^{202}Hg(α,4nγ),^{200}Hg(α,2nγ) 1986Ja13,1987Fa15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Zhu and F. G. Kondev	NDS 109, 699 (2008)	1-May-2007

1986Ja13: E=35 MeV for (α,2n), 55 MeV for (α,: N); Target: metallic, enriched, 240mγ/cm^2; Detectors: 2Ge(Li); Measured: γ(t), $\gamma\gamma$ coin, $\gamma(\theta)$, $\gamma(\theta$,H). Deduced g factor.

1987Fa15: E(α)=53 MeV. Target: enriched metallic, 150-200 mg/cm^2, placed between 2 mica foils. Detectors: Si(Li), Ge andGe(Li). Measured: $\gamma\gamma$ coin, $\gamma\gamma$(t), γ(t), $\gamma(\theta)$, $\gamma(\theta$,H) and ce; Deduced g factor.

Others: 1971BeXA, 1973WyZZ, 1974Lu03.

^{202}Pb Levels

E(level)†	J$^\pi$‡	T$_{1/2}$	Comments
0	0$^+$		
960.7 *5*	2$^+$#		
1382.8 *7*	4$^+$#		
2040.1 *9*	5$^-$#		
2169.6 *9*	9$^-$#	3.54 h *2*	T$_{1/2}$: From Adopted Levels. Configuration=((ν f$_{5/2}$)$^{-1}$(ν i$_{13/2}$)$^{-1}$).
2208.2 *10*	7$^-$#	65.4 ns *2*	T$_{1/2}$: Weighted average of T$_{1/2}$(168.1γ)=65.0 ns *5*, T$_{1/2}$(422.1γ)=65.0 ns *3*, T$_{1/2}$(657.3γ)=66.7 ns *3* and T$_{1/2}$(960.7γ)=65.0 ns *3* in 1986Ja13. Other: 42 ns *4* in 1974Lu03. Configuration=((ν p$_{1/2}$)$^{-1}$(ν i$_{13/2}$)$^{-1}$).
3057.7 *10*	11$^-$		
3191.1 *10*	10$^+$		
3237.4 *10*	12$^+$	24.2 ns *3*	T$_{1/2}$: Weighted average of T$_{1/2}$(179.7γ)=24.6 ns *5*, T$_{1/2}$(888.1γ)=23.4 ns *3* and T$_{1/2}$(1021.5γ)=24.5 ns *2* in 1986Ja13. Configuration=(ν i$_{13/2}$)$^{-2}$.
3328.7 *11*	12		
3955.4 *11*	13$^+$		
4022.6 *11*	(12,13)		
4068.0 *11*	13		
4090.7 *11*	14$^+$		
4090.7+x	16$^+$	110 ns *5*	Additional information 1. g=−0.042 *10* (corrected for Knight shift and diamagnetic shielding in 1986Ja13). T$_{1/2}$: From 1986Ja13. The individual values reported in 1986Ja13 are T$_{1/2}$(179.7γ)=120 ns *6*, T$_{1/2}$(853.3γ)=108.5 ns *20*, T$_{1/2}$(888.1γ)=105.5 ns *3* and T$_{1/2}$(1021.5γ)=112 ns *9*. Configuration=((ν f$_{5/2}$)$^{-2}$(ν i$_{13/2}$)$^{-2}$).
4170.4 *11*	14$^+$		
4322.5+x *4*	15		
4445.1+x *4*	16$^+$		
4452.2+x *7*	16		
5241.7+x *4*	17$^-$		
5250.7+x *5*	18$^+$		
5250.7+y	19$^-$	107 ns *3*	Additional information 2. g=−0.099 *3* (corrected for Knight shift and diamagnetic shielding in 1987Fa15,1987Ja08). T$_{1/2}$: Weighted average of T$_{1/2}$(1151.0γ)=107 ns *3* and T$_{1/2}$(796.6γ)=109 ns *8* in 1987Fa15. Configuration=((ν f$_{5/2}$)$^{-1}$(ν i$_{13/2}$)$^{-3}$).
5453.2+y *5*	(18$^-$)		
5939.9+y *5*	(20$^-$)		
6091.2+y *5*	21$^-$		

† From a least-square fit to Eγ.

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^{202}Hg(α,4nγ),^{200}Hg(α,2nγ) 1986Ja13,1987Fa15 (continued)

^{202}Pb Levels (continued)

‡ Based on deduced transition multipolarities in 1987Fa15, unless otherwise specified.
# From Adopted Levels.

γ(^{202}Pb)

E_γ †	I_γ †	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α @	Comments
(46.3 *4*)	0.051	3237.4	12^+	3191.1	10^+	[E2]	233 *14*	ce(L)/(γ+ce)=0.74 *3*; ce(M)/(γ+ce)=0.195 *14*; ce(N+)/(γ+ce)=0.058 *5* ce(N)/(γ+ce)=0.049 *4*; ce(O)/(γ+ce)=0.0087 *7*; ce(P)/(γ+ce)=0.000297 *24* E_γ: Calculated from level energy differences in 1986Ja13. I_γ: from intensity ratio of the delayed component of 888.1 and 1021.5 γ's, Ti(179.7γ)/Ti(46.3γ)=7.6 *4* (1986Ja13).
122.5 *5*		4445.1+x	16^+	4322.5+x	15			
129.7 *5*	0.6	4452.2+x	16	4322.5+x	15	D		Mult.: From A_2=−0.38 *17*, A_4=0.01 *28*.
168.1‡ *5*	7.3	2208.2	7^-	2040.1	5^-	E2#	0.798 *15*	α(K)=0.249 *4*; α(L)=0.409 *8*; α(M)=0.1075 *21*; α(N+..)=0.0322 *7* α(N)=0.0271 *6*; α(O)=0.00488 *10*; α(P)=0.000228 *5*
179.7 *5*	82	3237.4	12^+	3057.7	11^-	E1	0.1016 *16*	α(K)=0.0823 *13*; α(L)=0.01478 *24*; α(M)=0.00347 *6*; α(N+..)=0.001052 *17* α(N)=0.000871 *14*; α(O)=0.000167 *3*; α(P)=1.435×10^{-5} *23* Mult.: α(exp)=0.03 from intensity balance; A_2=−0.20 *7*, A_4=0.06 *9*.
202.5 *5*	1.8	5453.2+y	(18^-)	5250.7+y	19^-	D		Mult.: From A_2=−0.48 *10*, A_4=−0.05 *15*.
215.0 *5*	1.0	4170.4	14^+	3955.4	13^+	(M1)	1.078 *17*	α(K)=0.881 *14*; α(L)=0.1513 *24*; α(M)=0.0354 *6*; α(N+..)=0.01100 *17* α(N)=0.00901 *14*; α(O)=0.00180 *3*; α(P)=0.000192 *3* Mult.: From A_2=−0.6 *4*, A_4=0.3 *6*.
231.8 *5*	<4	4322.5+x	15	4090.7+x	16^+	D		Mult.: From A_2=−0.24 *3*, A_4=0.05 *5*.
271.1 *5*	4.6	3328.7	12	3057.7	11^-	D		Mult.: From A_2=−0.44 *5*, A_4=0.08 *7*.
354.4 *5*	40	4445.1+x	16^+	4090.7+x	16^+	(M1)	0.273	α(K)=0.224 *4*; α(L)=0.0380 *6*; α(M)=0.00890 *13*; α(N+..)=0.00276 *4* α(N)=0.00226 *4*; α(O)=0.000451 *7*; α(P)=4.83×10^{-5} *7* Mult.: From A_2=0.17 *6*, A_4=0.08 *8*.
422.1‡ *5*	≈67	1382.8	4^+	960.7	2^+	E2#	0.0448	α(K)=0.0299 *5*; α(L)=0.01121 *17*; α(M)=0.00282 *5*; α(N+..)=0.000856 *13* α(N)=0.000713 *11*; α(O)=0.0001335 *20*; α(P)=9.66×10^{-6} *14*
626.7 *5*	0.6	3955.4	13^+	3328.7	12			
657.3‡ *5*	33	2040.1	5^-	1382.8	4^+	E1#	0.00550	α(K)=0.00457 *7*; α(L)=0.000717 *11*; α(M)=0.0001661 *24*; α(N+..)=5.11×10^{-5} *8* α(N)=4.20×10^{-5} *6*; α(O)=8.28×10^{-6} *12*; α(P)=8.31×10^{-7} *12*
689.2 *5*	3.9	5939.9+y	(20^-)	5250.7+y	19^-	M1+E2		Mult.: From A_2=−0.76 *20*, A_4=0.12 *27*.
717.9 *5*	11	3955.4	13^+	3237.4	12^+	M1(+E2)	0.0422	α(K)=0.0347 *5*; α(L)=0.00578 *8*; α(M)=0.001348 *19*; α(N+..)=0.000418 *6* α(N)=0.000343 *5*; α(O)=6.84×10^{-5} *10*;

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^{202}Hg(α,4nγ),^{200}Hg(α,2nγ) 1986Ja13,1987Fa15 (continued)

γ(^{202}Pb) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α @	Comments
								α(P)=7.34×10^{-6} *11* Mult.: From α(K)exp=0.039 *4* (1986Ja13). Also: A_2=−0.85 *6*, A_4=0.15 *8*.
785.2 *5*	19	4022.6	(12,13)	3237.4	12$^+$	(D)		Mult.: From A_2=0.13 *3*, A_4=−0.01 *5*.
786.8‡ *5*	≈23	2169.6	9$^-$	1382.8	4$^+$	E5#	0.1629	α(K)=0.0819 *12*; α(L)=0.0601 *9*; α(M)=0.01600 *23*; α(N+..)=0.00492 *7* α(N)=0.00410 *6*; α(O)=0.000767 *11*; α(P)=5.82×10^{-5} *9*
796.6 *5*	9.9	5241.7+x	17$^-$	4445.1+x	16$^+$	D		Mult.: From A_2=−0.22 *4*, A_4=0.09 *6*.
830.6 *5*	6.1	4068.0	13	3237.4	12$^+$	D		Mult.: From A_2=−0.31 *5*, A_4=0.24 *7*.
840.5 *5*	7.3	6091.2+y	21$^-$	5250.7+y	19$^-$	E2	0.00942	α(K)=0.00737 *11*; α(L)=0.001559 *22*; α(M)=0.000375 *6*; α(N+..)=0.0001151 *17* α(N)=9.49×10^{-5} *14*; α(O)=1.84×10^{-5} *3*; α(P)=1.711×10^{-6} *24* Mult.: From A_2=0.29 *3*, A_4=−0.03 *4*.
853.3 *5*	60	4090.7	14$^+$	3237.4	12$^+$	E2	0.00913	α(K)=0.00716 *10*; α(L)=0.001503 *21*; α(M)=0.000361 *5*; α(N+..)=0.0001108 *16* α(N)=9.14×10^{-5} *13*; α(O)=1.776×10^{-5} *25*; α(P)=1.655×10^{-6} *24* Mult.: From α(K)exp=0.0074 *6* (1986Ja13).
888.1 *5*	100	3057.7	11$^-$	2169.6	9$^-$	E2	0.00843	α(K)=0.00664 *10*; α(L)=0.001365 *20*; α(M)=0.000327 *5*; α(N+..)=0.0001005 *15* α(N)=8.29×10^{-5} *12*; α(O)=1.612×10^{-5} *23*; α(P)=1.516×10^{-6} *22* Mult.: α(K)exp=0.00673 (1986Ja13).
932.9 *5*	4.6	4170.4	14$^+$	3237.4	12$^+$	(E2)	0.00765	α(K)=0.00605 *9*; α(L)=0.001215 *17*; α(M)=0.000290 *4*; α(N+..)=8.93×10^{-5} *13* α(N)=7.36×10^{-5} *11*; α(O)=1.434×10^{-5} *21*; α(P)=1.363×10^{-6} *20* Mult.: From A_2=0.21 *6*, A_4=0.09 *8*.
960.7‡ *5*	≈72	960.7	2$^+$	0	0$^+$	E2#	0.00722	α(K)=0.00573 *8*; α(L)=0.001135 *16*; α(M)=0.000271 *4*; α(N+..)=8.32×10^{-5} *12* α(N)=6.86×10^{-5} *10*; α(O)=1.338×10^{-5} *19*; α(P)=1.280×10^{-6} *18*
1021.5 *5*	17	3191.1	10$^+$	2169.6	9$^-$	(E1)	0.00241	α(K)=0.00201 *3*; α(L)=0.000306 *5*; α(M)=7.06×10^{-5} *10*; α(N+..)=2.18×10^{-5} *3* α(N)=1.79×10^{-5} *3*; α(O)=3.54×10^{-6} *5*; α(P)=3.66×10^{-7} *6* Mult.: From A_2=−0.25 *6*, A_4=0.05 *8* (1986Ja13). Others: A_2=−0.22 *4*, A_4=0.06 *6*.
1151.0 *5*	20	5241.7+x	17$^-$	4090.7+x	16$^+$	D		Mult.: From A_2=−0.16 *4*, A_4=0.04 *6*.
1160.0 *5*	4.8	5250.7+x	18$^+$	4090.7+x	16$^+$	(E2)	0.00501	α(K)=0.00404 *6*; α(L)=0.000743 *11*; α(M)=0.0001757 *25*; α(N+..)=5.55×10^{-5} *8* α(N)=4.45×10^{-5} *7*; α(O)=8.75×10^{-6} *13*; α(P)=8.65×10^{-7} *13*; α(IPF)=1.376×10^{-6} *23* Mult.: From A_2=0.25 *6*, A_4=0.05 *8*.

† From 1987Fa15 (Eα=53 MeV), unless otherwise specified. $\Delta E\gamma$ were estimated by the evaluators.

‡ From 1986Ja13 (Eα=35 MeV).

From adopted gammas.

@ 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.

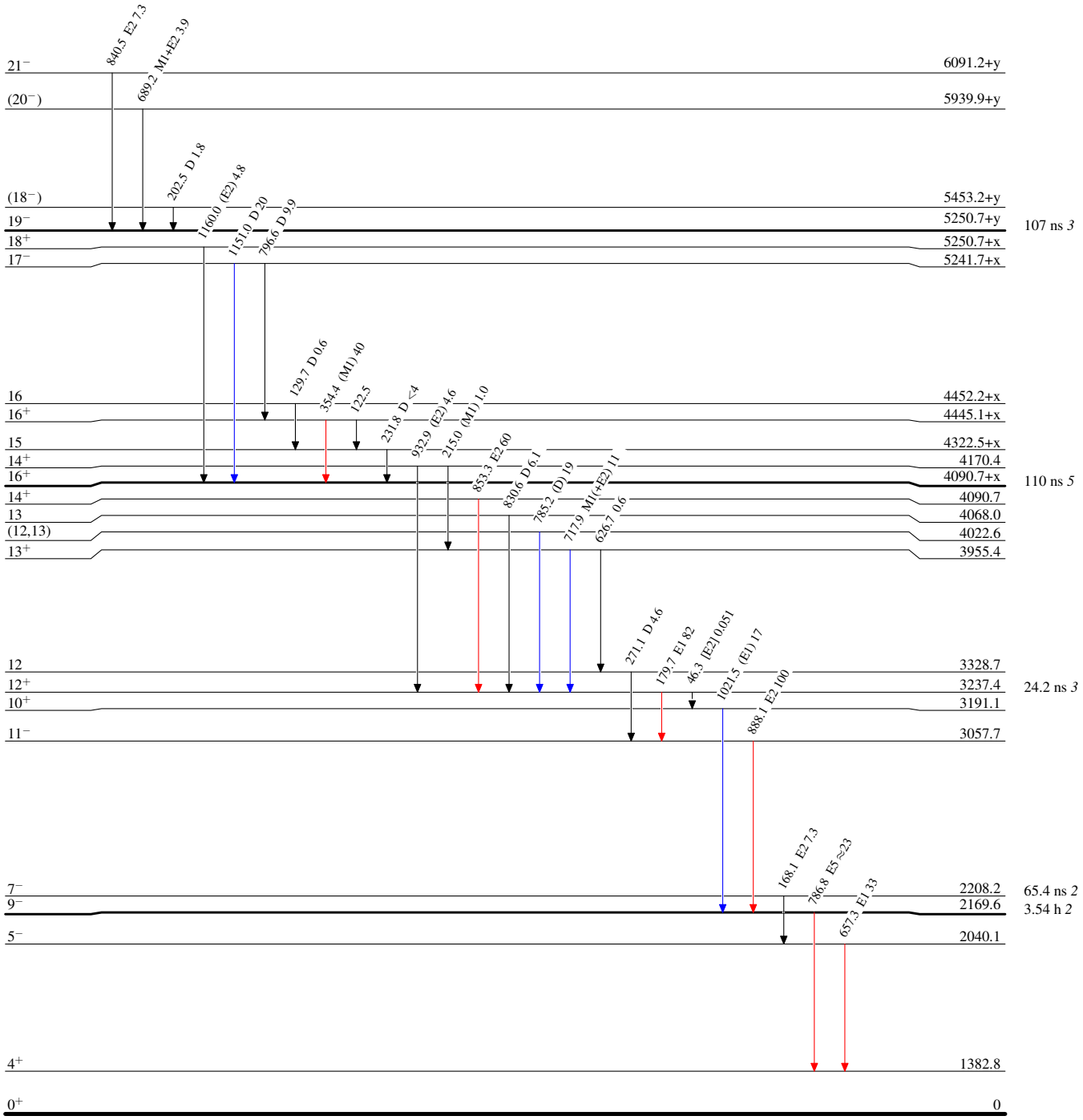
^{202}Hg(α,4nγ),^{200}Hg(α,2nγ) 1986Ja13,1987Fa15

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)

Level Scheme

Intensities: Type not specified



$^{202}_{82}Pb_{120}$

^{202}Hg(α,4nγ),^{200}Hg(α,2nγ) 1986Ja13,1987Fa15

Level Scheme (continued)

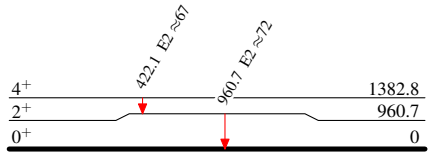
Intensities: Type not specified

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{202}_{82}Pb_{120}$