^{206}Tl IT decay 1978Ur01,1976Ha44,1976Be44

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 201,346 (2025)	21-Jan-2025

Parent: ^{206}Tl: E=2643.10 *18*; $J^{\pi}=(12)^{-}$; $T_{1/2}$=3.74 min *3*; %IT decay=100

^{206}Tl-E,J^{π},$T_{1/2}$: From Adopted Levels.

^{206}Tl-Dominant configuration=$\pi(h^{-1}_{11/2})\otimes\nu(i^{-1}_{13/2})$.

1976Be44: produced by ^{204}Hg(α,pn) reaction on enriched (99.7%) target with E(α)=39-55 MeV. γ's measured with Ge detector.

1976Ha44: produced by ^{204}Hg(^{7}Li,αn) reaction on enriched (92.5%) target with E(^{7}Li)=36 MeV. Measured: γ singles, $\gamma\gamma$ coincidences, perturbed $\gamma\gamma(\theta)$ and γ(t) with Ge(Li) detectors.

1978Ur01: produced by ^{209}Bi(n,α) reaction with E(n)=14 MeV. Measured γ singles and $\gamma\gamma$ coincidences with Ge detectors.

Others: 1976HaXT, 1976HaYV, 1976HaYY, 1977UrZY, 1978Bo16, and 1982BoZN.

^{206}Tl Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$	Comments
0.0	0^{-}	4.202 min *14*	$T_{1/2}$: From Adopted Levels. Dominant configuration=$\pi(s^{-1}_{1/2})\otimes\nu(p^{-1}_{1/2})$.
265.70 *10*	2^{-}		Dominant configuration=$\pi(d^{-1}_{3/2})\otimes\nu(p^{-1}_{1/2})$.
801.22 *20*	3^{-}		
952.22 *20*	4^{-}		Dominant configuration=$\pi(d^{-1}_{3/2})\otimes\nu(f^{-1}_{5/2})$.
1405.53 *20*	$(5)^{+}$	78 ns *1*	$T_{1/2}$: From γ(t) in 1976Ha44. g-factor=0.853 *12* in 1976Ha44 using the time-differential, perturbed-angular distribution technique. This value is corrected for diamagnetism and Knight shift. Dominant configuration=$\pi(h^{-1}_{11/2})\otimes\nu(p^{-1}_{1/2})$.
1621.88 *22*	$(7)^{+}$	10.1 ns *6*	$T_{1/2}$: From γ(t) in 1976Ha44. g-factor<0.35 in 1976Ha44 using the time-differential, perturbed-angular distribution technique. Dominant configuration=$\pi(s^{-1}_{1/2})\otimes\nu(i^{-1}_{13/2})$.
1710.6 *3*	$(6)^{+}$		
2079.1 *3*	$(8)^{+}$		Dominant configuration=$\pi(h^{-1}_{11/2})\otimes\nu(f^{-1}_{5/2})$.
2326.3 *3*	(8^{+})		Dominant configuration=$\pi(d^{-1}_{3/2})\otimes\nu(i^{-1}_{13/2})$ with $\pi(h^{-1}_{11/2})\otimes\nu(f^{-1}_{5/2})$ admixtures.
2643.3 *3*	$(12)^{-}$	3.74 min *3*	$T_{1/2}$: Weighted average of 3.6 min *2* (1976Be44), 3.76 min *4* (1976Ha44), and 3.73 min *4* (1978Ur01). Other: 3.77 min *2* in 1977UrZY, superseded by 1978Ur01. Dominant configuration=$\pi(h^{-1}_{11/2})\otimes\nu(i^{-1}_{13/2})$.

[†] From a least-squares fit to Eγ.

[‡] From ^{206}Tl Adopted Levels.

$\gamma(^{206}Tl)$

Iγ normalization: From I(γ+ce)(265.7γ)=100%.

E$_\gamma$[†]	I$_\gamma$[‡&]	E$_i$(level)	J^{π}_i	E$_f$	J^{π}_f	Mult.[#]	α[@]	I$_{(\gamma+ce)}$[&]	Comments
88.5[a] *5*	<0.46	1710.6	$(6)^{+}$	1621.88	$(7)^{+}$	[M1]	12.12 *25*	<6	α(K)=9.87 *20*; α(L)=1.72 *4*; α(M)=0.403 *9* α(N)=0.1017 *22*; α(O)=0.0198 *4*; α(P)=0.00186 *4* %Iγ<0.46 I$_\gamma$: From intensity balance at the 1710.6 keV level.
216.4 *1*	74 *4*	1621.88	$(7)^{+}$	1405.53	$(5)^{+}$	[E2]	0.312 *4*	97 *5*	ce(K)/(γ+ce)=0.1068 *14*; ce(L)/(γ+ce)=0.0982 *13*;

Continued on next page (footnotes at end of table)

^{206}Tl IT decay 1978Ur01,1976Ha44,1976Be44 (continued)

γ(^{206}Tl) (continued)

E_γ[†]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	$I_{(\gamma+ce)}$[&]	Comments
									ce(M)/(γ+ce)=0.0254 *4* ce(N)/(γ+ce)=0.00637 *9*; ce(O)/(γ+ce)=0.001118 *16*; ce(P)/(γ+ce)=4.83×10^{-5} *7* α(K)=0.1402 *20*; α(L)=0.1288 *18*; α(M)=0.0334 *5* α(N)=0.00836 *12*; α(O)=0.001467 *21*; α(P)=6.34×10^{-5} *9* %Iγ=74 *4*
247.2 *1*	8.4 *18*	2326.3	(8$^+$)	2079.1	(8)$^+$	[M1]	0.667 *9*	14 *3*	ce(K)/(γ+ce)=0.3278 *33*; ce(L)/(γ+ce)=0.0555 *8*; ce(M)/(γ+ce)=0.01297 *19* ce(N)/(γ+ce)=0.00327 *5*; ce(O)/(γ+ce)=0.000636 *10*; ce(P)/(γ+ce)=6.01×10^{-5} *9* α(K)=0.547 *8*; α(L)=0.0926 *13*; α(M)=0.02162 *30* α(N)=0.00546 *8*; α(O)=0.001060 *15*; α(P)=0.0001003 *14* %Iγ=8.4 *18*
265.7 *1*	86.17 *17*	265.70	2$^-$	0.0	0$^-$	E2	0.1605 *23*	100	ce(K)/(γ+ce)=0.0738 *10*; ce(L)/(γ+ce)=0.0484 *7*; ce(M)/(γ+ce)=0.01243 *17* ce(N)/(γ+ce)=0.00312 *4*; ce(O)/(γ+ce)=0.000552 *8*; ce(P)/(γ+ce)=2.67×10^{-5} *4* α(K)=0.0856 *12*; α(L)=0.0562 *8*; α(M)=0.01443 *20* α(N)=0.00362 *5*; α(O)=0.000640 *9*; α(P)=3.10×10^{-5} *4* %Iγ=86.17 *17*
304.9 *2*	1.3 *7*	1710.6	(6)$^+$	1405.53	(5)$^+$	[M1]	0.375 *5*	1.8 *10*	ce(K)/(γ+ce)=0.2236 *25*; ce(L)/(γ+ce)=0.0377 *5*; ce(M)/(γ+ce)=0.00880 *13* ce(N)/(γ+ce)=0.002222 *32*; ce(O)/(γ+ce)=0.000432 *6*; ce(P)/(γ+ce)=4.08×10^{-5} *6* α(K)=0.308 *4*; α(L)=0.0519 *7*; α(M)=0.01211 *17* α(N)=0.00306 *4*; α(O)=0.000594 *8*; α(P)=5.62×10^{-5} *8* %Iγ=1.3 *7*
316.8 *2*	0.75 *27*	2643.3	(12)$^-$	2326.3	(8$^+$)	M4	13.63 *19*	11 *4*	ce(K)/(γ+ce)=0.472 *6*; ce(L)/(γ+ce)=0.337 *5*; ce(M)/(γ+ce)=0.0941 *18* ce(N)/(γ+ce)=0.0243 *5*; ce(O)/(γ+ce)=0.00444 *9*; ce(P)/(γ+ce)=0.000261 *5* α(K)=6.90 *10*; α(L)=4.93 *7*; α(M)=1.376 *20* α(N)=0.355 *5*; α(O)=0.0650 *9*; α(P)=0.00381 *5* %Iγ=0.75 *27* Mult.: α(exp)≈14.2 in 1976Ha44.
368.2 *2*	1.04 *75*	2079.1	(8)$^+$	1710.6	(6)$^+$	[E2]	0.0617 *9*	1.1 *8*	ce(K)/(γ+ce)=0.0374 *5*;

Continued on next page (footnotes at end of table)

^{206}Tl IT decay 1978Ur01,1976Ha44,1976Be44 (continued)

γ(^{206}Tl) (continued)

E_γ[†]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	$I_{(\gamma+ce)}$[&]	Comments
									ce(L)/(γ+ce)=0.01567 *22*; ce(M)/(γ+ce)=0.00395 *6* ce(N)/(γ+ce)=0.000992 *14*; ce(O)/(γ+ce)=0.0001787 *25*; ce(P)/(γ+ce)=1.036×10^{-5} *15* α(K)=0.0397 *6*; α(L)=0.01664 *24*; α(M)=0.00420 *6* α(N)=0.001053 *15*; α(O)=0.0001897 *27*; α(P)=1.100×10^{-5} *15* %Iγ=1.0 *8*
453.3 *2*	93 *5*	1405.53	(5)$^+$	952.22	4$^-$	[E1]	0.01136 *16*	94 *5*	ce(K)/(γ+ce)=0.00929 *13*; ce(L)/(γ+ce)=0.001491 *21*; ce(M)/(γ+ce)=0.000345 *5* ce(N)/(γ+ce)=8.66×10^{-5} *12*; ce(O)/(γ+ce)=1.653×10^{-5} *23*; ce(P)/(γ+ce)=1.422×10^{-6} *20* α(K)=0.00939 *13*; α(L)=0.001507 *21*; α(M)=0.000349 *5* α(N)=8.76×10^{-5} *12*; α(O)=1.672×10^{-5} *23*; α(P)=1.438×10^{-6} *20* %Iγ=93 *5*
457.2 *5*	22.2 *27*	2079.1	(8)$^+$	1621.88	(7)$^+$	[M1]	0.1261 *18*	25 *3*	ce(K)/(γ+ce)=0.0920 *12*; ce(L)/(γ+ce)=0.01535 *22*; ce(M)/(γ+ce)=0.00358 *5* ce(N)/(γ+ce)=0.000903 *13*; ce(O)/(γ+ce)=0.0001755 *25*; ce(P)/(γ+ce)=1.663×10^{-5} *24* α(K)=0.1036 *15*; α(L)=0.01729 *25*; α(M)=0.00403 *6* α(N)=0.001017 *15*; α(O)=0.0001976 *28*; α(P)=1.873×10^{-5} *27* %Iγ=22.2 *27*
535.5 *2*	1.4 *9*	801.22	3$^-$	265.70	2$^-$	[M1]	0.0830 *12*	1.5 *10*	ce(K)/(γ+ce)=0.0630 *8*; ce(L)/(γ+ce)=0.01047 *15*; ce(M)/(γ+ce)=0.002438 *34* ce(N)/(γ+ce)=0.000615 *9*; ce(O)/(γ+ce)=0.0001196 *17*; ce(P)/(γ+ce)=1.134×10^{-5} *16* α(K)=0.0682 *10*; α(L)=0.01134 *16*; α(M)=0.00264 *4* α(N)=0.000666 *9*; α(O)=0.0001295 *18*; α(P)=1.229×10^{-5} *17* %Iγ=1.4 *9*
564.2 *1*	5.5 *9*	2643.3	(12)$^-$	2079.1	(8)$^+$	M4	1.165 *16*	12 *2*	ce(K)/(γ+ce)=0.358 *4*; ce(L)/(γ+ce)=0.1342 *19*; ce(M)/(γ+ce)=0.0349 *5* ce(N)/(γ+ce)=0.00894 *14*; ce(O)/(γ+ce)=0.001676 *27*; ce(P)/(γ+ce)=0.0001240 *20* α(K)=0.775 *11*; α(L)=0.291 *4*; α(M)=0.0756 *11* α(N)=0.01934 *27*; α(O)=0.00363 *5*;

Continued on next page (footnotes at end of table)

^{206}Tl IT decay 1978Ur01,1976Ha44,1976Be44 (continued)

γ(^{206}Tl) (continued)

E_γ[†]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	$I_{(\gamma+ce)}$[&]	Comments
									α(P)=0.000268 *4* %Iγ=5.5 *9* Mult.: α(exp)≈1.2 in 1976Ha44.
604.3 *2*	1.0 *7*	1405.53	$(5)^+$	801.22	3^-	[M2]	0.1664 *23*	1.2 *8*	ce(K)/(γ+ce)=0.1130 *14*; ce(L)/(γ+ce)=0.02256 *31*; ce(M)/(γ+ce)=0.00540 *8* ce(N)/(γ+ce)=0.001368 *19*; ce(O)/(γ+ce)=0.000265 *4*; ce(P)/(γ+ce)=2.431×10^{-5} *34* α(K)=0.1318 *18*; α(L)=0.0263 *4*; α(M)=0.00629 *9* α(N)=0.001595 *22*; α(O)=0.000309 *4*; α(P)=2.84×10^{-5} *4* %Iγ=1.0 *7*
616.3[a] *2*	<0.5	2326.3	(8^+)	1710.6	$(6)^+$	[E2]	0.01732 *24*	<0.5	ce(K)/(γ+ce)=0.01278 *18*; ce(L)/(γ+ce)=0.00322 *5*; ce(M)/(γ+ce)=0.000785 *11* ce(N)/(γ+ce)=0.0001973 *28*; ce(O)/(γ+ce)=3.67×10^{-5} *5*; ce(P)/(γ+ce)=2.71×10^{-6} *4* α(K)=0.01300 *18*; α(L)=0.00328 *5*; α(M)=0.000798 *11* α(N)=0.0002007 *28*; α(O)=3.73×10^{-5} *5*; α(P)=2.75×10^{-6} *4* %Iγ<0.5
686.5 *2*	91 *5*	952.22	4^-	265.70	2^-	[E2]	0.01367 *19*	92 *5*	ce(K)/(γ+ce)=0.01032 *14*; ce(L)/(γ+ce)=0.002407 *34*; ce(M)/(γ+ce)=0.000582 *8* ce(N)/(γ+ce)=0.0001465 *21*; ce(O)/(γ+ce)=2.74×10^{-5} *4*; ce(P)/(γ+ce)=2.102×10^{-6} *29* α(K)=0.01046 *15*; α(L)=0.002440 *34*; α(M)=0.000590 *8* α(N)=0.0001485 *21*; α(O)=2.78×10^{-5} *4*; α(P)=2.131×10^{-6} *30* %Iγ=91 *5*
704.6 *3*	1.5 *10*	2326.3	(8^+)	1621.88	$(7)^+$	[M1]	0.0405 *6*	1.5 *10*	ce(K)/(γ+ce)=0.0321 *4*; ce(L)/(γ+ce)=0.00528 *7*; ce(M)/(γ+ce)=0.001229 *17* ce(N)/(γ+ce)=0.000310 *4*; ce(O)/(γ+ce)=6.03×10^{-5} *8*; ce(P)/(γ+ce)=5.73×10^{-6} *8* α(K)=0.0334 *5*; α(L)=0.00550 *8*; α(M)=0.001279 *18* α(N)=0.000323 *5*; α(O)=6.28×10^{-5} *9*; α(P)=5.96×10^{-6} *8* %Iγ=1.5 *10*
1021.5 *2*	69 *6*	2643.3	$(12)^-$	1621.88	$(7)^+$	[E5]	0.0617 *9*	73 *6*	ce(K)/(γ+ce)=0.0361 *5*; ce(L)/(γ+ce)=0.01652 *23*;

Continued on next page (footnotes at end of table)

^{206}Tl IT decay 1978Ur01,1976Ha44,1976Be44 (continued)

γ(^{206}Tl) (continued)

E_γ †	I_γ ‡&	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	α@	$I_{(\gamma+ce)}$&	Comments
									ce(M)/(γ+ce)=0.00426 *6* ce(N)/(γ+ce)=0.001079 *15*; ce(O)/(γ+ce)=0.0001987 *28*; ce(P)/(γ+ce)=1.401×10^{-5} *20* α(K)=0.0383 *5*; α(L)=0.01753 *25*; α(M)=0.00452 *6* α(N)=0.001146 *16*; α(O)=0.0002109 *30*; α(P)=1.488×10^{-5} *21* %Iγ=69 *6*
1139.9 *3*	5.9 *20*	1405.53	(5)$^+$	265.70	2$^-$	[E3]	0.01089 *15*	6 *2*	ce(K)/(γ+ce)=0.00822 *11*; ce(L)/(γ+ce)=0.001939 *27*; ce(M)/(γ+ce)=0.000470 *7* ce(N)/(γ+ce)=0.0001187 *17*; ce(O)/(γ+ce)=2.240×10^{-5} *31*; ce(P)/(γ+ce)=1.828×10^{-6} *26* α(K)=0.00831 *12*; α(L)=0.001960 *27*; α(M)=0.000476 *7* α(N)=0.0001200 *17*; α(O)=2.264×10^{-5} *32*; α(P)=1.848×10^{-6} *26*; α(IPF)=1.952×10^{-7} *35* %Iγ=5.9 *20*

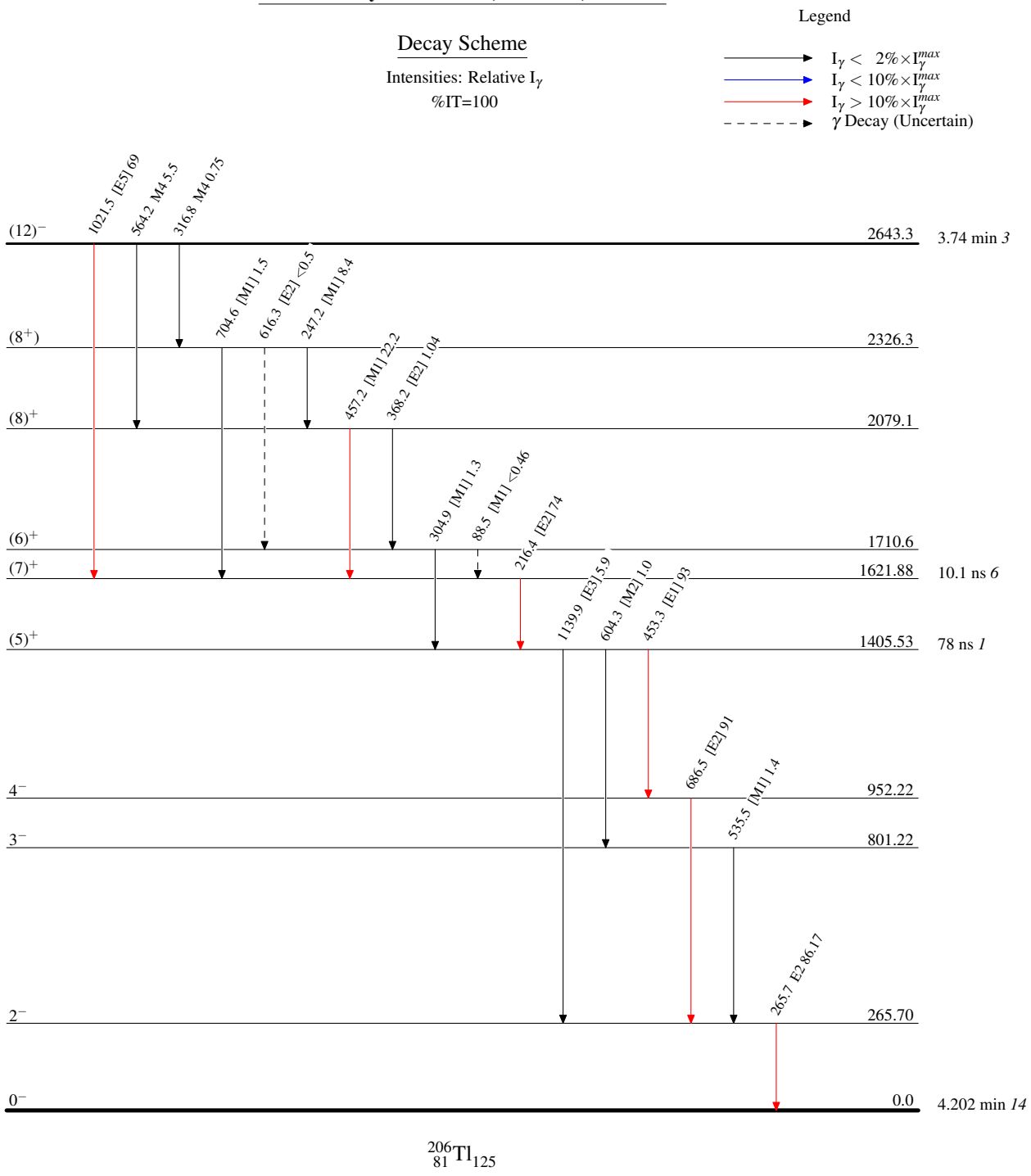
† From 1978Ur01. Others: 1976Be44 and 1976Ha44, both without uncertainties.
‡ From I(γ+ce) of 1978Ur01, but converted to Iγ by the evaluator using the theoretical α values. The 1978Ur01 values are in agreement with those of 1976Be44 (incomplete data set) and 1976Ha44 (no uncertainties given).
# From Adopted Levels.
@ Additional information 1.
& Absolute intensity per 100 decays.
a Placement of transition in the level scheme is uncertain.

^{206}Tl IT decay 1978Ur01,1976Ha44,1976Be44

Decay Scheme

Intensities: Relative I_γ

%IT=100



$^{206}_{81}Tl_{125}$