

$^{156}\text{Gd}(^{35}\text{Cl},4n\gamma)$ 1994Re02,1995Re18

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 110, 999 (2009)	1-Nov-2008

1994Re02, 1995Re18: E=169 and 172 MeV; 12 Compton-suppressed Ge spectrometers with inner array of 50 BGO elements; measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin, DCO ratios. See also 1995Re18.

 ^{187}Tl Levels

The gross structure of the level scheme from 1994Re02 agrees with the adopted level scheme; however, there are many small differences which are noted here in comments on the relevant levels and gammas.

E(level) [†]	J ^π [‡]	Comments
334 [#] 4	9/2 ⁻	Additional information 1. E(level): From Adopted Levels.
727.9 [#] 4	11/2 ⁻	
995.7 ^{&} 4	9/2 ⁻	Adopted band assignment differs from that in 1994Re02.
1059.2 [#] 4	13/2 ⁻	Note that adopted $\pi=+$ for this level; also, the adopted band assignment differs from that in 1994Re02.
1344.4 [@] 5	13/2 ⁺	E(level): the adopted order for the 285 and 392 cascade gammas is reversed in 1994Re02; the adopted E(level) is, thus, 1453 keV.
1432.9 [#] 5	15/2 ⁻	E(level): this level is assigned to a 1/2[530] band in Adopted Levels. Additionally, the adopted order for the 374 and 404 cascade gammas is the reverse of that in 1994Re02, and the resulting adopted level at 1465 keV is assigned to the 1/2[660] band.
1446.6 ^{&} 7	13/2 ⁻	
1736.4 [@] 7	17/2 ⁺	
1793.5 [#] 7	17/2 ⁻	Level not adopted; a 362.7 γ (here 360.6) is placed elsewhere in the other (HI,xny) studies. The 734.1 γ of this dataset from this level is absent in other (HI,xny) studies.
1836.7 [#] 7	19/2 ⁻	
1873.4 ^{&} 8	17/2 ⁻	
2102.5 [@] 9	21/2 ⁺	
2298.9 9	19/2 ⁺	
2361.4 ^{&} 10	21/2 ⁻	
2544.9 [@] 10	25/2 ⁺	
2588.1?		not adopted.
2907.3 ^{&} 11	25/2 ⁻	
3055.2 [@] 11	29/2 ⁺	
3491.2 ^{&} 12	29/2 ⁻	Not adopted; see comment on 583.9 γ .
3624.8 [@] 13	33/2 ⁺	
4092.3 ^{&} 13	33/2 ⁻	The adopted energy for the level deexcited by the 601 γ is 3512 because, there, the 601 γ is placed to directly feed the 2908 level.
4245.4 [@] 14	37/2 ⁺	
4907.4 [@] 14	41/2 ⁺	
5603.3 [@] 15	45/2 ⁺	

[†] From least-squares adjustment of $E\gamma$ assuming $\Delta E=0.5$ keV for all $E\gamma$. Energies are relative to E=334 for 9/2⁻ isomer (adopted value: 334 4).

[‡] From 1994Re02, based on unenumerated DCO ratio data and deduced band structure. Note that J suggested in 1994Re02 is two units lower than the adopted value for levels in both the 1/2[660] and the $h_{9/2}$ bands.

[#] Band(A): (π 9/2[505]). Strongly coupled (oblate) band. Only the J=9/2 and 11/2 assignments are retained in Adopted Levels.

$^{156}\text{Gd}(^{35}\text{Cl},4n\gamma)$ **1994Re02,1995Re18 (continued)**

^{187}Tl Levels (continued)

@ Band(B): Configuration= $(\pi 1/2[660])$. Decoupled (prolate) $\Delta J=2$ band.

& Band(C): Configuration= $(\pi 1/2[541]$ OR $\pi 3/2[532])$. Decoupled (prolate) $\Delta J=2$ $h_{9/2}$ band. Note that the 997 level is assigned, instead, to the $9/2[505]$ band in Adopted Levels, and the 3492 level is not adopted.

							$\gamma(^{187}\text{Tl})$		
E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments		
267.7	11.8	995.7	9/2 ⁻	727.9	11/2 ⁻	D			
285.1	90.6	1344.4	13/2 ⁺	1059.2	13/2 ⁻				
331.4	100	1059.2	13/2 ⁻	727.9	11/2 ⁻				
360.6	3.8	1793.5	17/2 ⁻	1432.9	15/2 ⁻				
366.1	70.1	2102.5	21/2 ⁺	1736.4	17/2 ⁺				
373.8	5.8	1432.9	15/2 ⁻	1059.2	13/2 ⁻		Does not deexcite the 1434 level in adopted gammas; see comment on 1434 level.		
392.0	>81.2	1736.4	17/2 ⁺	1344.4	13/2 ⁺		See comment on 1345 level re placement of 392 γ .		
393.9	<152.8	727.9	11/2 ⁻	334	9/2 ⁻				
403.8	7.0	1836.7	19/2 ⁻	1432.9	15/2 ⁻		Does not deexcite the 1838 level in adopted gammas; see comment on 1434 level.		
426.8	42.7	1873.4	17/2 ⁻	1446.6	13/2 ⁻				
442.4	56.8	2544.9	25/2 ⁺	2102.5	21/2 ⁺				
450.9	50.4	1446.6	13/2 ⁻	995.7	9/2 ⁻				
484.6 [#]	5.3	2588.1?		2102.5	21/2 ⁺		not adopted.		
488.0	29.8	2361.4	21/2 ⁻	1873.4	17/2 ⁻				
510.3	38.1	3055.2	29/2 ⁺	2544.9	25/2 ⁺				
545.9	13.1	2907.3	25/2 ⁻	2361.4	21/2 ⁻				
562.5	7.0	2298.9	19/2 ⁺	1736.4	17/2 ⁺				
569.6	20.5	3624.8	33/2 ⁺	3055.2	29/2 ⁺				
583.9	8.5	3491.2	29/2 ⁻	2907.3	25/2 ⁻		This γ is not reported in other (HI,xn γ) studies; not adopted.		
601.1	6.6	4092.3	33/2 ⁻	3491.2	29/2 ⁻				
616.7	6.0	1344.4	13/2 ⁺	727.9	11/2 ⁻	D	DCO ratio suggests stretched D transition (1994Re02). Note that this γ feeds the 335 level in Adopted Levels, gammas, however.		
620.6	12.9	4245.4	37/2 ⁺	3624.8	33/2 ⁺				
661.8	48.9	995.7	9/2 ⁻	334	9/2 ⁻	Q			
662.0	10.2	4907.4	41/2 ⁺	4245.4	37/2 ⁺				
695.9	3.8	5603.3	45/2 ⁺	4907.4	41/2 ⁺				
704.9	7.2	1432.9	15/2 ⁻	727.9	11/2 ⁻				
725.0	4.0	1059.2	13/2 ⁻	334	9/2 ⁻				
734.1 [#]	2.8	1793.5	17/2 ⁻	1059.2	13/2 ⁻		This γ is not reported in other (HI,xn γ) studies; not adopted.		

[†] From 1994Re02; uncertainties not stated by authors.

[‡] Authors' assignment based on unenumerated DCO ratio data.

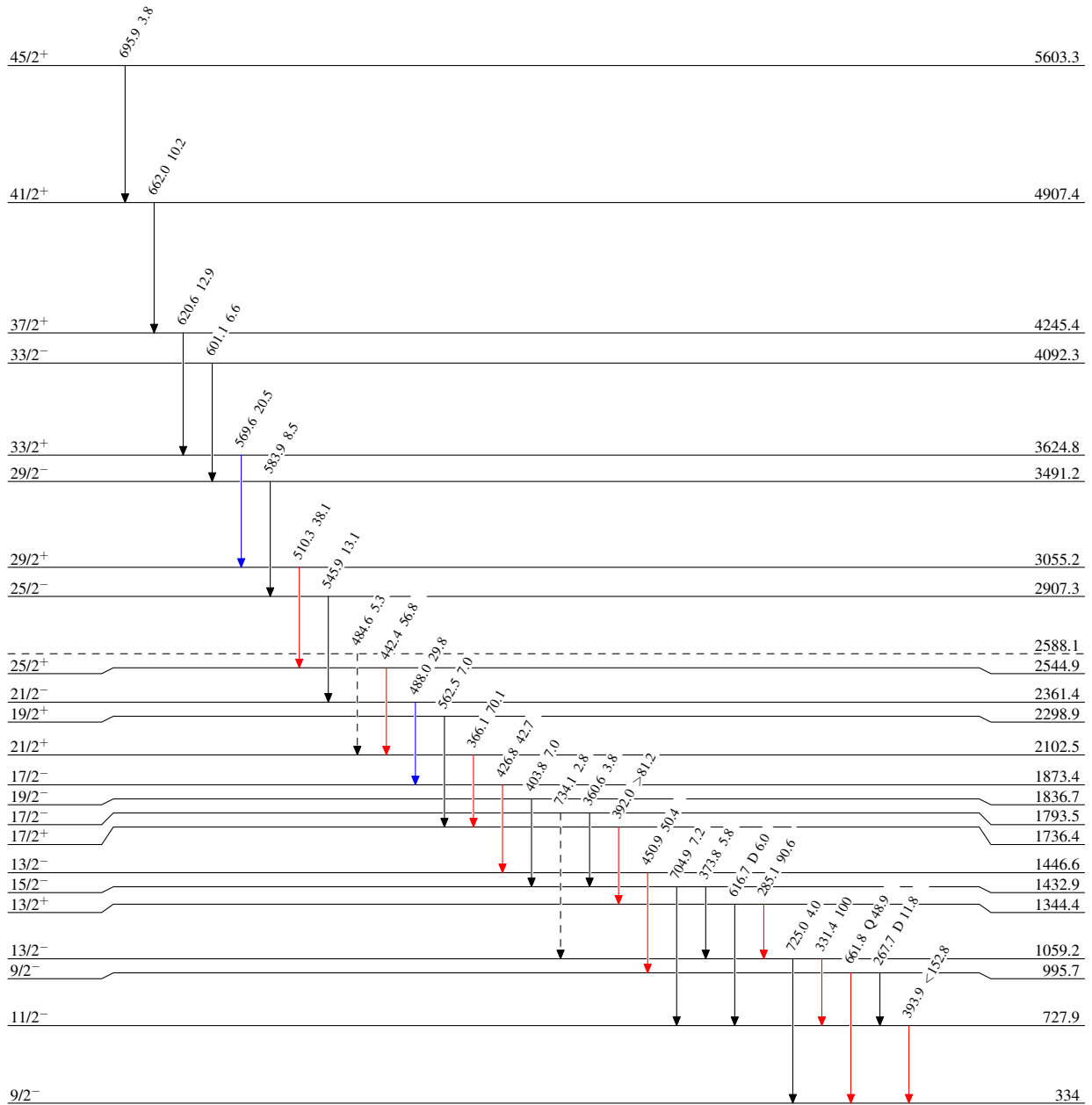
[#] Placement of transition in the level scheme is uncertain.

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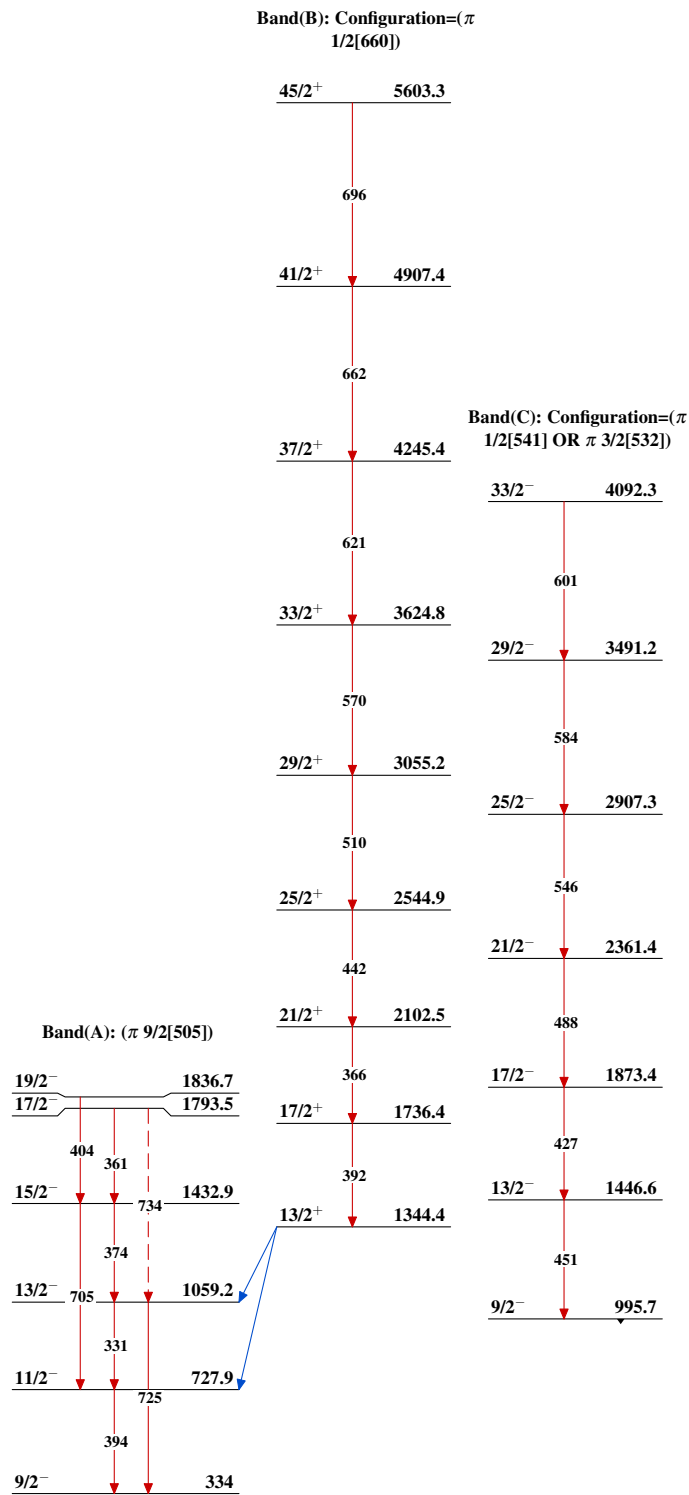
Legend

Level Scheme
Intensities: Relative I_γ

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



$^{187}\text{Tl}_{81}^{106}$

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