^{187}Tl ε decay (51 s+15.60 s) 1983CoZP,2008WoZY,1980WoZP

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

Parent: ^{187}Tl: E=0.0; J^π=(1/2$^+$); $T_{1/2}$≈51 s; Q(ε)=5674 *16*; %ε+%$β^+$ decay<100.0

Parent: ^{187}Tl: E=334 *4*; J^π=(9/2$^-$); $T_{1/2}$=15.60 s *12*; Q(ε)=5674 *16*; %ε+%$β^+$ decay<100.0

1983CoZP: analyzed data, deduced ^{187}Hg levels, isomer Nilsson assignments.

2008WoZY: Data extracted from the same experiment described in 1994RuZX and 1998Ru04; ^{187}Tl^{m,g} produced through ^{176}Hf(^{19}F,^{8}N); Detector: Ge(Li), Se(Li); reported Eγ, Iγ. Eγ and corresponding depopulating energy level from this dataset is only adopted if it is also reported in ^{163}Dy(^{28}Si,4nγ) – 1988Ha15.

1980WoZP: About 110 gammas were observed by 1980WoZP from the decays of g.s. and the isomeric state of ^{187}Tl. γ- and electron-singles, γγ- and ceγ-coincidence data were taken.

^{187}Hg Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	(3/2$^-$)		
0.0+x	(13/2$^+$)		
126.73+x *18*			
161.57 *24*	(9/2$^+$)	33 ns	J^π: This level gets more low-spin feeding compared to the 167.7 keV level and so J^π=11/2$^+$ for the 167.7 keV level suggests 9/2$^+$ for this level. A B(E2) of 1.3 W.u. which is very slow for an E2 transition suggests a 9/2$^+$[624] configuration for this level, consistent with the ground-state Nilsson assignments for all the N=107 isotones (2008WoZY). $T_{1/2}$: From 1983CoZP.
167.58 *22*	(11/2$^+$)		J^π: This level gets less low-spin feeding compared to the 161.5 keV level and so J^π=11/2$^+$ for this level suggests 9/2$^+$ for the 161.5 keV level (2008WoZY).
252.3+x *3*			
257.35 *23*			
269.8 *4*			
332.9+x *3*			
349.53+x *22*			
374.6+x *3*			
393.4+x *6*			
402.3 *4*			
403.7+x *3*			
404.0+x *5*			
411.18+x *22*			
423.65+x *20*			
441.27+x *23*			
457.27+x *22*			
481.5+x *6*			
498.1+x *3*			
563.72+x *23*			
568.8+x *5*			
573.0+x *6*			
597.3 *4*			
611.9 *6*			
631.8 *3*			
667.6+x *5*			
704.4+x *6*			
711.9+x *5*			
733.1 *4*			
770.82+x *22*			
784.3+x *6*			
828.8+x *4*			
832.6 *4*			
843.6+x *4*			

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^{187}Tl ε decay (51 s+15.60 s) 1983CoZP,2008WoZY,1980WoZP (continued)

^{187}Hg Levels (continued)

E(level)	E(level)	E(level)	E(level)
850.0 *4*	966.5+x *6*	1219.9 *5*	2131.4+x *3*
934.8+x *4*	1150.7 *6*	1701.06+x *21*	2185.8 *11*
952.8+x *6*	1169.5+x *6*	2048.6+x *11*	

† From Adopted Levels.

γ(^{187}Hg)

E_γ †	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
90.2# *5*	0.4 *1*	257.35		167.58	(11/2$^+$)	
102.4‡ *5*	0.5 *2*	269.8		167.58	(11/2$^+$)	
106.7 *5*	0.5 *2*	563.72+x		457.27+x		
108.1‡ *3*	1.4 *4*	269.8		161.57	(9/2$^+$)	
127.0 *3*	3.7 *6*	126.73+x		0.0+x	(13/2$^+$)	
x135.4@ *5*	0.5 *2*					
141.1@ *5*	0.5 *2*	393.4+x		252.3+x		
151.7 *3*	1.1 *3*	404.0+x		252.3+x		
161.5@ *3*	7.9 *12*	161.57	(9/2$^+$)	0.0	(3/2$^-$)	E_γ: 161 in 1983CoZP.
167.7‡ *3*	7.5 *11*	167.58	(11/2$^+$)	0.0+x	(13/2$^+$)	
214.6 *5*	0.8 *2*	563.72+x		349.53+x		
229.2 *5*	0.4 *1*	481.5+x		252.3+x		
234.7‡ *5*	1.0 *3*	402.3		167.58	(11/2$^+$)	
240.8‡ *5*	≤1.1	402.3		161.57	(9/2$^+$)	
x249.9 *3*	1.1 *3*					
252.3# *3*	5.2 *8*	252.3+x		0.0+x	(13/2$^+$)	
257.4# *3*	2.8 *4*	257.35		0.0	(3/2$^-$)	
x266.2 *5*	0.8 *2*					
x276.4@ *5*	0.7 *2*					
296.9 *3*	3.4 *5*	423.65+x		126.73+x		
x300.0‡ *3*	100 *15*					E_γ: ^{187}Tl^m IT decay.
314.7# *3*	2.5 *4*	441.27+x		126.73+x		
316.5‡ *3*	1.6 *5*	568.8+x		252.3+x		
320.7 *5*	0.6 *2*	573.0+x		252.3+x		
330.8 *5*	0.7 *2*	457.27+x		126.73+x		
332.9‡ *3*	4.3 *6*	332.9+x		0.0+x	(13/2$^+$)	
340.2 *3*	2.4 *4*	597.3		257.35		
x344.3@ *5*	≤0.5					
349.6 *3*	11.6 *17*	349.53+x		0.0+x	(13/2$^+$)	
354.9@ *5*	≤1.0	704.4+x		349.53+x		
x358.2@ *3*	1.3 *4*					
359.9 *5*	≤0.3	770.82+x		411.18+x		
374.6 *3*	2.0 *6*	374.6+x		0.0+x	(13/2$^+$)	
x383.7# *5*	0.8 *2*					
x386.0 *5*	0.6 *2*					
402.3@ *3*	1.2 *3*	843.6+x		441.27+x		
403.7# *3*	3.4 *5*	403.7+x		0.0+x	(13/2$^+$)	
405.0@ *5*	≤0.5	828.8+x		423.65+x		

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^{187}Tl ε decay (51 s+15.60 s) 1983CoZP,2008WoZY,1980WoZP (continued)

γ(^{187}Hg) (continued)

E_γ [†]	I_γ	E_i(level)	E_f	J^π_f	E_γ [†]	I_γ	E_i(level)	E_f	J^π_f
[x]408.9 *5*	0.5 *2*				[x]588.3[#] *5*	0.8 *2*			
411.2 *3*	6.6 *10*	411.18+x	0.0+x	(13/2$^+$)	[x]611.5 *3*	1.0 *3*			
415.3[‡] *3*	1.3 *4*	667.6+x	252.3+x		617.0 *5*	0.7 *2*	966.5+x	349.53+x	
417.7[@] *3*	1.2 *4*	828.8+x	411.18+x		[x]624.3[@] *5*	0.7 *2*			
421.2 *3*	≤0.5	770.82+x	349.53+x		631.5[‡] *5*	1.0 *3*	631.8	0.0	(3/2$^-$)
423.9 *3*	1.1 *3*	423.65+x	0.0+x	(13/2$^+$)	[x]642.9 *5*	0.8 *2*			
429.2[@] *5*	1.0 *3*	597.3	167.58	(11/2$^+$)	[x]655.2[‡] *5*	0.9 *3*			
437.0 *3*	5.0 *8*	563.72+x	126.73+x		[x]661.2 *3*	3.1 *5*			
441.1[#] *3*	1.4 *4*	441.27+x	0.0+x	(13/2$^+$)	[x]666.5[#] *5*	0.7 *2*			
444.3[‡] *5*	0.9 *3*	611.9	167.58	(11/2$^+$)	670.9 *5*	0.8 *2*	832.6	161.57	(9/2$^+$)
457.4 *3*	7.4 *11*	457.27+x	0.0+x	(13/2$^+$)	[x]677.8[‡] *5*	0.7 *2*			
459.6 *3*	1.2 *4*	711.9+x	252.3+x		688.4 *3*	1.3 *4*	850.0	161.57	(9/2$^+$)
464.3[‡] *3*	1.1 *3*	631.8	167.58	(11/2$^+$)	700.5 *5*	0.7 *2*	952.8+x	252.3+x	
475.7 *5*	0.8 *2*	733.1	257.35		[x]731.2[@] *3*	1.5 *5*			
[x]483.8[@] *3*	1.3 *4*				770.8 *3*	1.1 *3*	770.82+x	0.0+x	(13/2$^+$)
486.8 *3*	1.3 *4*	1219.9	733.1		[x]781.3 *5*	0.7 *2*			
498.1[#] *3*	4.2 *6*	498.1+x	0.0+x	(13/2$^+$)	820.0 *5*	0.7 *2*	1169.5+x	349.53+x	
[x]523.8[#] *3*	3.7 *6*				[x]905.7[#] *3*	1.3 *4*			
[x]527.6 *5*	0.7 *2*				1137.6 *3*	2.7 *4*	1701.06+x	563.72+x	
532.0[@] *5*	≤0.3	784.3+x	252.3+x		[x]1145.7[@] *3*	1.1 *3*			
553.4 *5*	0.9 *3*	1150.7	597.3		1277.7 *3*	2.1 *3*	1701.06+x	423.65+x	
571.6 *3*	3.8 *6*	733.1	161.57	(9/2$^+$)	1554[@]		2185.8	631.8	
575.3 *5*	0.8 *2*	832.6	257.35		1637.4[@]		2048.6+x	411.18+x	
[x]578.1 *3*	1.7 *5*				1674.3[@] *3*	3.3 *5*	2131.4+x	457.27+x	
[x]580.3 *3*	1.2 *4*				1700.5 *3*	2.7 *4*	1701.06+x	0.0+x	(13/2$^+$)
585.3 *3*	5.4 *8*	934.8+x	349.53+x		1720.1[@] *3*	1.4 *4*	2131.4+x	411.18+x	

[†] From 2008WoZY. γ-rays from ^{187}Tl^g ε decay only, except otherwise noted. Eγ and corresponding depopulating energy level from this dataset is only adopted if it is also reported in ^{163}Dy(^{28}Si,4nγ) – 1988Ha15.
[‡] From ^{187}Tl^m ε decay only.
[#] From both the ^{187}Tl^{m+g} ε decay.
[@] Source from ^{187}Tl^g or ^{187}Tl^m ε decay is not mentioned in 2008WoZY.
[x] γ ray not placed in level scheme.

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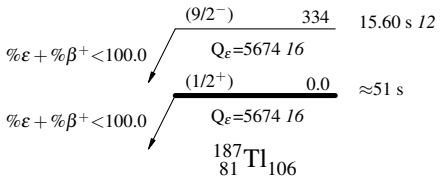
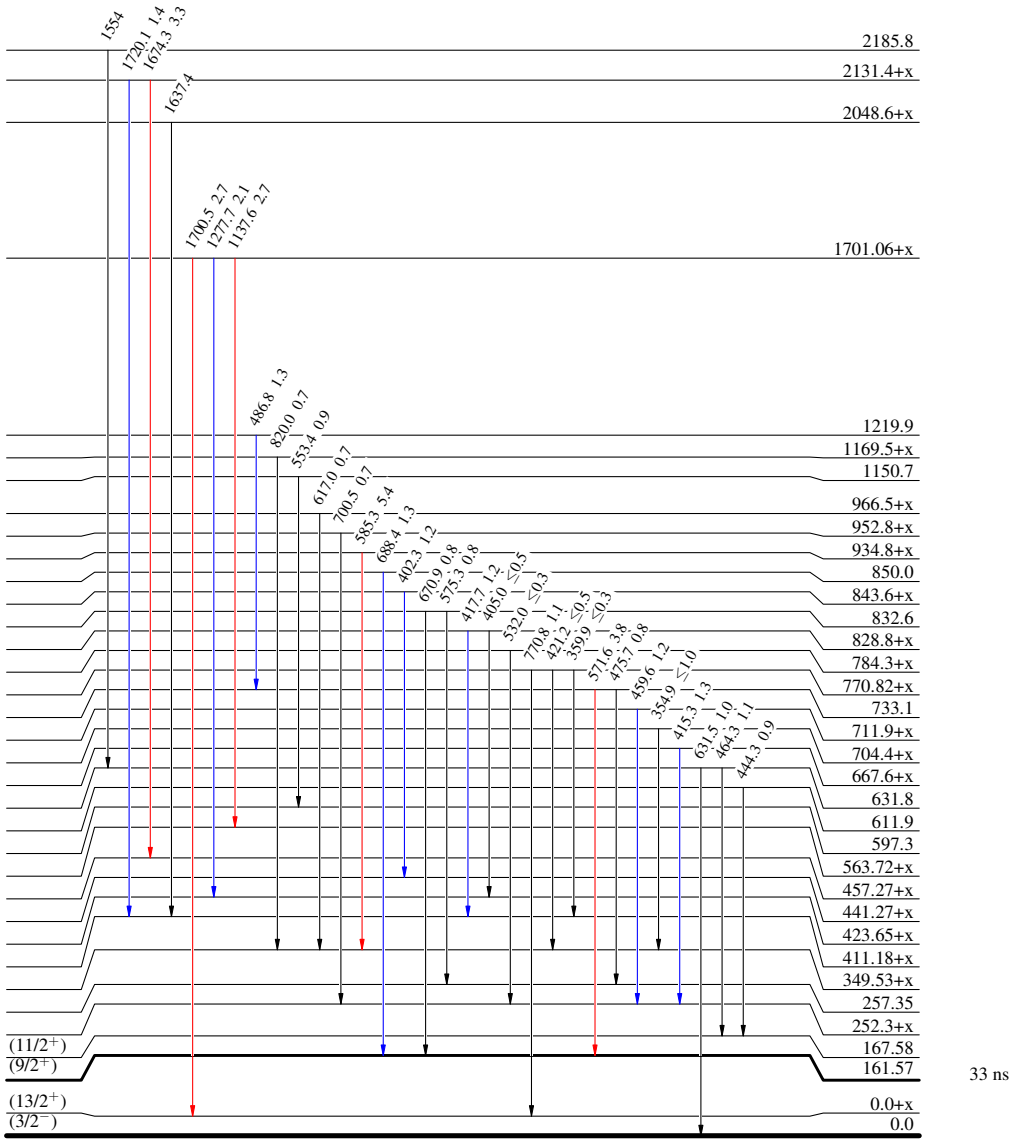
Decay Scheme

Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$





$^{187}_{80}Hg_{107}$

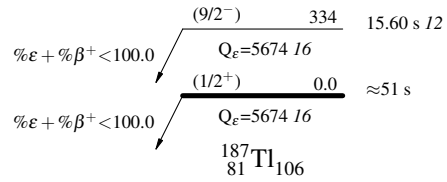
^{187}Tl ε decay (51 s+15.60 s) 1983CoZP,2008WoZY,1980WoZP

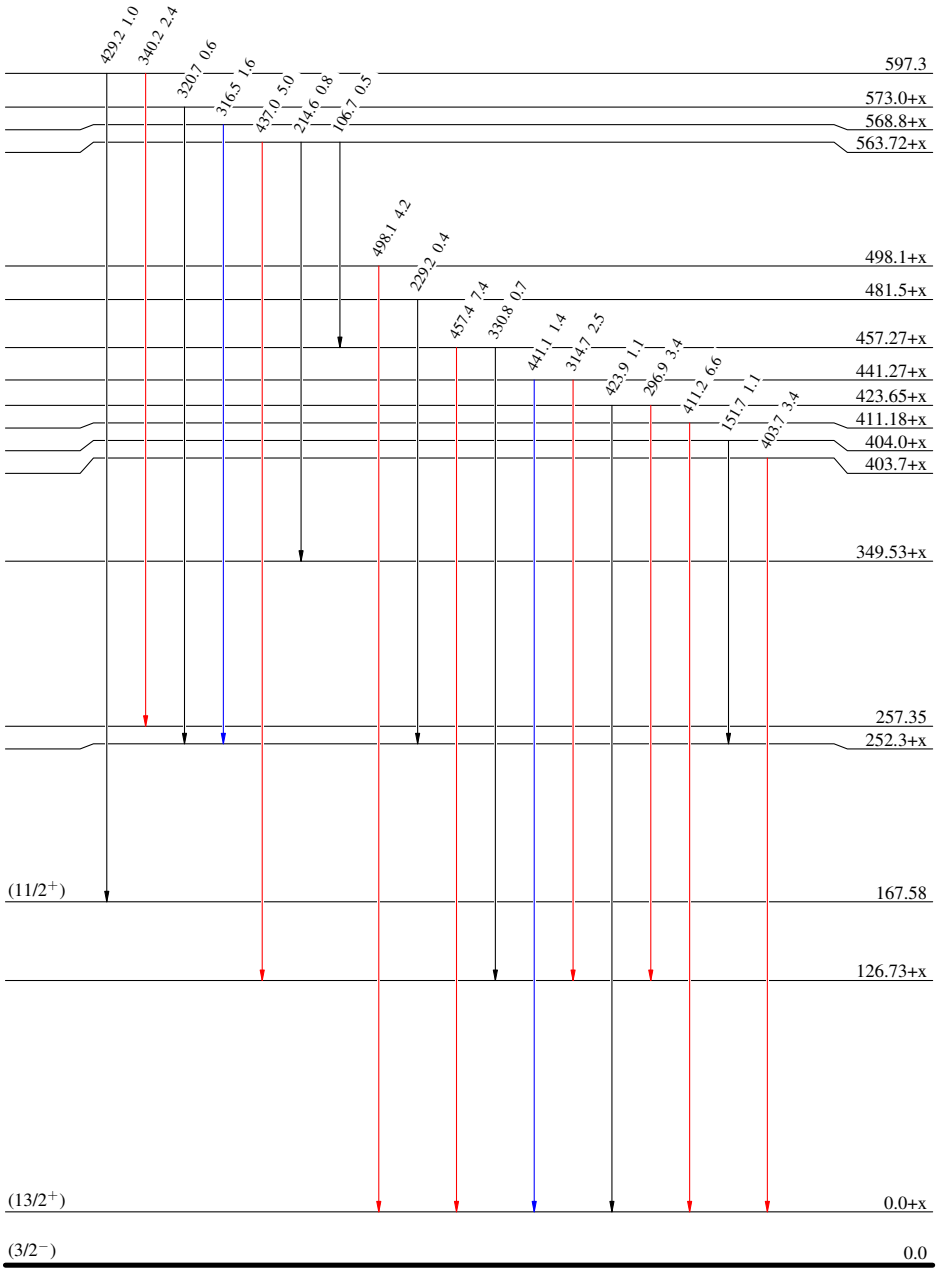
Decay Scheme (continued)

Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$





$^{187}_{80}Hg_{107}$

^{187}Tl ε decay (51 s+15.60 s) 1983CoZP,2008WoZY,1980WoZP

Decay Scheme (continued)

Intensities: Relative I_γ