^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 177, 1 (2021)	3-Sep-2021

Parent: ^{194}Tl: E=260 *14*; J$^{\pi}$=(7^{+}); $T_{1/2}$=32.8 min *2*; Q(ε)=5246 *14*; %ε+%β^{+} decay=100.0

^{194}Tl-E,J$^{\pi}$,$T_{1/2}$: From Adopted Levels of ^{194}Tl.

^{194}Tl-Q(ε): From 2021Wa16.

1972Am03: ^{194}Tl ions were obtained from spallation of lead by bombarding a PbF_2 target with 660 MeV proton beam from the synchrocyclotron of the Nuclear Problems Laboratory of JINR. γ rays were detected with Ge(Li) detectors and conversion electrons were detected with a β spectrometer with a Si(Li) detector (FWHM=3.2 keV at ≈200 keV). Measured Eγ, Iγ, E(ce), I(ce). Deduced levels, J, π, ε-decay branching ratios, log *ft*, conversion coefficients, γ-ray multipolarities.

2019Ol05: ^{194}Tl ions were produced by a 500-MeV proton beam provided by the TRIUMF main cyclotron impinging on an uranium carbide target, and implanted into a mylar tape at the central focus of the GRIFFIN spectrometer. γ rays were detected with the GRIFFIN array consisting of 15 HPGe clover detectors and 7 cylindrical $LaBr_3$(Ce) crystals; conversion electrons were detected with a set of 5 in-vacuum LN_2-cooled lithium-drifted silicon detectors (PACES) and a fast 1-mm-thin plastic Zero Degree Scintillator (ZDS). Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma$(t). Deduced levels, $T_{1/2}$, transition strengths. Comparisons with available data and theoretical calculations.

Others: 1968Pe13, 1970To14, 1967Na14, 1966Pe06, 1960Ju01, 1974St04, 1976WeZM.

Due to a large gap (≈3 MeV) between Q-value=5246 *14* and the highest observed level of 2464, the decay scheme is considered incomplete and the branching ratios and log *ft* values are considered as approximated values.

^{194}Hg Levels

Negative result in the search for superdeformation at low-spin states populated by ^{194}Tl ε decay. Expected 3600γ in coincidence with 428γ (from 428 level) was not observed (1989HeYZ, 1990HeYY).

2138.4 and 2143.5 levels: level population suggested by evaluators based on placements of 227.98γ and 233.10γ in (HI,xnγ). In 1972Am03, 227.98γ is placed from a level at 1292.5 and 233.10γ is unplaced. The 1292.5 level proposed in 1972Am03 on the basis of energy sums of 219.0γ and 227.98γ is discarded by the evaluator. The 227.98γ is placed with an 8^{-} level at 2138 known from (HI,xnγ) and the 219.0γ is considered unplaced due to the absence of any other supporting argument.

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0	0^{+}		
428.2 *3*	2^{+}	19 ps *1*	$T_{1/2}$: from (636γ)(428γ)(t) with 735γ and 749γ also in gate (2019Ol05).
1064.5 *4*	4^{+}	<3 ps	$T_{1/2}$: from (735γ)(636γ)(t) with 428γ also in gate (2019Ol05).
1799.5 *5*	6^{+}		
1813.5 *5*	5^{-}	51 ps *6*	$T_{1/2}$: from (650γ)(749γ)(t) with 428γ also in gate (2019Ol05). Other: ≤0.15 ns (1970To14, (ce)γ(t)).
1910.4 *5*	7^{-}	3.61 ns *15*	$T_{1/2}$: unweighted average of 3.46 ns *3* (2019Ol05) and 3.75 ns *11* (1970To14). Value of 2019Ol05 is from (255γ)(735γ)(t) with 428γ also in gate; (209γ)(749γ)(t) and (209γ)(111γ)(t) (2019Ol05).
2138.4 *5*	8^{-}		
2143.5 *5*	9^{-}		
2165.8 *5*	6^{-}		
2179.9 *5*	5^{-},6^{-}		
2260.0? *9*	(4,5,6)$^{-}$		
2264.7 *5*	(5,6)$^{-}$		
2374.7 *5*	6^{-},7^{-}		
2463.9 *5*	6^{-}		

† From a least-squares fit to γ-ray energies.

‡ From Adopted Levels.

^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05 (continued)

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ [‡]	Iε[‡]	Log *ft*	I($\varepsilon+\beta^+$)[†‡]	Comments
(3042 *20*)	2463.9	1.80 *24*	16.0 *21*	6.5 *1*	17.8 *23*	av Eβ=914.8 *88*; εK=0.7281 *23*; εL=0.1292 *5*; εM+=0.04158 *14*
(3131 *20*)	2374.7	1.2 *3*	9.7 *21*	6.8 *1*	10.9 *24*	av Eβ=954.3 *88*; εK=0.7179 *24*; εL=0.1273 *5*; εM+=0.04094 *15*
(3241 *20*)	2264.7	0.49 *11*	10.3 *24*	8.4[1u] *1*	10.8 *25*	av Eβ=991.5 *84*; εK=0.7669 *10*; εL=0.1420 *3*; εM+=0.04600 *9*
(3246[#] *20*)	2260.0?	0.39 *8*	2.6 *5*	7.4 *1*	3.0 *6*	av Eβ=1005.2 *88*; εK=0.7040 *25*; εL=0.1246 *5*; εM+=0.04007 *16*
(3326 *20*)	2179.9	0.14 *9*	0.9 *5*	7.9 *3*	1.0 *6*	av Eβ=1040.8 *88*; εK=0.694 *3*; εL=0.1227 *5*; εM+=0.03944 *16*
(3340[#] *20*)	2165.8	<0.4	<3	>7.4	<3	av Eβ=1047.1 *89*; εK=0.692 *3*; εL=0.1223 *5*; εM+=0.03933 *16*
(3363 *20*)	2143.5	0.13 *2*	2.4 *4*	9.1[1u] *1*	2.5 *4*	av Eβ=1042.9 *84*; εK=0.7605 *12*; εL=0.1403 *3*; εM+=0.04544 *10*
(3368 *20*)	2138.4	1.3 *2*	7.5 *11*	6.9 *1*	8.8 *13*	av Eβ=1059.3 *89*; εK=0.688 *3*; εL=0.1216 *5*; εM+=0.03910 *17*
(3596 *20*)	1910.4	6.1 *23*	26 *10*	6.5 *2*	32 *12*	av Eβ=1160.9 *89*; εK=0.657 *3*; εL=0.1157 *6*; εM+=0.03719 *18*
(3693[#] *20*)	1813.5	<1.1	<12	>8.5[1u]	<13	av Eβ=1183.3 *85*; εK=0.7392 *15*; εL=0.1353 *4*; εM+=0.04377 *11*
(3707 *20*)	1799.5	2.3 *11*	9 *4*	7.0 *2*	11 *5*	av Eβ=1210.6 *89*; εK=0.640 *3*; εL=0.1127 *6*; εM+=0.03622 *18*

[†] From γ+ce intensity balance at each level.
[‡] Absolute intensity per 100 decays.
[#] Existence of this branch is questionable.

γ(^{194}Hg)

Iγ normalization: From I(γ+ce)(749γ and 735γ)=100, assuming no γ feedings from levels above 1813.5 and no β feedings to g.s., 428.2 and 1064.5 levels. About 14% γ intensity is unplaced but it is unlikely that any of it will affect the normalization factor significantly with the above assumption.
Unplaced γ rays are from 33-min (g.s.) or from 32.8-min isomer (1972Am03).

E$_\gamma$[†]	I$_\gamma$[†#]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[‡]	α[@]	Comments
96.90 *8*	10 *2*	1910.4	7$^-$	1813.5	5$^-$	E2	6.33	α(K)=0.624 *9*; α(L)=4.27 *7*; α(M)=1.117 *17* α(N)=0.277 *4*; α(O)=0.0459 *7*; α(P)=0.0001280 *19* %Iγ=7.7 *16* E$_\gamma$: from 1968Pe13 using permanent-magnet spectrograph plates. The same value is quoted by 1972Am03. I$_\gamma$: other: 10.7 *59* (Pb target), 9.1 *46* (U target) (1968Pe13). Mult.: α(L)exp=4.0 *4*, L/(M+N)=2.9 (1972Am03), α(L)exp=4.2 *8* (1968Pe13), (L1+L2)/L3=1.24 *5*, L/M=3.6 *4*, M/(N+O)=2.7 *3* (1960Ju01).
98.9 *1*	0.8 *3*	2264.7	(5,6)$^-$	2165.8	6$^-$	[M1]	8.15	α(K)=6.67 *10*; α(L)=1.137 *17*; α(M)=0.265 *4* α(N)=0.0664 *10*; α(O)=0.01256 *18*; α(P)=0.000960 *14* %Iγ=0.62 *23*
^{x}107.2 *2*	1.0 *2*							%Iγ=0.77 *16*

Continued on next page (footnotes at end of table)

^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05 (continued)

γ(^{194}Hg) (continued)

E_γ †	I_γ †#	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡	α@	Comments
110.96 *8*	8.3 *20*	1910.4	7⁻	1799.5	6⁺	[E1]		0.325	α(K)=0.261 *4*; α(L)=0.0494 *7*; α(M)=0.01155 *17* α(N)=0.00285 *4*; α(O)=0.000507 *8*; α(P)=2.58×10^{-5} *4* %Iγ=6.4 *16* E_γ: other: 110.8 *10* (1968Pe13). I_γ: other: 7.6 *38* (Pb target), 7.3 *37* (U target) (1968Pe13).
208.90 *18*	8.0 *20*	2374.7	6⁻,7⁻	2165.8	6⁻	E2(+M1)	>2.1	0.40 *6*	α(K)=0.21 *6*; α(L)=0.1380 *21*; α(M)=0.0353 *7* α(N)=0.00877 *16*; α(O)=0.001499 *22*; α(P)=2.8×10^{-5} *9* %Iγ=6.2 *16* E_γ: other: 209.7 *10* (1968Pe13). I_γ: other: 7.1 *36* (Pb target), 6.7 *39* (U target) (1968Pe13). Mult.: α(K)exp=0.2, K/L=1.6, K/(M+N)=4.7 (1972Am03).
ˣ219.0 *5*	1.3 *3*					M1+E2	1.2 *5*	0.52 *15*	α(K)=0.37 *15*; α(L)=0.1155 *23*; α(M)=0.0285 *7* α(N)=0.00712 *15*; α(O)=0.00126 *3*; α(P)=5.1×10^{-5} *22* %Iγ=1.00 *24* Mult.,δ: α(K)exp=0.37. On the basis of energy sums, 1972Am03 propose a (3⁺) level at 1292 with deexciting transitions of 219.0 and 227.98. However, the evaluators consider this level unlikely due to the absence of a transition to the 428, 2⁺ level. Moreover, the 227.98γ most probably corresponds to the 227.6γ known to deexcite an 8⁻ level at 2138 level in (HI,xnγ). The multipolarity of the 227.98γ from ce data is consistent with 228γ(θ) data in (HI,xnγ). The 8⁻ level is expected to be populated from the (7⁺) isomer of ^{194}Tl.
227.98 *8*	8.6 *10*	2138.4	8⁻	1910.4	7⁻	E2+M1	2.1 *+17−6*	0.35 *7*	α(K)=0.22 *7*; α(L)=0.0981 *18*; α(M)=0.0247 *4* α(N)=0.00616 *9*; α(O)=0.001069 *22*; α(P)=2.9×10^{-5} *9* %Iγ=6.6 *8* E_γ,I_γ: other: 228.4 *10*, with Iγ=7.3 *37* (1968Pe13). 1972AM03 place this γ from a 1292 level which is discarded by evaluators. See comments for 219.0γ. Mult.,δ: α(K)exp=0.31, K/L=1.8, K/(M+N)=8 (1972Am03).
233.10 *15*	2.7 *4*	2143.5	9⁻	1910.4	7⁻	E2		0.234	α(K)=0.1167 *17*; α(L)=0.0880 *13*; α(M)=0.0226 *4* α(N)=0.00562 *8*; α(O)=0.000956 *14*; α(P)=1.470×10^{-5} *21*

Continued on next page (footnotes at end of table)

^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05 (continued)

γ(^{194}Hg) (continued)

Eγ[†]	Iγ[†#]	Ei(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[@]	Comments
									%Iγ=2.1 *3* Eγ: placement based on results in (HI,xnγ); unplaced in 1972Am03. Mult.: δ(E2/M1)>5 from α(K)exp=0.11 (1972Am03).
x239.0 *7*	1.2 *3*					M1(+E2)	<1.1	0.55 *13*	α(K)=0.43 *13*; α(L)=0.089 *4*; α(M)=0.0212 *5* α(N)=0.00532 *13*; α(O)=0.00098 *5*; α(P)=6.1×10^{-5} *18* %Iγ=0.93 *24* Mult.: α(K)exp=0.46.
255.40 *10*	12 *2*	2165.8	6$^-$	1910.4	7$^-$	M1(+E2)	0.7 *5*	0.43 *12*	α(K)=0.34 *11*; α(L)=0.072 *5*; α(M)=0.0172 *8* α(N)=0.00429 *19*; α(O)=0.00079 *6*; α(P)=4.8×10^{-5} *16* %Iγ=9.3 *16* Eγ: other: 256.7 *15* (1968Pe13). Mult.,δ: α(K)exp=0.37, K/L=5.7, K/(M+N)=13 (1972Am03).
284.00 *20*	2.4 *4*	2463.9	6$^-$	2179.9	5$^-$,6$^-$	M1(+E2)	<0.7	0.37 *5*	α(K)=0.30 *5*; α(L)=0.055 *3*; α(M)=0.0129 *6* α(N)=0.00322 *14*; α(O)=0.00060 *4*; α(P)=4.2×10^{-5} *7* %Iγ=1.9 *3* Mult.,δ: α(K)exp=0.38 (1972Am03).
298.1 *2*	2.7 *3*	2463.9	6$^-$	2165.8	6$^-$	E2(+M1)	>2	0.13 *3*	α(K)=0.088 *24*; α(L)=0.0352 *18*; α(M)=0.0088 *4* α(N)=0.00220 *9*; α(O)=0.000384 *20*; α(P)=1.2×10^{-5} *4* %Iγ=2.1 *3* Eγ,Iγ: other: 298.8 *10* with Iγ=2.2 *22* (Pb target) (1968Pe13). Mult.,δ: α(K)exp=0.089 (1972Am03).
x299.5 *5*	1.3 *4*								%Iγ=1.0 *3*
x319.80 *10*	5.1 *10*					E2		0.0882	α(K)=0.0541 *8*; α(L)=0.0257 *4*; α(M)=0.00651 *10* α(N)=0.001619 *23*; α(O)=0.000280 *4*; α(P)=7.00×10^{-6} *10* %Iγ=3.9 *8* Mult.: α(K)exp=0.041 gives δ(E2/M1)>10. Eγ: other: 322 *2*, Iγ=6.5 *33* (Pb target) (1968Pe13).
352.20 *25*	2.2 *4*	2165.8	6$^-$	1813.5	5$^-$	M1+E2	0.9 *4*	0.16 *5*	α(K)=0.13 *4*; α(L)=0.026 *4*; α(M)=0.0061 *8* α(N)=0.00153 *18*; α(O)=0.00028 *4*; α(P)=1.7×10^{-5} *6* %Iγ=1.7 *3* Mult.,δ: α(K)exp=0.13 (1972Am03).
366.50 *25*	2.3 *4*	2179.9	5$^-$,6$^-$	1813.5	5$^-$	M1(+E2)	<0.8	0.18 *3*	α(K)=0.15 *3*; α(L)=0.026 *3*; α(M)=0.0061 *6* α(N)=0.00153 *14*; α(O)=0.00029 *3*; α(P)=2.1×10^{-5} *4* %Iγ=1.8 *3* Mult.,δ: α(K)exp=0.18 (1972Am03).
380.5 *3*	1.8 *3*	2179.9	5$^-$,6$^-$	1799.5	6$^+$	[E1]		0.01610	α(K)=0.01331 *19*; α(L)=0.00215 *3*;

Continued on next page (footnotes at end of table)

^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05 (continued)

γ(^{194}Hg) (continued)

E_γ †	I_γ †#	E_i(level)	J^π_i	E_f	J^π_f	Mult.‡	δ‡	α@	Comments
									α(M)=0.000497 *7* α(N)=0.0001236 *18*; α(O)=2.29×10^{-5} *4*; α(P)=1.532×10^{-6} *22* %Iγ=1.39 *24* Mult.: from ΔJ^π; α(K)exp gives δ(M2/E1)=0.88 *23* for E1+M2, which is highly unlikely.
428.20 *25*	130 *6*	428.2	2$^+$	0.0	0$^+$	E2		0.0397	α(K)=0.0274 *4*; α(L)=0.00927 *13*; α(M)=0.00230 *4* α(N)=0.000574 *9*; α(O)=0.0001012 *15*; α(P)=3.62×10^{-6} *5* %Iγ=100 *7* E_γ: other: 428.4 *5* (1968Pe13). I_γ: total Iγ=220 *25* (1972Am03) distributed in two parts on the basis of intensity balance at 428 level. The other component belongs to ^{194}Tl ε decay (33.0 min). Other total Iγ: 232 *35* (Pb target), 610 *91* (U target) (1968Pe13). Mult.: (L1+L2)/L3=5.1 *10*, K/L=3.0 *6*, L/M=1.3 *5* (1960Ju01).
446.5 *7*	3.7 *7*	2260.0?	(4,5,6)$^-$	1813.5	5$^-$	M1+E2	1.1 *+15−7*	0.08 *4*	α(K)=0.06 *4*; α(L)=0.012 *4*; α(M)=0.0029 *8* α(N)=0.00072 *20*; α(O)=0.00013 *4*; α(P)=8.E−6 *5* %Iγ=2.9 *6* Mult.,δ: α(K)exp=0.093, K/L=3.5 (1972Am03).
451.0 *7*	6.5 *15*	2264.7	(5,6)$^-$	1813.5	5$^-$	M1+E2	1.7 *+27−8*	0.06 *3*	α(K)=0.044 *22*; α(L)=0.010 *3*; α(M)=0.0024 *6* α(N)=0.00060 *14*; α(O)=0.00011 *3*; α(P)=6.E−6 *4* %Iγ=5.0 *12* Mult.,δ: α(K)exp=0.063, K/L=3.3 (1972Am03).
^{x}462.5 *7*	6.0 *20*					M1+E2	1.2 *5*	0.065 *21*	α(K)=0.052 *19*; α(L)=0.0105 *22*; α(M)=0.0025 *5* α(N)=0.00063 *12*; α(O)=0.000116 *24*; α(P)=7.E−6 *3* %Iγ=4.6 *16* Mult.: α(K)exp=0.051.
464.5 *7*	3.0 *10*	2374.7	6$^-$,7$^-$	1910.4	7$^-$	E2(+M1)	>2	0.040 *8*	α(K)=0.030 *7*; α(L)=0.0079 *8*; α(M)=0.00193 *18* α(N)=0.00048 *5*; α(O)=8.7×10^{-5} *9*; α(P)=4.0×10^{-6} *10*

Continued on next page (footnotes at end of table)

^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05 (continued)

γ(^{194}Hg) (continued)

E_γ[†]	I_γ[†#]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[‡]	α[@]	Comments
									%Iγ=2.3 *8* Mult.,δ: α(K)exp=0.11, K/L=2.6 (1972Am03).
^{x}510.9[&] *3*	11 *2*								%Iγ=8.5 *16* Probably annihilation radiation.
553.2 *3*	6.0 *15*	2463.9	6^-	1910.4	7^-	M1(+E2)	<0.8	0.061 *10*	α(K)=0.050 *9*; α(L)=0.0085 *11*; α(M)=0.00197 *24* α(N)=0.00049 *6*; α(O)=9.3×10^{-5} *12*; α(P)=6.9×10^{-6} *12* %Iγ=4.6 *12* E_γ: other: 553.4 *10* (1968Pe13). Mult.: α(K)exp=0.063 (1972Am03).
^{x}600.5 *7*	2.2 *6*								%Iγ=1.7 *5*
636.30 *25*	130 *6*	1064.5	4^+	428.2	2^+	E2		0.01542	α(K)=0.01173 *17*; α(L)=0.00280 *4*; α(M)=0.000678 *10* α(N)=0.0001693 *24*; α(O)=3.06×10^{-5} *5*; α(P)=1.557×10^{-6} *22* %Iγ=100 *7* E_γ: other: 636.8 *5* (1968Pe13). I_γ: total Iγ=150 *20* (1972Am03) distributed in two parts on the basis of intensity balance at 1064 level. The other component belongs to ^{194}Tl ε decay (33.0 min). Other total Iγ: 151 *23* (Pb target), 189 *29* (U target) (1968Pe13). Mult.: α(K)exp=0.013 (1972Am03), 0.014 *4* (1968Pe13), 0.013 (1966Pe06), α(L)exp=0.0028, K/L=4.5 (1972Am03).
650.3 *3*	9 *2*	2463.9	6^-	1813.5	5^-	M1+E2	1.3 *5*	0.026 *8*	α(K)=0.021 *7*; α(L)=0.0040 *9*; α(M)=0.00094 *20* α(N)=0.00023 *5*; α(O)=4.4×10^{-5} *10*; α(P)=2.9×10^{-6} *9* %Iγ=6.9 *16* Mult.,δ: α(K)exp=0.021 (1972Am03).
664.2 *7*	1.5 *4*	2463.9	6^-	1799.5	6^+				%Iγ=1.2 *3*
^{x}675.7[&]	1.0								%Iγ=0.77
^{x}682.7[&]	0.7								%Iγ=0.54
^{x}691.0[&]	0.9								%Iγ=0.69
^{x}694.8[&]	1.3								%Iγ=1.00
^{x}702.2[&]	1.6								%Iγ=1.23
^{x}711.0[&]	1.7								%Iγ=1.31
^{x}719.8[&]	1.8								%Iγ=1.39
735.0 *3*	29 *6*	1799.5	6^+	1064.5	4^+	E2		0.01129	α(K)=0.00878 *13*; α(L)=0.00191 *3*; α(M)=0.000458 *7* α(N)=0.0001144 *16*; α(O)=2.09×10^{-5} *3*; α(P)=1.162×10^{-6} *17* %Iγ=22 *4* E_γ: other: 734.7 *5* (1968Pe13). I_γ: others: 31 *6* (Pb target), 29 *6* (U target) (1968Pe13). Mult.: α(K)exp=0.008 (1972Am03), 0.011 *3* (1968Pe13).

Continued on next page (footnotes at end of table)

^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05 (continued)

γ(^{194}Hg) (continued)

E_γ[†]	I_γ[†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
749.0 *3*	100	1813.5	5^-	1064.5	4^+	E1	0.00395	α(K)=0.00330 *5*; α(L)=0.000502 *7*; α(M)=0.0001154 *17* α(N)=2.88×10^{-5} *4*; α(O)=5.40×10^{-6} *8*; α(P)=3.95×10^{-7} *6* %Iγ=77 *4* E_γ: other: 748.9 *5* (1968Pe13). Mult.: α(K)exp=0.0033 (1972Am03), 0.0034 *10* (1968Pe13), 0.0024 (1966Pe06).
^{x}1118.7 *10*								E_γ: from 1968Pe13 only.
^{x}1383.0[&]	0.9							%Iγ=0.69
^{x}1424.4[&]	0.8							%Iγ=0.62
^{x}1445.9[&]	0.7							%Iγ=0.54
^{x}1530.7[&]	1.3							%Iγ=1.00 E_γ: 2003Su30 assign a 1529.9 *5* (Iγ=2.0 *3*) to 33.0 min, 2^- activity.
^{x}1550.3[&]	2.3							%Iγ=1.77 E_γ: 2003Su30 assign a 1551.6 *5* (Iγ=4.2 *4*) to 33.0 min, 2^- activity.
^{x}1640.0[&]	0.9							%Iγ=0.69
^{x}1676[&]	0.6							%Iγ=0.46
^{x}1691.4[&]	1.3							%Iγ=1.00
^{x}1822[&]	0.7							%Iγ=0.54
^{x}1832.0[&]	0.6							%Iγ=0.46 Proposed placement with a tentative 2260 level (1972Am03) considered unlikely since possible direct ε feeding from (7^+) suggests J(2260)>4.
^{x}1936.0[&]	0.9							%Iγ=0.69

† From 1972Am03, unless otherwise noted. Quoted values of intensities are relative to Iγ(749γ)=100.
‡ From ce data (1972Am03,1968Pe13) given under comments where available. The same values are adopted in Adopted Gammas. For selected transitions, data are also available from 1968Pe13. Uncertainty of 30% in ce data from 1972Am03 is assumed by evaluators when deducing δ value.
# For absolute intensity per 100 decays, multiply by 0.77 *4*.
@ 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.
& Placement of transition in the level scheme is uncertain.
^{x} γ ray not placed in level scheme.

^{194}Tl ε decay (32.8 min) 1972Am03,2019Ol05

Decay Scheme