^{192}Pb ε decay 1981So09

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113, 1871 (2012)	15-Jun-2012

Parent: ^{192}Pb: E=0.0; $J^\pi=0^+$; $T_{1/2}$=3.5 min *1*; Q(ε)=3316 *34*; %ε+%$β^+$ decay=99.9941 *7*

Others: 1979To06 (preliminary version of 1981So09), 1987Va09.

The decay scheme and data are from 1981So09, except as noted.

1981So09: ^{192}Pb sources from ^{180}W(^{16}O,4n), E(^{16}O)=100 MeV; ^{182}W(^{16}O,6n), E(^{16}O)=143 MeV; mass separation; measured Eγ, Iγ (Ge(Li), FWHM=2.1 keV at 1332 keV), E(ce), Ice (Si(Li), FWHM=2.3 keV at ce(K)(Bi)=973 keV), γγ coin, γγ(t).

^{192}Tl Levels

E(level)†	J^π‡	$T_{1/2}$
0.0	(2^-)	9.6 min *4*
167.49 *10*	$1^{(-)}$	
371.05 *18*	$1^{(-)}$	
413.98 *23*	$(1^-,2^-)$	
775.67 *14*	$(0^-,1^-)$	
1195.46 *18*	1^+	

† From least-squares fit to Eγ.

‡ Adopted values.

ε,$β^+$ radiations

ε+$β^+$ feedings are from intensity imbalance at each level assuming no direct feeding to g.s. (see comment with normalization).

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(2.12×10^3 *4*)	1195.46	0.81 *13*	57 *7*	4.71 *6*	58 *7*	av Eβ=511 *15*; εK=0.7930 *11*; εL=0.1456 *4*; εM+=0.04734 *13*
(2.54×10^3 *4*)	775.67	0.93 *14*	22 *3*	5.28 *6*	23 *3*	av Eβ=694 *15*; εK=0.7735 *23*; εL=0.1404 *5*; εM+=0.04556 *17* Log *ft*: very low for first-forbidden transition, but not inconsistent with systematics in this region of Z.
(2.94×10^3 *4*)	371.05	0.52 *13*	5.8 *14*	6.00 *11*	6.3 *15*	av Eβ=872 *15*; εK=0.741 *4*; εL=0.1335 *7*; εM+=0.04325 *23*
(3.15×10^3 *4*)	167.49	1.6 *11*	13 *9*	5.7 *3*	15 *10*	av Eβ=962 *15*; εK=0.720 *4*; εL=0.1292 *8*; εM+=0.04185 *25*
(3.32×10^3‡ *4*)	0.0	<0.05	<1.0	>8.5^{1u}	<1	av Eβ=1022 *15*; εK=0.7634 *18*; εL=0.1431 *5*; εM+=0.04666 *16*

† Absolute intensity per 100 decays.

‡ Existence of this branch is questionable.

^{192}Pb ε decay 1981So09 (continued)

γ(^{192}Tl)

Iγ normalization: From total I(γ+ce) to g.s.=100%; this assumes no direct ε+β$^+$ feeding to g.s. (log $f^{1u}t$=8.5, the lower limit for a 0$^+$ to 2$^-$ transition, corresponds to 1% feeding).
Most transitions reported in 1981So09 are also present in the γ spectrum from the A=192 fraction in 1987Va09.

E_γ	I_γ[&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[†]	Comments
[x]144.5 *3*	3.0 *5*								
167.5 *1*	29 *2*	167.49	1$^{(-)}$	0.0	(2$^-$)	M1,E2		1.4 *6*	α(K)=0.9 *7*; α(L)=0.33 *6*; α(M)=0.082 *18*; α(N+..)=0.025 *5* α(N)=0.021 *5*; α(O)=0.0038 *6*; α(P)=0.00023 *7* α(L)exp=0.34 *8*.
[x]179.2 *3*	3.0 *12*								
[x]213.1 *3*	7.7 *6*								
[x]214.9 *3*	11 *8*								
[x]250.7 *2*	9.5 *9*								
[x]269.5 *3*	7.4 *7*								
[x]343.1 *3*	[@]								Iγ: γ contaminated by both a sum peak and a γ-ray from ^{192}Tl ε decay.
371.0 *2*	17 *2*	371.05	1$^{(-)}$	0.0	(2$^-$)	M1(+E2)	0.6 *+5–6*	0.18 *5*	α(K)=0.14 *4*; α(L)=0.027 *4*; α(M)=0.0063 *9*; α(N+..)=0.0019 *3* α(N)=0.00159 *22*; α(O)=0.00030 *5*; α(P)=2.7×10^{-5} *7* α(K)exp=0.15 *4*. Iγ: from 1979To06; Iγ=17 *14* in 1981So09 is presumed to be a misprint.
404.5 *3*	6.5 *9*	775.67	(0$^-$,1$^-$)	371.05	1$^{(-)}$	[M1,E2]		0.11 *7*	α(K)=0.09 *6*; α(L)=0.018 *6*; α(M)=0.0043 *13*; α(N+..)=0.0013 *4* α(N)=0.0011 *4*; α(O)=0.00021 *7*; α(P)=1.7×10^{-5} *9*
414.1 *3*	13 *2*	413.98	(1$^-$,2$^-$)	0.0	(2$^-$)	M1(+E2)	≤2.2	0.11 *5*	α(K)=0.09 *5*; α(L)=0.018 *5*; α(M)=0.0042 *11*; α(N+..)=0.0013 *4* α(N)=0.0011 *3*; α(O)=0.00020 *6*; α(P)=1.8×10^{-5} *7* α(K)exp=0.16 *11*.
608.2 *1*	38 *3*	775.67	(0$^-$,1$^-$)	167.49	1$^{(-)}$	M1+E2	1.7 *+7–4*	0.029 *5*	α(K)=0.022 *4*; α(L)=0.0046 *6*; α(M)=0.00110 *13*; α(N+..)=0.00033 *4* α(N)=0.00028 *3*; α(O)=5.3×10^{-5} *7*; α(P)=4.4×10^{-6} *7* α(K)exp=0.023 *4*.
781.6 *3*	18 *2*	1195.46	1$^+$	413.98	(1$^-$,2$^-$)	[E1]		0.00379 *6*	α=0.00379 *6*; α(K)=0.00316 *5*; α(L)=0.000484 *7*; α(M)=0.0001116 *16*; α(N+..)=3.39×10^{-5} *5* α(N)=2.80×10^{-5} *4*; α(O)=5.40×10^{-6} *8*; α(P)=4.87×10^{-7} *7*

Continued on next page (footnotes at end of table)

^{192}Pb ε decay 1981So09 (continued)

γ(^{192}Tl) (continued)

E_γ	I_γ[&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[†]	Comments
1195.4 *2*	100 *6*	1195.46	1^+	0.0	(2^-)	(E1)	0.001763 *25*	α=0.001763 *25*; α(K)=0.001464 *21*; α(L)=0.000219 *3*; α(M)=5.03×10^{-5} *7*; α(N+..)=2.98×10^{-5} *5* α(N)=1.263×10^{-5} *18*; α(O)=2.44×10^{-6} *4*; α(P)=2.26×10^{-7} *4*; α(IPF)=1.450×10^{-5} *22* α(K)exp=0.0028 *13*. Mult.: E1,E2 from α(K)exp; adopted Δπ=yes.

† Additional information 1.
‡ From experimental conversion coefficients, determined by simultaneous measurement of ce and photon spectra (equipment calibrated assuming α(K)(E2 theory) for 422.8γ and 634.8γ in ^{192}Hg daughter).
# From α(K)exp or α(L)exp.
@ Not determined; transition observed only in coincidence spectra.
& For absolute intensity per 100 decays, multiply by 0.49 *5*.
x γ ray not placed in level scheme.

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Decay Scheme

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