^{200}Hg(α,4nγ) 1987Fa15

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 192,1 (2023)	1-Aug-2023

Beam: α particles at energy 41 and 53 MeV accelerated at Stockholm 225 cm cyclotron; Target: ^{198}Hg, placed between two mica foils; Detectors: intrinsic Ge and Ge(Li); Measured: γ, $\gamma\gamma$, $\gamma\gamma(\theta)$, γ(t), $\gamma\gamma$(t), g-factor; Deduced: J,$T_{1/2}$, level scheme.

^{200}Pb Levels

E(level)†	J^{π}‡	$T_{1/2}$	Comments
0	0^+		
1026.60 *20*	2^+		
1488.8 *3*	4^+		
1908.4 *4*	5^-		A mixture of configuration=$\nu(f_{5/2}^{-1},i_{13/2}^{-1})$ and configuration=$\nu(p_{3/2}^{-1},i_{13/2}^{-1})$.
2153.5 *4*	7^-	46 ns *1*	$T_{1/2}$: From γ(t) in 1987Fa15. A mixture of configuration=$\nu(f_{5/2}^{-1},i_{13/2}^{-1})$, configuration=$\nu(p_{3/2}^{-1},i_{13/2}^{-1})$ and configuration=$\nu(p_{1/2}^{-1},i_{13/2}^{-1})$.
2183.0 *11*	9^-	424 ns *10*	$T_{1/2}$: From γ(t) in 1987Fa15. Configuration=$\nu(f_{5/2}^{-1},i_{13/2}^{-1})$.
2267.9 *7*			
2959.9 *11*	10^+		
3005.3 *12*	12^+	202 ns *5*	$T_{1/2}$: From 776.9γ(t) in 1987Fa15. g=−0.1530 *6* from 1987Fa15, using the time-differential perturbed angular distribution technique. Configuration=$\nu(i_{13/2}^{-2})$.
3180.9 *12*	11^-		
3395.1 *13*	(12)		
3829.0 *13*	(13^+)		
3866.6 *13*	14^+		
3872.5 *13*	13^+		
4067.1 *13*	14^+		
4144.7 *14*	16^+	5 ns *1*	$T_{1/2}$: From 278.1γ(t) and 861.3γ(t) in 1987Fa15. Configuration=$\nu(i_{13/2}^{-2})\otimes4^+$.
4253.2 *14*	(15)		
4341.7 *15*	16^+		
5006.9 *15*	17^-		Configuration=$\nu(f_{5/2}^{-1},i_{13/2}^{-3})$.
5074.6 *17*	19^-	67 ns *5*	$T_{1/2}$: Recommended in 1987Fa15, based on weighted average of 62 ns *2* (278.1γ(t)) and 71 ns *2* (861.3γ(t)) in 1987Fa15. Other: 77 ns *10* from 665.2γ(t) in 1987Fa15. g=−0.094 *7* from 1987Fa15, corrected for Knight shift, using the time-differential perturbed angular distribution technique. Configuration=$\nu(f_{5/2}^{-1},i_{13/2}^{-3})$.
5146.8 *15*	18		
5435.3 *20*	(18^-)		
5752.2 *20*	(20^-)		
5800.0 *17*	21^-		

† From a least squares fit to Eγ.
‡ From 1987Fa15.

^{200}Hg(α,4nγ) 1987Fa15 (continued)

γ(^{200}Pb)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	α@	Comments
29.5 *10*		2183.0	9⁻	2153.5	7⁻			E_γ: From adopted gammas.
45.4 *4*		3005.3	12⁺	2959.9	10⁺			E_γ: From adopted gammas.
67.7 *8*		5074.6	19⁻	5006.9	17⁻	E2	37.0 *22*	α(L)=27.5 *17*; α(M)=7.3 *4* α(N)=1.83 *11*; α(O)=0.325 *20*; α(P)=0.0117 *7* E_γ,Mult.: From adopted gammas.
114.4 *5*	2.0	2267.9		2153.5	7⁻	M1,E2	5.0 *14*	α(K)=2.8 *24*; α(L)=1.6 *7*; α(M)=0.41 *20* α(N)=0.10 *5*; α(O)=0.019 *8*; α(P)=0.001132 *27* Mult.: A_2=0.19 *9*; A_4=0.06 *13*.
139.9 *5*	1.9	5146.8	18	5006.9	17⁻	D		Mult.: A_2=−0.46 *7*; A_4=−0.25 *15*.
196.9 *5*	≈2	4341.7	16⁺	4144.7	16⁺			
214.2 *5*	1.5	3395.1	(12)	3180.9	11⁻	D		Mult.: A_2=−0.38 *6*; A_4=0.10 *8*.
245.1 *2*	70	2153.5	7⁻	1908.4	5⁻	E2	0.2164 *31*	α(K)=0.1046 *15*; α(L)=0.0835 *12*; α(M)=0.02166 *31* α(N)=0.00547 *8*; α(O)=0.000997 *14*; α(P)=5.51×10⁻⁵ *8* Mult.: A_2=0.34 *2*; A_4=−0.12 *4*.
278.1 *5*	15	4144.7	16⁺	3866.6	14⁺	E2	0.1453 *22*	α(K)=0.0777 *11*; α(L)=0.0507 *8*; α(M)=0.01306 *21* α(N)=0.00330 *5*; α(O)=0.000605 *9*; α(P)=3.56×10⁻⁵ *5* Mult.: A_2=0.34 *2*; A_4=−0.11 *3*.
ˣ339.3								
360.7 *10*	<1	5435.3	(18⁻)	5074.6	19⁻			
ˣ367.9								
386.6 *5*	1.5	4253.2	(15)	3866.6	14⁺	D		Mult.: A_2=−0.32 *8*; A_4=−0.01 *11*.
419.6 *2*	100	1908.4	5⁻	1488.8	4⁺	E1	0.01389 *19*	α(K)=0.01145 *16*; α(L)=0.001871 *26*; α(M)=0.000435 *6* α(N)=0.0001099 *15*; α(O)=2.150×10⁻⁵ *30*; α(P)=2.072×10⁻⁶ *29* Mult.: A_2/A_4=−0.23 *2*; A_4=−0.02 *3*.
462.2 *2*	100	1488.8	4⁺	1026.60	2⁺	E2	0.0356 *5*	α(K)=0.02456 *34*; α(L)=0.00832 *12*; α(M)=0.002078 *29* α(N)=0.000526 *7*; α(O)=9.90×10⁻⁵ *14*; α(P)=7.47×10⁻⁶ *10* Mult.: A_2=0.44 *3*; A_4=−0.20 *4*.
ˣ579.3								
665.2 *5*	3.5	5006.9	17⁻	4341.7	16⁺	E1	0.00537 *8*	α(K)=0.00446 *6*; α(L)=0.000700 *10*; α(M)=0.0001620 *23* α(N)=4.10×10⁻⁵ *6*; α(O)=8.08×10⁻⁶ *11*; α(P)=8.12×10⁻⁷ *11* Mult.: A_2=−0.17 *4*; A_4=0.02 *6*.
677.6 *10*	0.8	5752.2	(20⁻)	5074.6	19⁻	(M1)	0.0486 *7*	α(K)=0.0399 *6*; α(L)=0.00666 *10*; α(M)=0.001555 *23* α(N)=0.000395 *6*; α(O)=7.88×10⁻⁵ *11*; α(P)=8.46×10⁻⁶ *12* Mult.: A_2<0.
725.4 *5*	2.0	5800.0	21⁻	5074.6	19⁻	E2	0.01274 *18*	α(K)=0.00977 *14*; α(L)=0.002256 *32*; α(M)=0.000547 *8* α(N)=0.0001385 *20*; α(O)=2.67×10⁻⁵ *4*; α(P)=2.383×10⁻⁶ *34* Mult.: A_2=0.29 *6*; A_4=−0.08 *7*.
776.9 *2*	54	2959.9	10⁺	2183.0	9⁻	E1	0.00399 *6*	α(K)=0.00332 *5*; α(L)=0.000514 *7*; α(M)=0.0001189 *17* α(N)=3.01×10⁻⁵ *4*; α(O)=5.94×10⁻⁶ *8*;

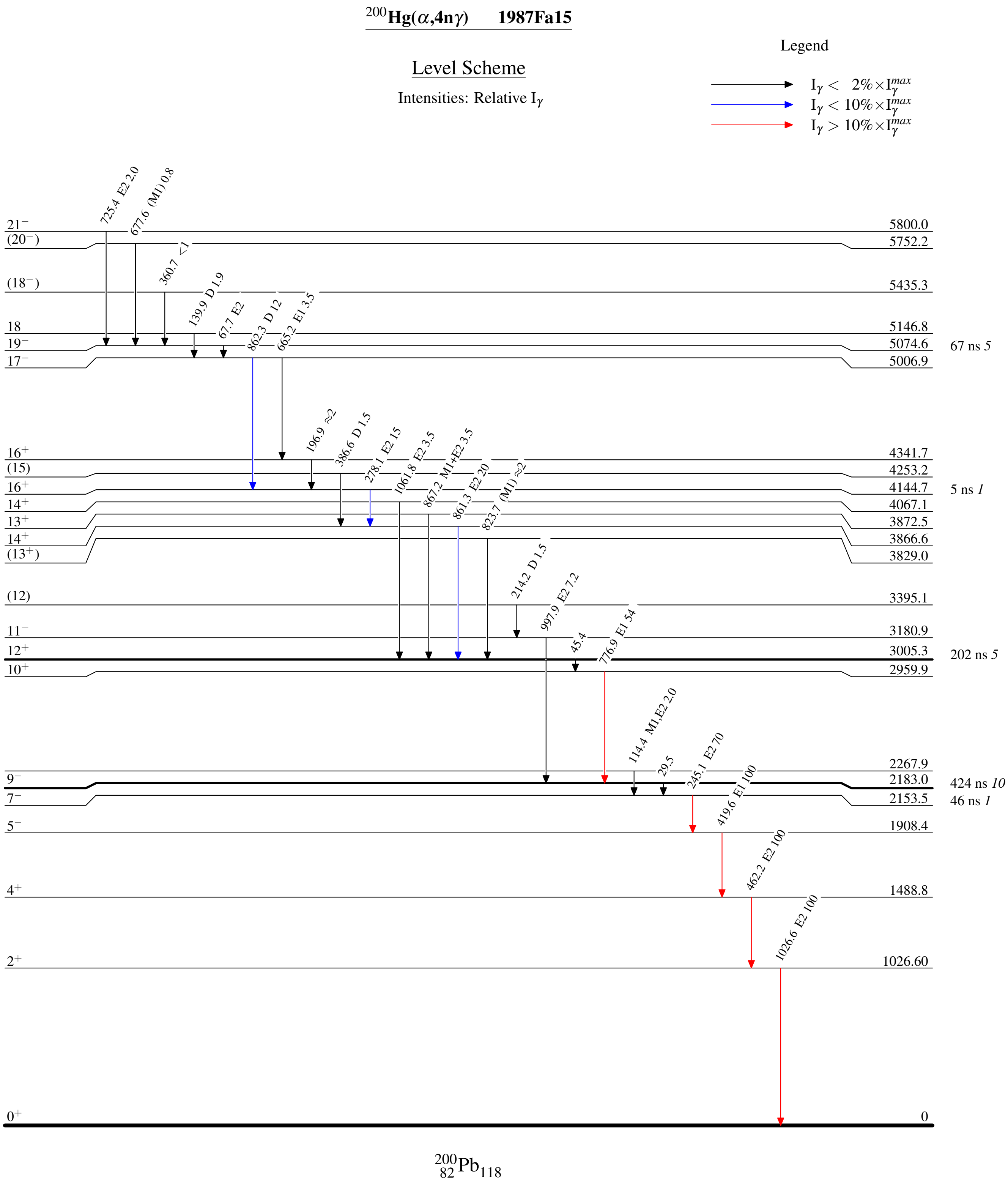
Continued on next page (footnotes at end of table)

^{200}Hg(α,4nγ) 1987Fa15 (continued)

γ(^{200}Pb) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	α [@]	Comments
								α(P)=6.04×10^{-7} *8* Mult.: A_2=−0.20 *2*; A_4=−0.00 *4*.
823.7 *5*	≈2	3829.0	(13$^+$)	3005.3	12$^+$	(M1)	0.0293 *4*	α(K)=0.02408 *34*; α(L)=0.00399 *6*; α(M)=0.000932 *13* α(N)=0.0002367 *33*; α(O)=4.72×10^{-5} *7*; α(P)=5.08×10^{-6} *7* Mult.: A_2<0.
861.3 *5*	20	3866.6	14$^+$	3005.3	12$^+$	E2	0.00895 *13*	α(K)=0.00702 *10*; α(L)=0.001467 *21*; α(M)=0.000352 *5* α(N)=8.92×10^{-5} *13*; α(O)=1.732×10^{-5} *24*; α(P)=1.618×10^{-6} *23* Mult.: A_2=0.33 *7*; A_4=0.01 *9*.
862.3 *5*	12	5006.9	17$^-$	4144.7	16$^+$	D		Mult.: A_2<0.
867.2 *5*	3.5	3872.5	13$^+$	3005.3	12$^+$	M1+E2	0.017 *8*	α(K)=0.014 *7*; α(L)=0.0025 *10*; α(M)=5.8×10^{-4} *23* α(N)=1.5×10^{-4} *6*; α(O)=2.9×10^{-5} *12*; α(P)=3.0×10^{-6} *14* Mult.: A_2=−0.63 *6*; A_4=−0.02 *13*.
997.9 *5*	7.2	3180.9	11$^-$	2183.0	9$^-$	E2	0.00669 *9*	α(K)=0.00533 *7*; α(L)=0.001037 *15*; α(M)=0.0002470 *35* α(N)=6.26×10^{-5} *9*; α(O)=1.223×10^{-5} *17*; α(P)=1.179×10^{-6} *17* Mult.: A_2=0.13 *5*; A_4=0.13 *7*.
1026.6 *2*	100	1026.60	2$^+$	0	0$^+$	E2	0.00633 *9*	α(K)=0.00505 *7*; α(L)=0.000973 *14*; α(M)=0.0002312 *32* α(N)=5.86×10^{-5} *8*; α(O)=1.146×10^{-5} *16*; α(P)=1.111×10^{-6} *16* Mult.: A_2=0.30 *2*; A_4=0.01 *3*.
1061.8 *5*	3.5	4067.1	14$^+$	3005.3	12$^+$	E2	0.00593 *8*	α(K)=0.00475 *7*; α(L)=0.000901 *13*; α(M)=0.0002140 *30* α(N)=5.42×10^{-5} *8*; α(O)=1.062×10^{-5} *15*; α(P)=1.035×10^{-6} *15* Mult.: A_2=0.25 *5*; A_4=−0.03 *6*.

† From 1987Fa15, unless otherwise stated. ΔEγ was estimated by the evaluator.
‡ From 1987Fa15. ΔIγ′s were not reported by the authors.
\# From $\gamma(\theta)$ and the proposed J^π assignments in 1987Fa15.
@ Additional information 1.
^{x} γ ray not placed in level scheme.


^{200}Hg(α,4nγ) 1987Fa15
Level Scheme
Intensities: Relative Iγ
Legend
Iγ < 2%×Iγmax
Iγ < 10%×Iγmax
Iγ > 10%×Iγmax
21− 5800.0
(20−) 5752.2
(18−) 5435.3
18 5146.8
19− 5074.6 67 ns 5
17− 5006.9
16+ 4341.7
(15) 4253.2
16+ 4144.7 5 ns 1
14+ 4067.1
13+ 3872.5
14+ 3866.6
(13+) 3829.0
(12) 3395.1
11− 3180.9
12+ 3005.3 202 ns 5
10+ 2959.9
2267.9
9− 2183.0 424 ns 10
7− 2153.5 46 ns 1
5− 1908.4
4+ 1488.8
2+ 1026.60
0+ 0
725.4 E2 2.0
677.6 (M1) 0.8
360.7 <1
139.9 D 1.9
67.7 E2
862.3 D 12
665.2 E1 3.5
196.9 ≈2
386.6 D 1.5
278.1 E2 15
1061.8 E2 3.5
867.2 M1+E2 3.5
861.3 E2 20
823.7 (M1) ≈2
214.2 D 1.5
997.9 E2 7.2
45.4
776.9 E1 54
114.4 M1,E2 2.0
29.5
245.1 E2 70
419.6 E1 100
462.2 E2 100
1026.6 E2 100
$^{200}_{82}$Pb$_{118}$