^{186}Tl IT decay 1981Kr20,1977Be23,1977Co21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. C. Batchelder and A. M. Hurst, M. S. Basunia	NDS 183, 1 (2022)	1-Mar-2022

Parent: ^{186}Tl: E=414 *39*; J^{π}=(10$^-$); $T_{1/2}$=3.32 s *11*; %IT decay>94.1

^{186}Tl-E: Weighted average of 451 keV *56* (2020St11 − if x=77 keV *56*) and 396 keV *39* from mass measurement in 2014Bo26, uncertainty is the lowest input value.

Other: 2020St11.

2020St11: ^{186}Tl from U(p, X), E=1.4 GeV spallation reaction; measured Eγ, Iγ; spede spectrometer and five HPGe clover detectors. Deduce half-lives of ^{186}Tl (2$^-$) ground state and (10$^-$) isomer, upper limit of %IT decay and lower limit of %β+ branching ratios from the decay of the (10$^-$) isomer of ^{186}Tl.

^{186}Tl Levels

E(level)†	J^{π}	$T_{1/2}$	Comments
40 *39*	(7$^+$)	27.5 s *10*	$T_{1/2}$: From Adopted Levels.
129 *39*			J^{π}: (6$^+$) in 2020St11.
396 *39*			J^{π}: (7$^+$) in 2020St11.
414 *39*	(10$^-$)	3.32 s *11*	%IT=100 $T_{1/2}$: From Adopted Levels. Others: 3.40 s *9* (374γ(t), ce(t) − 2020St11), 3 s *1* (374γ(t) − 1977Be23), 4.5 s *13* (374γ(t) − 1977Co21), and 4.5 s *+10−15* (374γ(t) − 1975Ha27).

† From Adopted Levels.

γ(^{186}Tl)

Iγ normalization: Based on isomer decay branching.

Eγ	Iγ‡	E$_i$(level)	J_i^{π}	E$_f$	J_f^{π}	Mult.	α†	Comments
(18.2 *4*)	4.8e-7 *14*	414	(10$^-$)	396		(E3)	3.3e6 *5*	Eγ: From level energy difference. I$_{(\gamma+ce)}$: 1.6 *4*, estimated value in 2020St11 based on data in the literature, assuming transition multipolarity E3 for 18.2γ and conversion coefficient of 3.3 × 10^6 *5*.
266.5 *1*	0.55 *5*	396		129		[M1+E2]	0.35 *20*	α(K)=0.26 *18*; α(L)=0.065 *10*; α(M)=0.0159 *17* α(N)=0.0040 *5*; α(O)=0.00075 *12*; α(P)=5.6×10^{-5} *26* Eγ: From 2020St11. Iγ: From 2020St11. Mult.: Assumed to estimate the total transition intensity of 266.5γ in 2020St11.
374.2 *1*	99.45	414	(10$^-$)	40	(7$^+$)	E3	0.249 *4*	α(K)=0.1008 *15*; α(L)=0.1104 *16*; α(M)=0.0291 *4* α(N)=0.00735 *11*; α(O)=0.001305 *19*; α(P)=6.71×10^{-5} *10* Eγ: From 2020St11. Iγ: From 100/(1+0.249). Mult.: from α(K)exp=0.095 *17* (weighted average of 0.095 *20* (1977Be23), 0.17 *7* (1977Co21), and 0.07 *4* (1981Kr20)). Also K/L=1.5 *9* (1977Co21).

Continued on next page (footnotes at end of table)

^{186}Tl IT decay 1981Kr20,1977Be23,1977Co21 (continued)

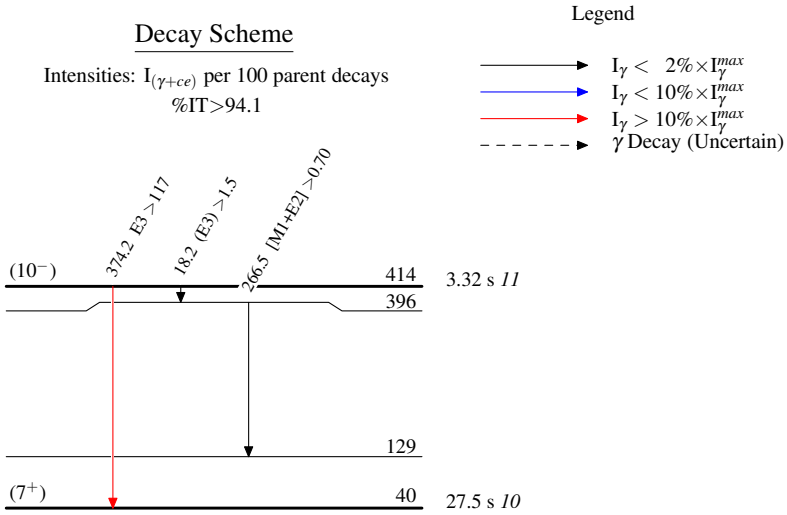
$\gamma(^{186}Tl)$ (continued)

† Additional information 1.
‡ For absolute intensity per 100 decays, multiply by >0.941.

^{186}Tl IT decay 1981Kr20,1977Be23,1977Co21

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
%IT>94.1



$^{186}_{81}Tl_{105}$