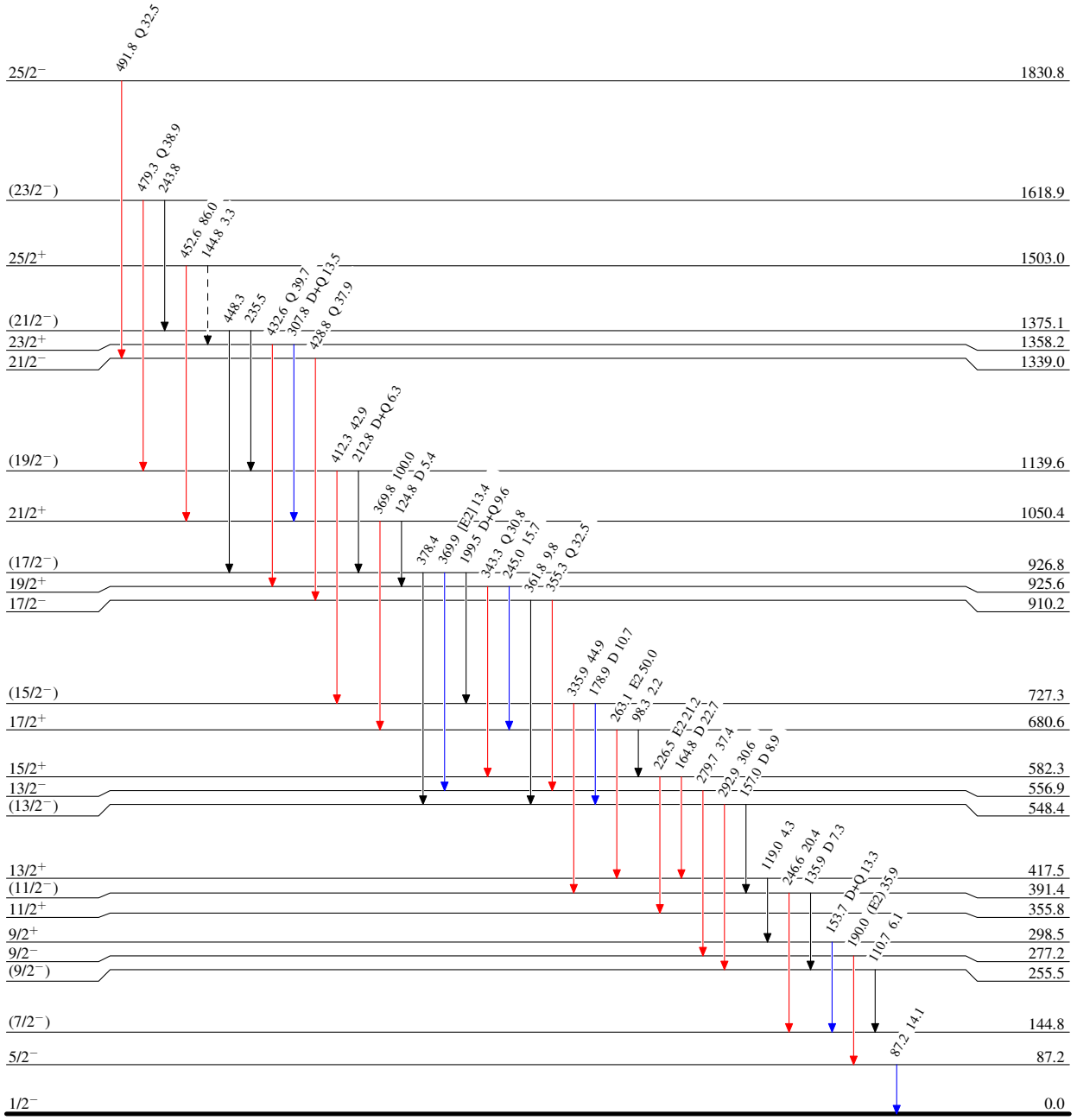
^{155}Gd(^{28}Si,4nγ) 1990MaYY

Level Scheme (continued)

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{179}_{78}Pt_{101}$

^{155}Gd(^{28}Si,4nγ) 1990MaYY