^{198}Pt(^{6}Li,4nγ) 1981Kr03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 192,1 (2023)	1-Aug-2023

Beam: E(^{6}Li)=30-40 MeV; Target: ^{198}Pt, 5 mg/cm^2 thick and enriched to 96% in ^{198}Pt; Detectors: two-Ge(Li) detectors; Measured: exc. function, γ singles, $\gamma\gamma$ coin, $\gamma\gamma$(t), Eγ, Iγ, $\gamma\gamma(\theta)$; Deduced: level scheme, J^π, $T_{1/2}$.

^{200}Tl Levels

E(level)[†]	J$^\pi$[#]	$T_{1/2}$	Comments
0.0	2$^-$	26.1 h *1*	J$^\pi$,$T_{1/2}$: From Adopted Levels.
323.70 *17*	(3)$^-$		J$^\pi$: From Adopted Levels.
540.90 *17*	4$^-$		
753.60 *24*	7$^+$	34.0 ms *10*	$T_{1/2}$: From Adopted Levels.
762.00 *24*	5$^+$	0.33 μs *5*	$T_{1/2}$: From 1972Is01, but assigned to this level by 1981Kr03.
886.1 *3*	6$^+$		
1023.6 *3*	6$^+$		
1173.8 *3*	(6,8)$^+$		
1244.0 *3*	7$^-$[‡]	4.8 ns *2*	$T_{1/2}$: From $\gamma\gamma$(t) in 1981Kr03.
1247.4? *3*	(8)$^-$[‡]		E(level): Based on the observed weak 493.8γ in parallel to 490.4γ; both transitions are proposed in 1981Kr03 to feed the same level (J^π=7$^+$ at 753.6 keV).
1322.9 *4*	(9,10)$^-$[‡]		
1349.4 *4*			
1442.1 *5*	(10,11)$^-$[‡]		
1659.3 *5*	(11,12)$^-$[‡]		
1889.1 *5*	(12,13)$^-$[‡]		
2070.3 *5*			
2237.4 *6*	(13,14)$^-$[‡]		
2548.1 *6*	(14,15)$^-$[‡]		

[†] From a least-squares fit to Eγ.

[‡] From possible configuration=$\pi(h^{-1}_{9/2})\otimes\nu(i^{-1}_{13/2})$ in 1981Kr03. The assignment is tentative.

[#] Based on the measured multipolarities for γ ray transitions in 1981Kr03, unless otherwise specified.

γ(^{200}Tl)

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	α[#]	Comments
(3.4 *4*)	0.06 *3*	1247.4?	(8)$^-$	1244.0	7$^-$	[M1]	1937	E$_\gamma$: From level energy differences. Transition was not measured directly, but suggested by the authors in analogy with ^{198}Tl. I$_\gamma$: From I(γ+ce)(3.4γ)/I(γ+ce)(493.8γ)=13 *4* in 1981Kr03, Iγ(493.8γ) and α(3.4γ and 493.8γ).
75.5 *2*	26 *4*	1322.9	(9,10)$^-$	1247.4?	(8)$^-$	M1		
119.2 *2*	12 *2*	1442.1	(10,11)$^-$	1322.9	(9,10)$^-$	M1		Mult.: A_2=−0.16 *3* and A_4=0.03 *5*.
132.4 *2*	16 *2*	886.1	6$^+$	753.60	7$^+$	M1		Mult.: From intensity balance considerations in 1981Kr03. A_2=−0.05 *2* with A_4 set to zero.
[x]151.2 *2*	12 *2*							A_2=0.16 *5* and A_4=−0.06 *9* in 1981Kr03.
175.6 *2*	15 *2*	1349.4		1173.8	(6,8)$^+$			
[x]178.6 *2*	11 *2*							
[x]191.8 *2*	14 *2*							
212.7 *2*	110 *17*	753.60	7$^+$	540.90	4$^-$	E3		Mult.: From adopted gammas. A_2=0.06 *4* and A_4=0.01 *6* in 1981Kr03.

Continued on next page (footnotes at end of table)

^{198}Pt(^{6}Li,4nγ) 1981Kr03 (continued)

$\gamma(^{200}Tl)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. ‡	α #	Comments
217.2 *2*	36 *5*	540.90	4^-	323.70	$(3)^-$	M1(+E2)		Mult.: A_2=−0.23 *5* and A_4=−0.12 *10*; multiply placed.
217.2 *2*	8 *1*	1659.3	$(11,12)^-$	1442.1	$(10,11)^-$	M1(+E2)		Mult.: ΔJ=1 band member.
220.4 *2*	5 *1*	1244.0	7^-	1023.6	6^+			
221.1 *2*	80 *12*	762.00	5^+	540.90	4^-	E1		Mult.: From α=0.06 *2* from intensity balance considerations in 1981Kr03. A_2=0.01 *2* and A_4=0.02 *3*, but values are inconsistent with the proposed E1 multipolarity presumably due to the loss of alignment following the decay of a long-lived isomer.
229.8 *2*	20 *3*	1889.1	$(12,13)^-$	1659.3	$(11,12)^-$	M1(+E2)		Mult.: A_2=−0.21 *4* and A_4=0.08 *7*; ΔJ=1 band member.
261.6 *2*	40 *6*	1023.6	6^+	762.00	5^+	M1(+E2)		Mult.: A_2=−0.26 *3* and A_4=−0.03 *6*.
287.7 *2*	20 *3*	1173.8	$(6,8)^+$	886.1	6^+	M1,E2		Mult.: A_2=0.37 *4*; A_4=−0.14 *6*.
310.7 *2*	7 *1*	2548.1	$(14,15)^-$	2237.4	$(13,14)^-$	M1(+E2)		Mult.: A_2=−0.23 *13* with A_4 set to zero; ΔJ=1 band member.
323.7 *2*	18 *3*	323.70	$(3)^-$	0.0	2^-			
348.3 *2*	13 *2*	2237.4	$(13,14)^-$	1889.1	$(12,13)^-$	M1+E2		Mult.: A_2=−0.42 *5* and A_4 was set to zero; ΔJ=1 band member.
357.9 *2*	43 *6*	1244.0	7^-	886.1	6^+	E1		Mult.: From intensity balance considerations in 1981Kr03; A_2=−0.04 *4* (with A_4 set to zero), but this value is inconsistent with that expected for a pure E1 transition.
411.0 *2*	9 *1*	2070.3		1659.3	$(11,12)^-$			
420.3 *2*	47 *7*	1173.8	$(6,8)^+$	753.60	7^+	M1+E2		Mult.: A_2=−0.62 *9* and A_4=−0.13 *9*.
447.6		1889.1	$(12,13)^-$	1442.1	$(10,11)^-$			E_γ: From the level scheme of 1981Kr03.
490.4 *2*	100 *15*	1244.0	7^-	753.60	7^+	(E1)		Mult.: A_2=0.35 *1* and A_4=−0.02 *2* consistent with J to J stretched dipole transition; pure E1 is suggested from unpublished ce studies reported in 1981Kr03.
493.8 *2*	9 *3*	1247.4?	$(8)^-$	753.60	7^+	[E1]	0.00947	
540.9 *2*	476 *71*	540.90	4^-	0.0	2^-	E2		Mult.: A_2=0.08 *2* and A_4=−0.01 *4*, but values are inconsistent with proposed E2 multipolarity presumably due to the lost of alignment following decays of long-lived isomers.
578.1		2237.4	$(13,14)^-$	1659.3	$(11,12)^-$			E_γ: From the level scheme of 1981Kr03.
658.6		2548.1	$(14,15)^-$	1889.1	$(12,13)^-$			E_γ: From the level scheme of 1981Kr03.

† From 1981Kr03. ΔEγ is reported to be between 0.1 keV and 0.2 keV (1981Kr03). ΔEγ=0.2 keV is assumed by the evaluator for all transitions; ΔIγ is reported between 5% and 15% (1981Kr03). ΔIγ=15% is assumed by the evaluator for all transitions.

‡ From 1981Kr03, based on $\gamma(\theta)$, unless otherwise stated.

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.

x γ ray not placed in level scheme.

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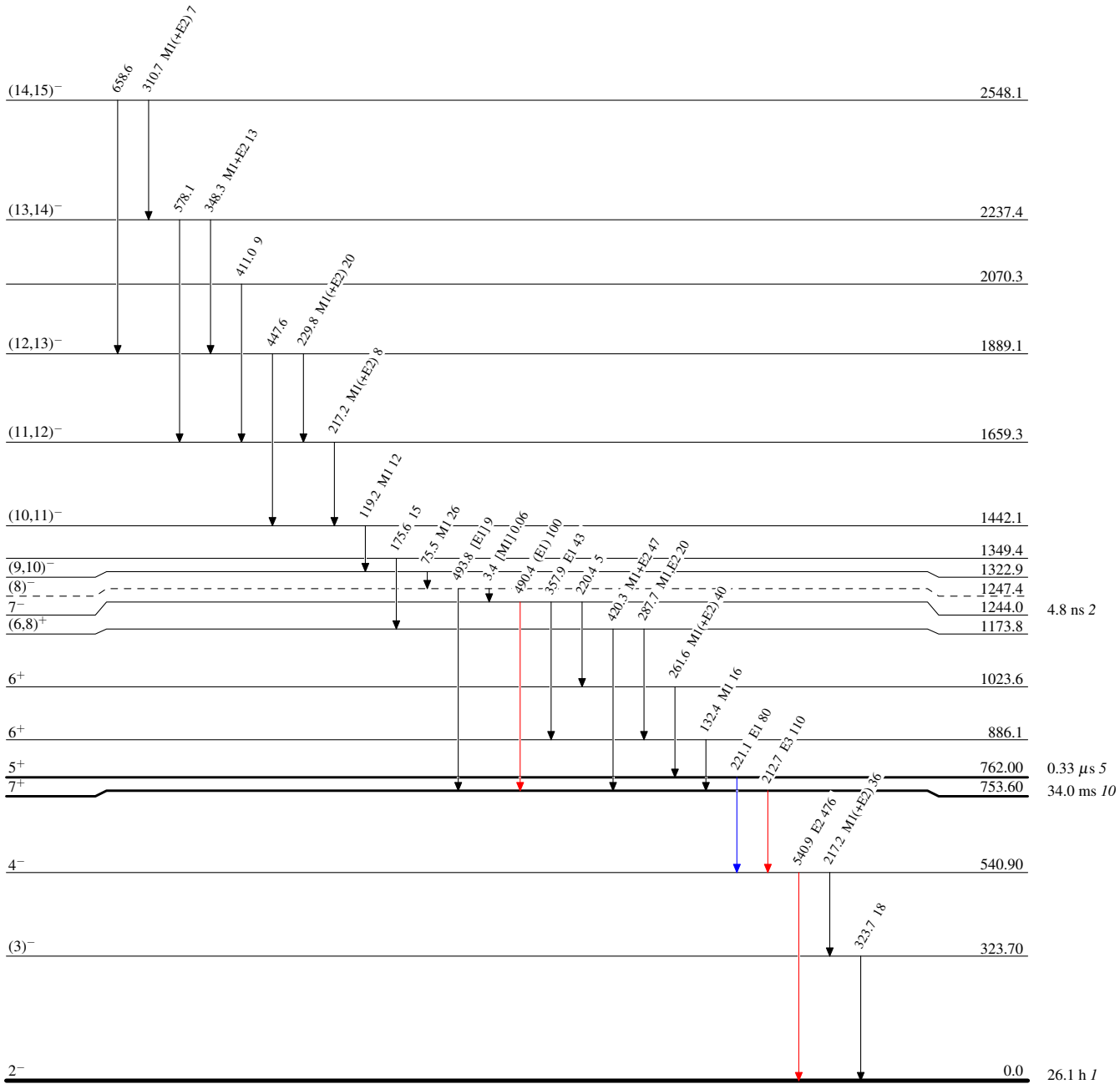
Level Scheme

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)



$^{200}_{81}Tl_{119}$