^{200}Hg(α,3nγ) 1988Ro08,1981He07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 187,355 (2023)	20-Sep-2022

1988Ro08: E(α)=53 MeV; Target: enriched liquid ^{200}Hg; Detectors: intrinsic germanium and Ge(Li); Measured: γ, $\gamma(\theta)$, $\gamma(\theta,\beta,t)$ and $\gamma\gamma(t)$.
1981He07: E(α)=40 MeV; Target: enriched to 95.7% ^{200}Hg oxide; Detectors: Ge(Li); Measured: γ, $\gamma\gamma$, $\gamma(\theta)$, $\gamma(t)$ and $\gamma\gamma(t)$.
Other: 1977He06.

^{201}Pb Levels

E(level)†	J$^\pi$‡	$T_{1/2}$#	Comments
0@	5/2$^-$	9.33 h *5*	
88.6& *10*	3/2$^-$		
170.0a *15*	(1/2$^-$)		
538.7 *6*	(3/2$^-$)		
628.8b *4*	13/2$^+$	60.8 s *18*	
879.6 *5*	(5/2$^-$)		
936.1 *3*	7/2$^-$		
1014.4 *5*	9/2$^-$		
1186.3 *7*	11/2$^-$		
1447.3 *5*	11/2$^+$		
1541.5c *5*	17/2$^+$		
1545.5 *5*	15/2$^+$		
1895.8d *5*	19/2$^+$	3.2 ns *6*	$T_{1/2}$: From (350γ,354γ,913γ,917γ)(t) in 1981He07.
1901.9e *5*	21/2$^+$		
2068.1 *6*	21/2$^+$		
2496.0f *5*	21/2$^-$		
2603.7 *7*	21/2,23/2		
2718.2g *5*	25/2$^-$	63 ns *3*	$T_{1/2}$: From (222.3γ,350.3γ,354.3γ,600.3γ,913.2γ,917.1γ)(t) in 1988Ro08. Other: 55 ns in 1981He07. g-factor=−0.063 *3* (1988Ro08).
2718.2+xh	29/2$^-$	508 ns *5*	Additional information 1. E(level): 1981He07 stated that X<70 keV. $T_{1/2}$: From (222.3γ,350.3γ,354.3γ,600.3γ,913.2γ,917.1γ)(t) in 1988Ro08. Other: 540 ns *40* γ(t) in 1981He07; g-factor=−0.0697 *4* (1988Ro08).
2793.9 *6*			
3508.8+x *4*	31/2$^-$		
3543.8+x *4*	33/2$^-$		
3637.5+x *4*	31/2		
3830.8+x *6*	35/2$^-$		
3931.3+xi *4*	33/2$^+$		
4504.4+x *7*	35/2		
4558.5+x *6*	37/2$^+$		
4638.0+xj *8*	41/2$^+$	43 ns *3*	$T_{1/2}$: From (727.7γ,287.0γ,825.6γ)(t) in 1988Ro08. g-factor=−0.18 *4* (1988Ro08).
4639.4+x *5*	(35/2)		
4999.4+x *7*			
5084.9+x *9*			
5171.7+x *7*			
5423.4+x *9*			

† From a least-squares fit to Eγ.

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^{200}Hg(α,3nγ) 1988Ro08,1981He07 (continued)

^{201}Pb Levels (continued)

‡ From 1988Ro08, unless otherwise stated.
# From Adopted Levels, unless otherwise stated.
@ Configuration=$\nu\ f_{5/2}^{-1}$.
& Configuration=$\nu\ p_{3/2}^{-1}$.
a Configuration=$\nu\ p_{1/2}^{-1}$. The assignment is tentative.
b Configuration=$\nu\ i_{13/2}^{-1}$.
c Probably an admixture of configuration=$\nu\ (f_{5/2}^{-1},p_{1/2}^{-1},i_{13/2}^{-1})\otimes 2^+$ and configuration=$\nu\ (i_{13/2}^{-1})\otimes 2^+$.
d Probably an admixture of configuration=$\nu\ (f_{5/2}^{-1},p_{1/2}^{-1},i_{13/2}^{-1})\otimes 4^+$ and configuration=$\nu\ (i_{13/2}^{-1})\otimes 4^+$.
e Configuration=$\nu\ (f_{5/2}^{-2},i_{13/2}^{-1})$.
f Configuration=$\nu\ [p_{3/2}^{-1},(i_{13/2}^{-2})_{12+}]$.
g Probably an admixture of configuration=$\nu\ [f_{5/2}^{-1},(i_{13/2}^{-2})_{10+}]$, configuration=$\nu\ [p_{3/2}^{-1},(i_{13/2}^{-2})_{12+}]$ and configuration=$\nu\ [p_{1/2}^{-1},(i_{13/2}^{-2})_{12+}]$.
h Configuration=$\nu\ [f_{5/2}^{-1},(i_{13/2}^{-2})_{12+}]$.
i Configuration=$\nu\ (i_{13/2}^{-3})$.
j Configuration=$\nu\ (p_{3/2}^{-1},f_{5/2}^{-1},i_{13/2}^{-3})$.

$\gamma(^{201}Pb)$

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.@	α&	Comments
79.5 *5*		4638.0+x	$41/2^+$	4558.5+x	$37/2^+$			α(L)=12.8 *4*; α(M)=3.37 *11* α(N)=0.849 *28*; α(O)=0.151 *5*; α(P)=0.00561 *18*
(81.4# *7*)		170.0	$(1/2^-)$	88.6	$3/2^-$			
88.6# *10*		88.6	$3/2^-$	0	$5/2^-$			
166.2‡ *2*	4.3 *4*	2068.1	$21/2^+$	1901.9	$21/2^+$	E2+M1	1.5 *7*	α(K)=1.0 *8*; α(L)=0.37 *6*; α(M)=0.093 *20* α(N)=0.023 *5*; α(O)=0.0044 *7*; α(P)=0.00032 *8* I_γ: 4.1 *4* in 1981He07. Mult.: A_2=0.36 *5*, A_4=0.01 *5* in 1988Ro08, consistent with ΔJ=0 assignment.
171.9 *5*	0.9 *1*	1186.3	$11/2^-$	1014.4	$9/2^-$			α(K)=1.635 *27*; α(L)=0.282 *5*; α(M)=0.0661 *11* α(N)=0.01679 *27*; α(O)=0.00335 *5*; α(P)=0.000358 *6*
222.2‡ *1*	44 *4*	2718.2	$25/2^-$	2496.0	$21/2^-$	E2	0.299 *4*	α(K)=0.1318 *19*; α(L)=0.1247 *18*; α(M)=0.0325 *5* α(N)=0.00820 *12*; α(O)=0.001488 *21*; α(P)=7.85×10^{-5} *11* I_γ: 32 *3* in 1981He07. Mult.: A_2=0.22 *5*, A_4=0.02 *6* in 1988Ro08; A_2=0.00 *3*, A_4=−0.06 *4* in 1981He07; α(exp)=0.34 *3* in 1981He07.
287.0 *5*	7.7 *8*	3830.8+x	$35/2^-$	3543.8+x	$33/2^-$	M1+E2	0.31 *17*	α(K)=0.23 *16*; α(L)=0.056 *11*; α(M)=0.0136 *21* α(N)=0.0035 *5*; α(O)=0.00067 *13*; α(P)=5.9×10^{-5} *27* Mult.: A_2=−0.51 *5*, A_4=0.02 *8* in 1988Ro08.
293.8 *5*	3.8 *4*	3931.3+x	$33/2^+$	3637.5+x	31/2	D		α(K)=0.0254 *4*; α(L)=0.00430 *6*; α(M)=0.001004 *15* α(N)=0.000253 *4*; α(O)=4.91×10^{-5} *7*; α(P)=4.54×10^{-6} *7* Mult.: A_2=−0.28 *4*, A_4=0.07 *6* in 1988Ro08.

^{200}Hg(α,3nγ) 1988Ro08,1981He07 (continued)

$\gamma(^{201}Pb)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[&]	Comments
297.9[‡] *3*	1.2 *12*	2793.9		2496.0	21/2$^-$	M1+E2	0.28 *16*	α(K)=0.21 *14*; α(L)=0.050 *11*; α(M)=0.0121 *21* α(N)=0.0031 *5*; α(O)=0.00059 *13*; α(P)=5.3×10^{-5} *24* I_γ: 0.7 *1* in 1981He07. Mult.: A_2=−0.99 *13*, A_4=0.13 *5* in 1981He07.
350.3[‡] *2*	32 *3*	1895.8	19/2$^+$	1545.5	15/2$^+$	E2	0.0739 *10*	α(K)=0.0454 *6*; α(L)=0.02135 *30*; α(M)=0.00543 *8* α(N)=0.001374 *19*; α(O)=0.000255 *4*; α(P)=1.684×10^{-5} *24* I_γ: 26.0 *25* in 1981He07. Mult.: A_2=0.25 *5*, A_4=−0.05 *6* in 1988Ro08; Note, that A_2=0.09 *2*, A_4=−0.07 *4* in 1981He07 would imply an M1+E2 assignment.
354.3[‡] *2*	47 *5*	1895.8	19/2$^+$	1541.5	17/2$^+$	M1+E2	0.171 *99*	α(K)=0.13 *9*; α(L)=0.029 *9*; α(M)=0.0070 *18* α(N)=0.0018 *5*; α(O)=3.5×10^{-4} *10*; α(P)=3.2×10^{-5} *16* I_γ: 44 *4* in 1981He07. Mult.: A_2=0.70 *5*, A_4=0.04 *6* in 1988Ro08; A_2=0.19 *3*, A_4=0.01 *4* in 1981He07.
360.0 *5*	≈1	4999.4+x		4639.4+x	(35/2)			
360.4[‡] *3*	17 *2*	1901.9	21/2$^+$	1541.5	17/2$^+$	E2	0.0683 *10*	α(K)=0.0426 *6*; α(L)=0.01929 *28*; α(M)=0.00490 *7* α(N)=0.001239 *18*; α(O)=0.0002300 *33*; α(P)=1.543×10^{-5} *22* I_γ: 25.3 *25* in 1981He07. Mult.: A_2>0 in 1988Ro08; A_2=0.25 *3*, A_4=−0.08 *4* in 1981He07.
368.8[#a] *10*		538.7	(3/2$^-$)	170.0	(1/2$^-$)			
387.5 *5*	1.0 *1*	3931.3+x	33/2$^+$	3543.8+x	33/2$^-$			
422.5 *5*	5.0 *5*	3931.3+x	33/2$^+$	3508.8+x	31/2$^-$			
446.9 *5*	0.70 *7*	5084.9+x		4638.0+x	41/2$^+$			
573.1 *5*	2.1 *21*	4504.4+x	35/2	3931.3+x	33/2$^+$	D		α(K)=0.039 *23*; α(L)=0.0073 *30*; α(M)=0.0017 *7* α(N)=4.4×10^{-4} *17*; α(O)=9.E−5 *4*; α(P)=9.E−6 *4* Mult.: A_2=−0.87 *5*, A_4=0.14 *8* in 1988Ro08.
594.1[‡] *3*	3.4 *4*	2496.0	21/2$^-$	1901.9	21/2$^+$	D		α(K)=0.00557 *8*; α(L)=0.000882 *12*; α(M)=0.0002045 *29* α(N)=5.17×10^{-5} *7*; α(O)=1.017×10^{-5} *14*; α(P)=1.013×10^{-6} *14* I_γ: 1.1 *2* in 1981He07. Mult.: A_2=−0.06 *5*, A_4=0.08 *6* in 1988Ro08.
600.2[‡] *1*	74 *8*	2496.0	21/2$^-$	1895.8	19/2$^+$	D		α(K)=0.00546 *8*; α(L)=0.000864 *12*; α(M)=0.0002002 *28* α(N)=5.06×10^{-5} *7*; α(O)=9.96×10^{-6} *14*; α(P)=9.93×10^{-7} *14*

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^{200}Hg(α,3nγ) 1988Ro08,1981He07 (continued)

$\gamma(^{201}Pb)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[&]	Comments
								I_γ: 46 *5* in 1981He07. Mult.: A_2=−0.21 *4*, A_4=−0.02 *6* in 1988Ro08; A_2=−0.10 *3*, A_4=−0.03 *4* in 1981He07.
627.2 *5*	≈1	4558.5+x	37/2$^+$	3931.3+x	33/2$^+$			
628.8[‡] *4*	194 *20*	628.8	13/2$^+$	0	5/2$^-$	M4	0.815 *12*	α(K)=0.553 *8*; α(L)=0.1953 *28*; α(M)=0.0506 *7* α(N)=0.01302 *19*; α(O)=0.00252 *4*; α(P)=0.0002181 *31* I_γ: 98 *9* in 1981He07. Mult.: From adopted gammas.
667.3[‡] *3*	2.1 *2*	5171.7+x		4504.4+x	35/2	D		I_γ: 2.1 *2* in 1981He07. Mult.: A_2=−0.38 *6*, A_4=−0.16 *9* in 1981He07.
707.9 *5*	10	2603.7	21/2,23/2	1895.8	19/2$^+$			A_2=−0.10 *4*, A_4=−0.02 *6* in 1988Ro08.
708.1[‡] *2*	≈1	4639.4+x	(35/2)	3931.3+x	33/2$^+$			Placement of this gamma is from 1988Ro08. I_γ: 5.6 *5* in 1981He07.
727.7 *5*	10 *1*	4558.5+x	37/2$^+$	3830.8+x	35/2$^-$	D		Mult.: A_2=−0.13 *5*, A_4=−0.02 *7* in 1988Ro08.
785.4 *5*	5.9 *6*	5423.4+x		4638.0+x	41/2$^+$			
790.6 *5*	5.7 *6*	3508.8+x	31/2$^-$	2718.2+x	29/2$^-$	M1+E2	0.022 *11*	α(K)=0.018 *9*; α(L)=0.0031 *13*; α(M)=7.4×10^{-4} *30* α(N)=1.9×10^{-4} *8*; α(O)=3.7×10^{-5} *16*; α(P)=3.8×10^{-6} *18* Mult.: A_2=−1.06 *3*, A_4=−0.01 *5* in 1988Ro08.
818.5[‡] *2*	4.5 *5*	1447.3	11/2$^+$	628.8	13/2$^+$	D		α(K)=0.016 *8*; α(L)=0.0029 *12*; α(M)=6.7×10^{-4} *27* α(N)=1.7×10^{-4} *7*; α(O)=3.4×10^{-5} *14*; α(P)=3.5×10^{-6} *17* I_γ: 4.7 *5* in 1981He07. Mult.: A_2=−0.21 *5*, A_4=0.01 *7* in 1988Ro08.
825.6 *5*	17 *2*	3543.8+x	33/2$^-$	2718.2+x	29/2$^-$	E2	0.00975 *14*	α(K)=0.00761 *11*; α(L)=0.001626 *23*; α(M)=0.000391 *6* α(N)=9.91×10^{-5} *14*; α(O)=1.922×10^{-5} *27*; α(P)=1.776×10^{-6} *25* Mult.: A_2=0.28 *5*, A_4=−0.03 *6* in 1988Ro08.
847.7[#a] *10*		936.1	7/2$^-$	88.6	3/2$^-$			
879.6 *5*	0.8 *1*	879.6	(5/2$^-$)	0	5/2$^-$			
912.7[‡] *2*	100 *10*	1541.5	17/2$^+$	628.8	13/2$^+$	E2	0.00797 *11*	α(K)=0.00629 *9*; α(L)=0.001277 *18*; α(M)=0.000305 *4* α(N)=7.74×10^{-5} *11*; α(O)=1.507×10^{-5} *21*; α(P)=1.426×10^{-6} *20* I_γ: 100 in 1981He07. Mult.: A_2=0.32 *5*, A_4=−0.01 *6* in 1988Ro08; A_2=0.21 *3*, A_4=−0.05 *4* in 1981He07.

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^{200}Hg(α,3nγ) 1988Ro08,1981He07 (continued)

$\gamma(^{201}Pb)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[&]	Comments
916.7[‡] *2*	41 *4*	1545.5	$15/2^+$	628.8	$13/2^+$	M1+E2	0.015 *7*	α(K)=0.012 *6*; α(L)=0.0021 *9*; α(M)=5.0×10^{-4} *20* α(N)=1.3×10^{-4} *5*; α(O)=2.5×10^{-5} *10*; α(P)=2.6×10^{-6} *12* I_γ: 35 *3* in 1981He07. Mult.: A_2=−0.51 *4*, A_4=0.15 *6* in 1988Ro08; A_2=−0.28 *3*, A_4=0.04 *4* in 1981He07.
919.3 *5*	3.0 *3*	3637.5+x	31/2	2718.2+x	$29/2^-$	D		α(K)=0.012 *6*; α(L)=0.0021 *9*; α(M)=5.0×10^{-4} *20* α(N)=1.3×10^{-4} *5*; α(O)=2.5×10^{-5} *10*; α(P)=2.6×10^{-6} *12* Mult.: A_2=−0.48 *4*, A_4=0.31 *7* in 1988Ro08.
936.2[#a] *5*		936.1	$7/2^-$	0	$5/2^-$			
1014.4 *5*	8.8 *9*	1014.4	$9/2^-$	0	$5/2^-$	E2	0.00648 *9*	α(K)=0.00517 *7*; α(L)=0.000999 *14*; α(M)=0.0002377 *33* α(N)=6.02×10^{-5} *8*; α(O)=1.178×10^{-5} *17*; α(P)=1.139×10^{-6} *16* Mult.: From adopted gammas. Note, that A_2=0.07 *4*, A_4=0.01 *6* in 1988Ro08 are inconsistent with the adopted multipolarity.

† From 1988Ro08, unless otherwise specified. Evaluator assigns a 0.5 keV uncertainty for Eγ and a 10% uncertainty for Iγ.
‡ From 1981He07.
# From adopted gammas.
@ From $\gamma(\theta)$ in 1981He07 and 1988Ro08, unless otherwise stated.
& Additional information 2.
a Placement of transition in the level scheme is uncertain.

^{200}Hg(α,3nγ) **1988Ro08,1981He07**

Level Scheme

Intensities: Relative I_γ

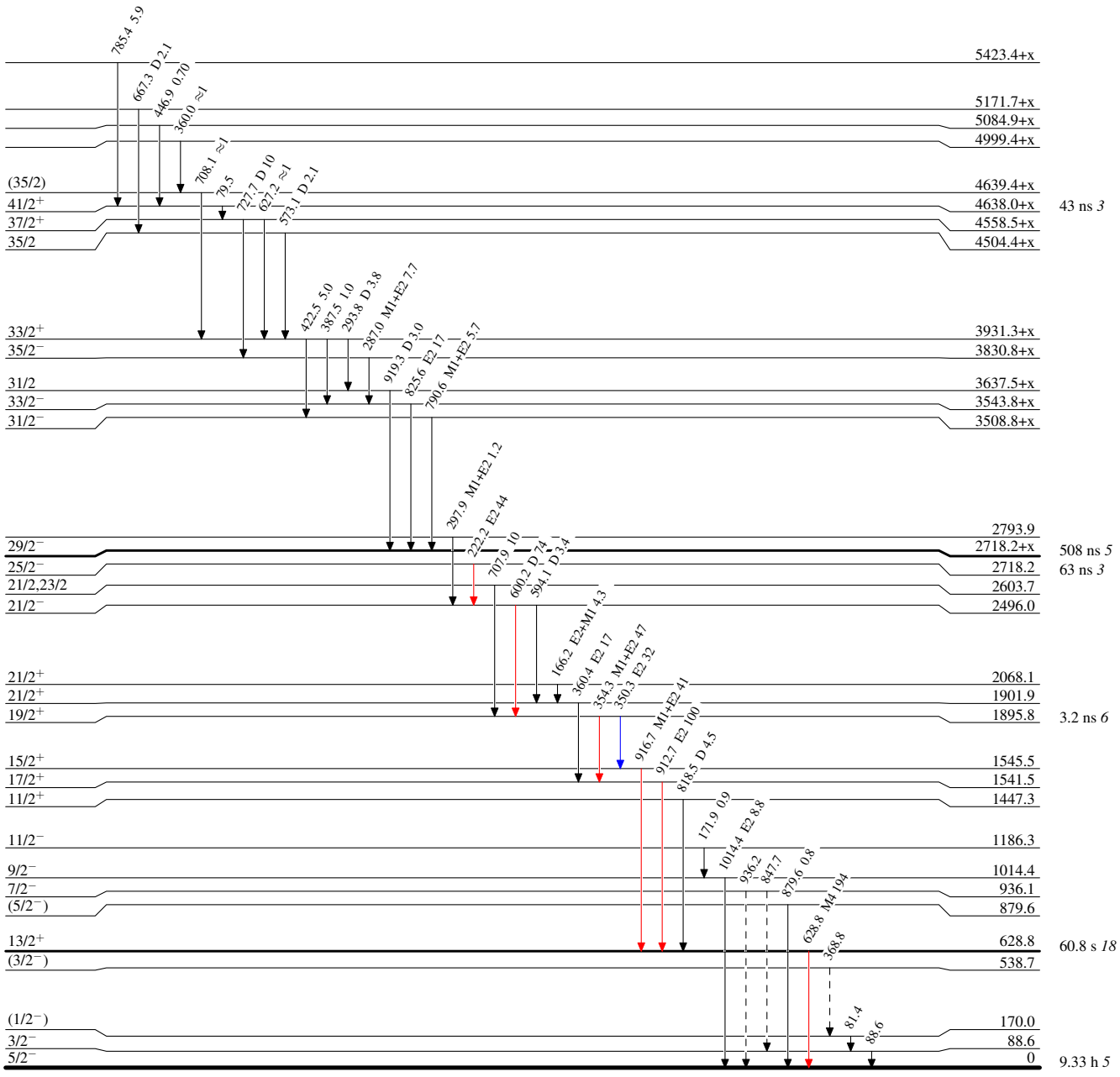
Legend

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

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

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

γ Decay (Uncertain)



$^{201}_{82}Pb_{119}$