^{202}Pb ε decay (3.54 h) 1957Mc40,1972Gu06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 196,342 (2024)	1-Sep-2023

Parent: ^{202}Pb: E=2169.83 *8*; $J^{\pi}=9^{-}$; $T_{1/2}$=3.54 h *2*; Q(ε)=40 *4*; %ε decay=9.7 *4*

^{202}Tl Levels

E(level)[†‡]	Jπ[‡]	$T_{1/2}$[‡]
0.0	2^{-}	12.4706 d *55*
490.47 *7*	4^{-}	
950.19 *10*	7^{+}	591 μs *3*
1098.94 *14*	6^{+}	
1340.13 *12*	8^{+}	
1552.09 *12*	9^{+}	
1675.68 *16*	$8^{+},9^{+}$	

† From a least-squares fit to Eγ.
‡ From Adopted Levels.

ε radiations

E(decay)	E(level)	Iε[†]	Log *ft*	Comments
(534 *4*)	1675.68	0.29 *7*	7.49 *11*	εK=0.7653 *5*; εL=0.1757 *4*; εM+=0.05902 *13*
(658 *4*)	1552.09	2.2 *4*	6.82 *9*	εK=0.7762 *3*; εL=0.16790 *20*; εM+=0.05594 *8*
(870 *4*)	1340.13	6.7 *9*	6.60 *7*	εK=0.7868 *2*; εL=0.1603 *1*; εM+=0.05293 *5*
(1260 *4*)	950.19	0.9 *9*	8.6[1u] *5*	εK=0.7733 *2*; εL=0.1698 *2*; εM+=0.05684 *5*

† For absolute intensity per 100 decays, multiply by 0.98.

γ(^{202}Tl)

Iγ normalization: From I(γ+ce)(490.47γ)=100% and %ε=9.7 *4*.

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
148.55 *15*	0.45 *15*	1098.94	6^{+}	950.19	7^{+}	M1(+E2)	≤0.3	2.71 *8*	%Iγ=0.230 *16* α(K)=2.19 *9*; α(L)=0.399 *12*; α(M)=0.094 *4* α(N)=0.0237 *9*; α(O)=0.00457 *14*; α(P)=0.000414 *9* Mult.: K/L=6.1 *12* (1957Mc40); α(K)exp=3.0 *12*.
211.92 *7*	1.5 *3*	1552.09	9^{+}	1340.13	8^{+}	M1		1.023 *14*	%Iγ=0.77 *5* α(K)=0.838 *12*; α(L)=0.1423 *20*; α(M)=0.0332 *5* α(N)=0.00839 *12*; α(O)=0.001630 *23*; α(P)=0.0001540 *22* Mult.: α(L1)exp=0.14 (1972Gu06).
241.1 *1*	1.7 *3*	1340.13	8^{+}	1098.94	6^{+}	E2		0.2186 *31*	%Iγ=0.87 *6* α(K)=0.1081 *15*; α(L)=0.0828 *12*; α(M)=0.02135 *30* α(N)=0.00535 *8*; α(O)=0.000943 *13*; α(P)=4.32×10^{-5} *6*

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^{202}Pb ε decay (3.54 h) 1957Mc40,1972Gu06 (continued)

γ(^{202}Tl) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
									I_γ: Doublet with 240.3γ in ^{202}Pb IT decay; Iγ(241.1γ) deduced from Iγ(240γ+241γ)=2.2 *3* (1972Gu06) and Iγ(240.3γ)=0.51 *4* from ^{202}Pb IT decay. Mult.: K/L=1.3 *2* and L12/L3=2.5 *3* (1957Mc40).
335.55 *10*	0.45 *10*	1675.68	8^+,9^+	1340.13	8^+	M1(+E2)	≤0.7	0.255 *35*	%Iγ=0.230 *16* α(K)=0.206 *31*; α(L)=0.0372 *28*; α(M)=0.0087 *6* α(N)=0.00221 *15*; α(O)=0.000425 *32*; α(P)=3.9×10^{-5} *5* Mult.: From α(K)exp=0.23 *6*; K/L ≈ 5 (1957Mc40).
389.94 *7*	12.4 *10*	1340.13	8^+	950.19	7^+	M1(+E2)	≤0.4	0.1832 *99*	%Iγ=6.3 *4* α(K)=0.150 *9*; α(L)=0.0256 *10*; α(M)=0.00600 *21* α(N)=0.00151 *5*; α(O)=0.000293 *11*; α(P)=2.74×10^{-5} *14* Mult.: α(K)exp=0.18 *3*; K/L=6 *3* (1957Mc40).
459.72 *7*	17.3 *10*	950.19	7^+	490.47	4^-	E3		0.1212 *17*	%Iγ=8.9 *6* α(K)=0.0614 *9*; α(L)=0.0447 *6*; α(M)=0.01165 *16* α(N)=0.00294 *4*; α(O)=0.000527 *7*; α(P)=2.99×10^{-5} *4* Mult.: L12/L3=5.1 *5* and K/L<1.7 (1957Mc40); α(L)exp=0.041 *7*; K/L=1.51 *15* (1955Be12).
490.47 *7*	18.4 *10*	490.47	4^-	0.0	2^-	E2		0.0295 *4*	%Iγ=9.4 *6* α(K)=0.02096 *29*; α(L)=0.00643 *9*; α(M)=0.001591 *22* α(N)=0.000400 *6*; α(O)=7.33×10^{-5} *10*; α(P)=4.91×10^{-6} *7* Mult.: α(L)exp=0.0072 *12*; L12/L3=8 *2* (1957Mc40).
601.95 *8*	1.2 *1*	1552.09	9^+	950.19	7^+	E2		0.01825 *26*	%Iγ=0.61 *4* α(K)=0.01364 *19*; α(L)=0.00350 *5*; α(M)=0.000854 *12* α(N)=0.0002148 *30*; α(O)=3.99×10^{-5} *6*; α(P)=2.92×10^{-6} *4* Mult.: α(K)exp=0.016 (1972Gu06).

[†] From 1972Gu06, unless otherwise stated. Iγ relative to Iγ(787γ)=100 in ^{202}Pb IT decay.
[‡] From α(K)exp,α(L)exp determined from Ice(γ)/Ice(787γ) in 1957Mc40, α(K)exp(787γ)=0.078 *8* (^{202}Pb IT decay) and Iγ/Iγ(787γ) from 1972Gu06, and sub-shell ratios, unless otherwise stated.
[#] From α(K)exp, α(L)exp and K/L and the briccmixing program.
[@] Additional information 1.
[&] For absolute intensity per 100 decays, multiply by 0.51 *4*.

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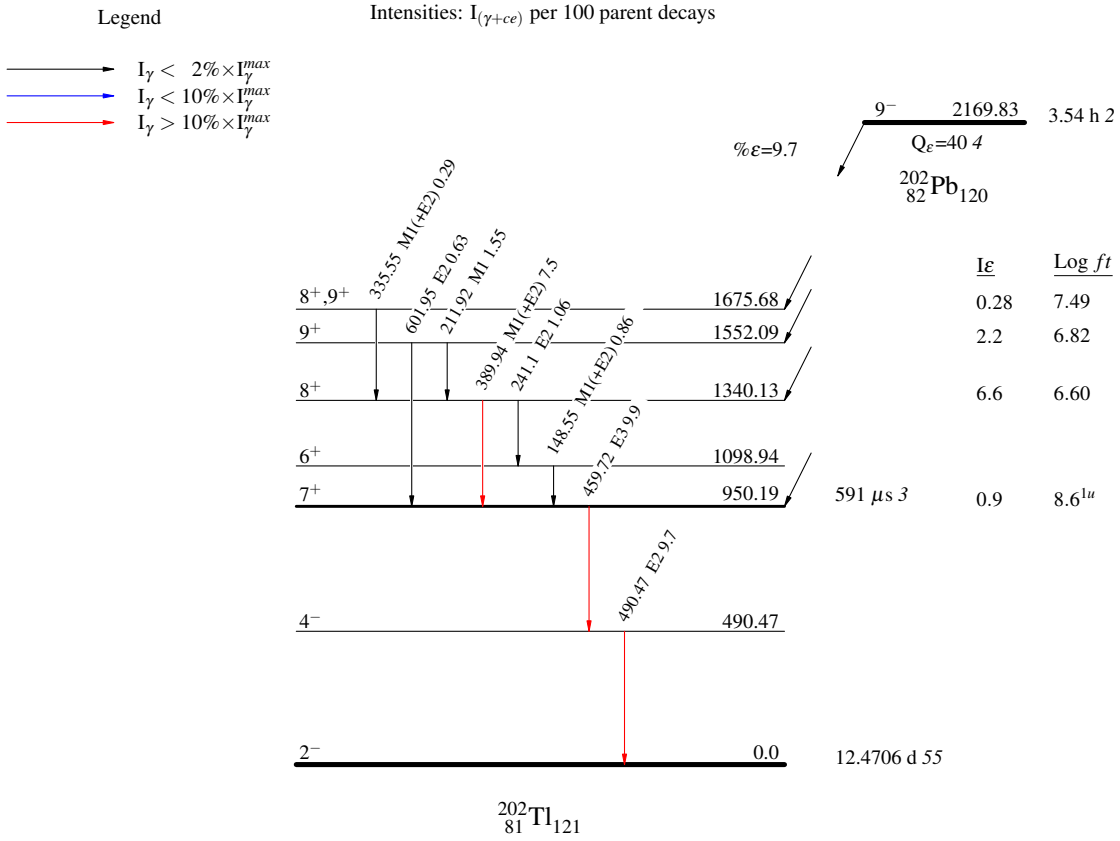
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



$^{202}_{81}Tl_{121}$