^{206}Pb IT decay (202 ns) 1977Dr08

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

Parent: ^{206}Pb: E=4027.3 *4*; $J^{\pi}=12^{+}$; $T_{1/2}$=202 ns *3*; %IT decay=100

1977Dr08: 93% enriched ^{204}Hg target. Reaction: ^{204}Hg(α,2nγ), E=30 MeV. Measured Eγ, Iγ, ce, $\gamma\gamma$(t) coin. Detectors: two Ge(Li), solenoid magnet and a cooled Si(Li) detector. Conversion coefficients were determined by assuming α(K)(theory, E2)=0.0081 for 803γ.

Others: 1970Qu03, 1971Be37, 1972Ma24, 1972Na08, 1973DiZE, 1979Ma37, 1983St15, 1994Po20, 2018La03.

^{206}Pb Levels

E(level)†	J^{π}‡	$T_{1/2}$‡	Comments
0.0	0^{+}		
803.04 *3*	2^{+}	8.17 ps *8*	
1340.52 *5*	3^{+}		
1684.00 *6*	4^{+}		
1997.72 *6*	4^{+}		
2200.18 *7*	7^{-}	125.1 μs *12*	μ=−0.1519 *28*; Q=0.5 *2* μ: From g=−0.0217 *4* by 1972Ma24. Other: −0.24 *14* (1970Qu03). Q: From 1973DiZE. Other: ≤0.2 (1970Qu03). Dominant configuration=$\nu(p^{-1}_{1/2},i^{-1}_{13/2})$.
2658.28 *21*	9^{-}		Dominant configuration=$\nu(f^{-1}_{5/2},i^{-1}_{13/2})$.
3957.4 *4*	10^{+}		Dominant configuration=$\nu(i^{-2}_{13/2})$.
4027.2 *4*	12^{+}	202 ns *3*	μ=−1.795 *22*; Q=0.51 *2* $T_{1/2}$: Weighted average of 200 ns *14* (1971Be37), 198 ns *6* (1979Ma37), 185 ns *15* (1983St15), 205 ns *4* (1993Bl02). Other: 203 ns *28* (2018La03). μ: Based on g-factor=−0.1496 *18* (1983St15). Other: μ=−1.86 *5* from g-factor=−0.155 *4* (1972Na08). Q: Based on Q(^{200}Pb,12^{+})/Q(^{206}Pb,12^{+})=1.553 *10* (1979Ma37). Dominant configuration=$\nu(i^{-2}_{13/2})$.

† From a least-squares fit to Eγ.

‡ From Adopted Levels.

^{206}Pb IT decay (202 ns) 1977Dr08 (continued)

γ(^{206}Pb)

Iγ normalization: From I(γ+ce)[803.04γ]=100.

E_γ †	I_γ ‡c	E_i(level)	J_i^π	E_f	J_f^π	Mult.a	δa	αb	Comments
69.7 *5*	0.35 *5*	4027.2	12^+	3957.4	10^+	E2		32.1 *12*	%Iγ=1.16 *7* α(L)=23.9 *9*; α(M)=6.32 *24* α(N)=1.59 *6*; α(O)=0.282 *11*; α(P)=0.0102 *4* E_γ: From 1977Dr08. I_γ: From intensity balance [I(γ+ce)(69.7γ)=I(γ+ce)(1299.1γ)] at the 3957-keV level. Mult.: L:M(exp)=3.5 *7* (1977Dr08).
202.44# *10*	0.0304& *28*	2200.18	7^-	1997.72	4^+	[E3]		3.78 *5*	%Iγ=0.101 *6* α(N)=0.1726 *25*; α(O)=0.0311 *4*; α(P)=0.001533 *22* α(K)=0.426 *6*; α(L)=2.470 *35*; α(M)=0.678 *10*
313.67# *10*	0.0187@ *5*	1997.72	4^+	1684.00	4^+	M1+E2	−0.22 *7*	0.364 *8*	%Iγ=0.062 *4* α(K)=0.296 *7*; α(L)=0.0516 *9*; α(M)=0.01212 *19* α(N)=0.00308 *5*; α(O)=0.000613 *10*; α(P)=6.47×10^{-5} *13*
343.55 *13*	7.26& *10*	1684.00	4^+	1340.52	3^+	M1(+E2)	+0.001 *3*	0.295 *4*	%Iγ=24.0 *14* α(N)=0.002442 *34*; α(O)=0.000487 *7*; α(P)=5.21×10^{-5} *7* α(K)=0.2413 *34*; α(L)=0.0411 *6*; α(M)=0.00961 *13* I_γ: 29 *3* in 1977Dr08 contains direct feeding to the 7^- isomer. Mult.: K:L:M(exp)=6.5 *4*:0.96 *7*:0.26 *3*, α(K)exp=0.227 *30* (1977Dr08).
458.1 *2*	29.1 *20*	2658.28	9^-	2200.18	7^-	E2		0.0364 *5*	%Iγ=96 *6* α(K)=0.02504 *35*; α(L)=0.00856 *12*; α(M)=0.002140 *30* α(N)=0.000542 *8*; α(O)=0.0001019 *14*; α(P)=7.65×10^{-6} *11* Mult.: K:L(exp)=2.6 *4*, α(K)exp=0.025 *3* (1977Dr08).
516.18 *4*	27.60& *28*	2200.18	7^-	1684.00	4^+	E3		0.0886 *12*	%Iγ=91 *6* α(K)=0.0483 *7*; α(L)=0.0301 *4*; α(M)=0.00782 *11* α(N)=0.001988 *28*; α(O)=0.000370 *5*; α(P)=2.64×10^{-5} *4* I_γ: 93 *5* in 1977Dr08 contains direct feeding to the 7^- isomer. Mult.: K:L:M(exp)=4.80 *32*:2.92 *24*:0.78 *12*, α(K)exp=0.052 *5* (1977Dr08).
537.48 *4*	8.7& *9*	1340.52	3^+	803.04	2^+	M1(+E2)	+0.001 *5*	0.0892 *12*	%Iγ=28.8 *17* α(K)=0.0731 *10*; α(L)=0.01229 *17*; α(M)=0.00287 *4* α(N)=0.000730 *10*; α(O)=0.0001456 *20*; α(P)=1.561×10^{-5} *22* I_γ: 30 *3* in 1977Dr08 contains direct feeding to the 7^- isomer. Mult.: K:L(exp)=5.3 *8*, α(K)exp=0.070 *8* (1977Dr08).
657.20# *4*	0.0997@ *16*	1997.72	4^+	1340.52	3^+	M1+E2	0.15 *3*	0.0518 *8*	%Iγ=0.330 *20* α(K)=0.0425 *6*; α(L)=0.00712 *10*; α(M)=0.001664 *24* α(N)=0.000423 *6*; α(O)=8.43×10^{-5} *12*; α(P)=9.03×10^{-6} *13*

$^{206}_{82}Pb_{124}$-2

^{206}Pb IT decay (202 ns) 1977Dr08 (continued)

γ(^{206}Pb) (continued)

E_γ[†]	I_γ[‡][c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[b]	Comments
803.04 *3*	29.9[&] *18*	803.04	2^+	0.0	0^+	E2	0.01032 *14*	%Iγ=99 *6* α(K)=0.00803 *11*; α(L)=0.001742 *24*; α(M)=0.000420 *6* α(N)=0.0001063 *15*; α(O)=2.059×10^{-5} *29*; α(P)=1.890×10^{-6} *26* I_γ: 100 *6* in 1977Dr08 contains direct feeding to the 7^- isomer. Mult.: K:L:M(exp)=0.808 *50*:0.161 *16*:0.062 *15* (1977Dr08).
880.92 *7*	20.52[&] *21*	1684.00	4^+	803.04	2^+	E2	0.00855 *12*	%Iγ=68 *4* α(K)=0.00673 *9*; α(L)=0.001389 *19*; α(M)=0.000333 *5* α(N)=8.43×10^{-5} *12*; α(O)=1.640×10^{-5} *23*; α(P)=1.540×10^{-6} *22* I_γ: 68 *4* in 1977Dr08 contains direct feeding to the 7^- isomer. Mult.: K:L(exp)=5.6 *1*, α(K)exp=0.0071 *7* (1977Dr08).
1194.69[#] *8*	0.0145[@] *8*	1997.72	4^+	803.04	2^+	E2	0.00474 *7*	%Iγ=0.0480 *29* α(K)=0.00382 *5*; α(L)=0.000696 *10*; α(M)=0.0001643 *23* α(N)=4.16×10^{-5} *6*; α(O)=8.18×10^{-6} *11*; α(P)=8.13×10^{-7} *11*; α(IPF)=3.43×10^{-6} *5*
1299.1 *3*	11.4 *15*	3957.4	10^+	2658.28	9^-	E1	1.63×10^{-3} *2*	%Iγ=37.7 *23* α(K)=0.001320 *18*; α(L)=0.0001983 *28*; α(M)=4.56×10^{-5} *6* α(N)=1.155×10^{-5} *16*; α(O)=2.296×10^{-6} *32*; α(P)=2.401×10^{-7} *34*; α(IPF)=5.21×10^{-5} *7* Mult.: α(K)exp=0.0015 *4* (1977Dr08).
1369.0 *3*	17 *3*	4027.2	12^+	2658.28	9^-	E3	0.00776 *11*	%Iγ=56.3 *34* α(K)=0.00604 *8*; α(L)=0.001300 *18*; α(M)=0.000313 *4* α(N)=7.96×10^{-5} *11*; α(O)=1.555×10^{-5} *22*; α(P)=1.507×10^{-6} *21*; α(IPF)=1.142×10^{-5} *16* Mult.: K:L:M(exp)=0.093 *1*:0.022 *3*:0.0085 *3*; α(K)exp=0.0055 *11* (1977Dr08). I_γ: Note that 1977Dr08 stated that part of Iγ(1639γ) is from ^{24}Na impurities, but the intensity balance is good with the intensities adopted here.

[†] From adopted gammas.
[‡] From 1977Dr08, unless otherwise stated.
[#] Assignment in the decay scheme based on the adopted gammas.
[@] From the branching ratio in the adopted gammas and I(γ+ce)[202.44γ]=0.145 *13*.
[&] From the branching ratio in the adopted gammas and the intensity balance.
[a] From adopted gammas. ce measurements of 1977Dr08 [^{206}Pb IT decay] were normalized using α(K)(803γ).
[b] Additional information 1.
[c] For absolute intensity per 100 decays, multiply by 3.31 *20*.

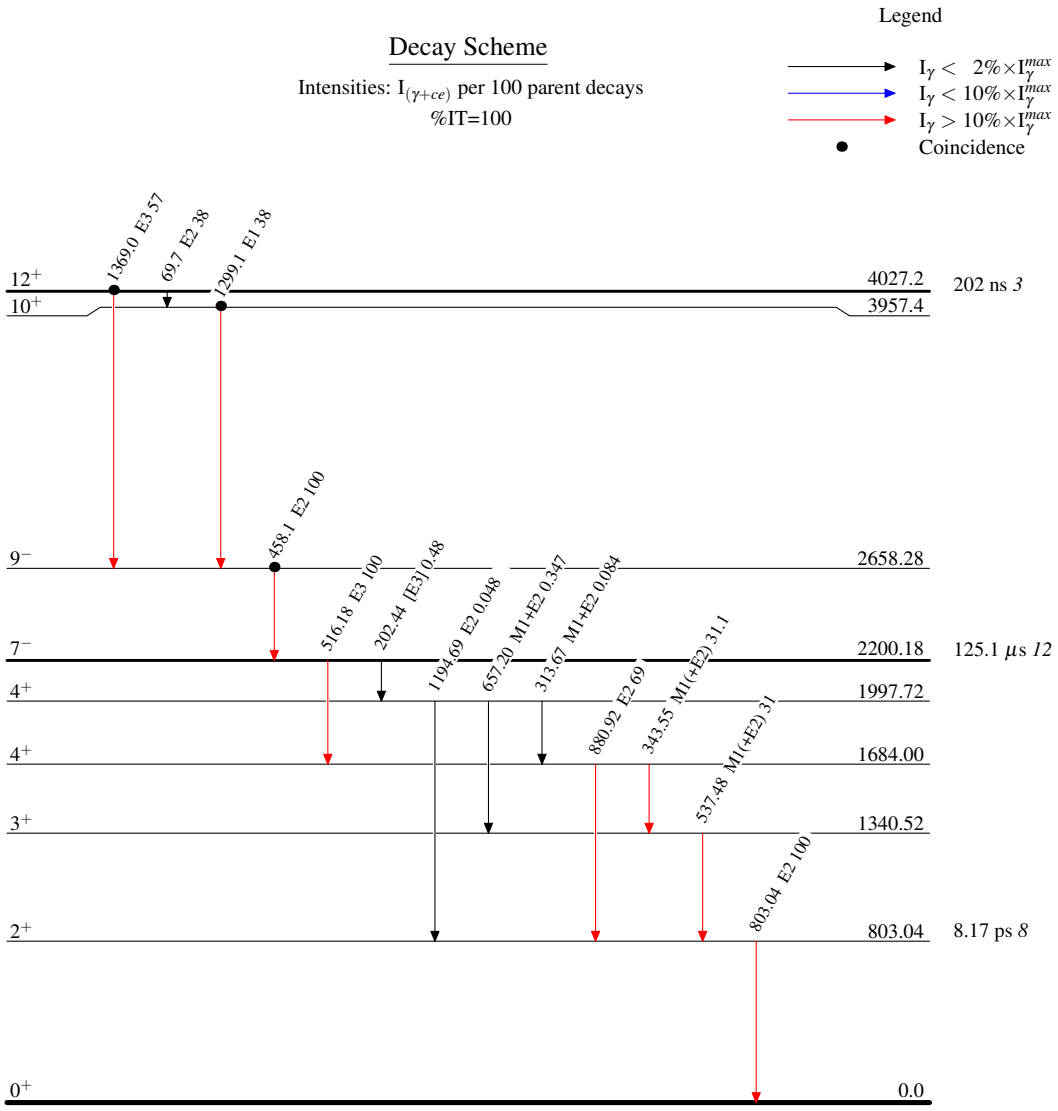
$^{206}_{82}Pb_{124}$-3

^{206}Pb IT decay (202 ns) 1977Dr08

Decay Scheme

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

%IT=100



$^{206}_{82}Pb_{124}$