^{204}Hg(α,3nγ) 1976Li09,1973Be32

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 166, 1 (2020)	20-Apr-2020

1976Li09: Beam energy: 40-MeV; Target: ^{204}Hg, enriched up to 99.7%; Measured: Eγ, Iγ, $\gamma\gamma$ coin, γ(t), $\gamma(\theta)$ conversion electrons, g-factor, μ.
1973Be32: Beam energy: 43-MeV; Target: ^{204}Hg, enriched up to 84%; Measured: Eγ, Iγ, $\gamma\gamma$ coin, γ(t), $\gamma(\theta)$.
Others: 1983St15, 1977Go15 and 1971Ma59.

^{205}Pb Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0[#]	5/2$^-$	1.70×10^7 y *9*	$T_{1/2}$: From Adopted Levels.
703.3[@] *4*	7/2$^-$		
987.5[@] *4*	9/2$^-$		
1013.7[&] *4*	13/2$^+$	5.55 ms *2*	$T_{1/2}$: From 987.5γ(t) in 1971Ma59. μ=−0.975 *40* (g=−0.150 *6*) using differential perturbed angular distributions technique (1971Ma59).
1697.2[a] *7*	17/2$^+$		
2020.4[a] *8*	19/2$^+$		
2555.4[b] *8*	(21/2$^+$)		
3167.7[c] *8*	21/2$^-$		
3195.5[c] *9*	25/2$^-$	217 ns *5*	$T_{1/2}$: From 684γ(t) in 1976Li09. Others: 226 ns *17* from γ(t) in 1973Be32. μ=−0.845 *14* (g=−0.0676 *11*) using the perturbed angular distribution technique (1976Li09).
3625.9[d] *10*	29/2$^-$		
3909.9[d] *11*	27/2$^-$		
5064.3[e] *11*	29/2$^+$		
5161.5[e] *11*	33/2$^+$	63 ns *3*	$T_{1/2}$: From 1535.6γ(t) in 1983St15. Other: 71 ns *3* from 430.4γ(t) in 1976Li09. μ=−2.44 *8* (g=−0.148 *5*) using the perturbed angular distribution technique (1983St15). Others: −2.59 *13* (g=−0.159 *8*) using the perturbed angular distributions technique (1976Li09).

[†] From a least squares fit to Eγ.
[‡] From 1976Li09, based on deduced transition multipolarities and multiple decay branches.
[#] configuration=$\nu(f^{-1}_{5/2})$.
[@] configuration=$\nu(f^{-1}_{5/2})\otimes 2^+$.
[&] configuration=$\nu(i^{-1}_{13/2})$.
[a] configuration=$\nu(i^{-1}_{13/2})\otimes 2^+$.
[b] configuration=$\nu(i^{-1}_{13/2})\otimes 4^+$.
[c] configuration=$\nu(p^{-1}_{1/2},i^{-2}_{13/2})$.
[d] configuration=$\nu(f^{-1}_{5/2},i^{-2}_{13/2})$.
[e] configuration=$\nu(i^{-3}_{13/2})$.

^{204}Hg(α,3nγ) 1976Li09,1973Be32 (continued)

$\gamma(^{205}Pb)$

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[#]	Iγ delayed[†]	Comments
(26.2 *6*)	0.0033 *9*	1013.7	13/2$^+$	987.5	9/2$^-$	[M2]	1.15×10^4 *14*	0.0118 *16*	α(L)=8.4×10^3 *10*; α(M)=2.3×10^3 *3* α(N)=6.1×10^2 *7*; α(O)=117 *14*; α(P)=8.8 *10* E_γ: From level energy differences. I_γ: From Iγ delayed(26.2γ)/Iγ delayed (310.3γ)=0.0066 *11* and Iγ singles(310.3γ)=0.5 *1*. Iγ delayed: From Ti(26.2γ)=Ti(987.5γ) + Ti(703.2γ) − Ti(310.3γ), Iγ delayed for 987.5γ, 703.2γ and 310.3γ, and CCs.
(27.8 *12*)	0.016 *5*	3195.5	25/2$^-$	3167.7	21/2$^-$	[E2]	2.9×10^3 *7*	0.031 *8*	α(L)=2.1×10^3 *6*; α(M)=5.6×10^2 *14* α(N)=1.4×10^2 *4*; α(O)=25 *6*; α(P)=0.80 *20* E_γ: From level energy differences. I_γ: From Iγ delayed(27.7γ)/Iγ delayed (1175.1γ)=0.0024 *6* and Iγ(1175.1γ)=6.8 *4*. Iγ delayed: From Ti(27.8γ)=Ti(612.2γ) + Ti(1147.4γ) − Ti(430.4γ), Iγ delayed for 612.2γ, 1147.4γ and 430.4γ, and CCs.
97.1 *5*	0.19 *6*	5161.5	33/2$^+$	5064.3	29/2$^+$	E2	7.18 *19*	0.31 *8*	α(K)=0.514 *8*; α(L)=4.96 *14*; α(M)=1.31 *4* α(N)=0.330 *10*; α(O)=0.0588 *17*; α(P)=0.00229 *7* I_γ: From Iγ delayed(97.1γ)/Iγ delayed (1535.6γ)=0.097 *27* and Iγ(1535.6γ)=2.0 *3*. Mult.: α(exp)=8 *2*.
284.0 *5*		3909.9	27/2$^-$	3625.9	29/2$^-$	[M1]	0.496	1.21 *15*	α(K)=0.405 *6*; α(L)=0.0692 *11*; α(M)=0.01621 *24* α(N)=0.00412 *7*; α(O)=0.000821 *13*; α(P)=8.78×10^{-5} *13* Iγ delayed: From Ti(284.0γ)=Ti(1154.4γ) + Ti(1251.7γ), Iγ delayed for 1251.7γ and 1154.4γ and CCs.
284.1 *5*	14.2 *8*	987.5	9/2$^-$	703.3	7/2$^-$	[M1]	0.495	24 *2*	α(K)=0.405 *6*; α(L)=0.0692 *11*; α(M)=0.01620 *24* α(N)=0.00412 *7*; α(O)=0.000821 *13*; α(P)=8.78×10^{-5} *13* I_γ,Iγ delayed: Doublet.
310.3 *5*	0.5 *1*	1013.7	13/2$^+$	703.3	7/2$^-$	[E3]	0.549 *9*	1.8 *2*	α(K)=0.1610 *24*; α(L)=0.287 *5*; α(M)=0.0771 *13* α(N)=0.0196 *4*; α(O)=0.00357 *6*; α(P)=0.000206 *4*
323.2 *5*	60 *4*	2020.4	19/2$^+$	1697.2	17/2$^+$	M1	0.348	87 *6*	α(K)=0.285 *5*; α(L)=0.0485 *7*; α(M)=0.01136 *17* α(N)=0.00289 *5*; α(O)=0.000575 *9*; α(P)=6.16×10^{-5} *9* Mult.: A_2=−0.22 *5*; A_2=−0.24 *1* and A_4≤0.001; α(K)exp=0.28 *5*; K/L=5.3 *8* (1976Li09); A_2=−0.22 *5* and A_4=−0.07 *7* (1973Be32).
430.4 *5*	33 *2*	3625.9	29/2$^-$	3195.5	25/2$^-$	E2	0.0426	5.3 *4*	α(K)=0.0287 *4*; α(L)=0.01049 *16*; α(M)=0.00263 *4* α(N)=0.000667 *10*; α(O)=0.0001249 *19*; α(P)=9.12×10^{-6} *14* Mult.: A_2=+0.30 *8*; A_2=+0.27 *2* and A_4=−0.10 *3*; α(K)exp=0.032 *4*; K/L=2.7 *3* (1976Li09); A_2=0.30 *8* and A_4=−0.2 *1* (1973Be32).
534.9 *5*	1.2 *2*	2555.4	(21/2$^+$)	2020.4	19/2$^+$	[M1+E2]	0.0903	1.1 *2*	α(K)=0.0741 *11*; α(L)=0.01245 *18*; α(M)=0.00291 *5*

$^{205}_{82}Pb_{123}$-2

^{204}Hg(α,3nγ) 1976Li09,1973Be32 (continued)

$\gamma(^{205}Pb)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[#]	Iγ delayed[†]	Comments
									α(N)=0.000739 *11*; α(O)=0.0001475 *21*; α(P)=1.581×10^{-5} *23*
612.2 *5*	2.0 *2*	3167.7	21/2$^-$	2555.4	(21/2$^+$)	[E1]	0.00633	4.3 *4*	α(K)=0.00525 *8*; α(L)=0.000829 *12*; α(M)=0.000192 *3* α(N)=4.85×10^{-5} *7*; α(O)=9.56×10^{-6} *14*; α(P)=9.55×10^{-7} *14*
683.5 *5*	100 *5*	1697.2	17/2$^+$	1013.7	13/2$^+$	E2	0.01446	100 *5*	α(K)=0.01098 *16*; α(L)=0.00264 *4*; α(M)=0.000642 *9* α(N)=0.0001627 *23*; α(O)=3.13×10^{-5} *5*; α(P)=2.74×10^{-6} *4* Mult.: A_2=+0.29 *4*; A_2=+0.27 *1* and A_4=−0.09 *1*; α(K)exp=0.011 *2*; K/L=4.4 *4* (1976Li09); A_2=0.29 *4* and A_4=0.003 *4* (1973Be32).
703.2 *5*	25 *2*	703.3	7/2$^-$	0	5/2$^-$	(E2+M1)	0.01361	31 *2*	α(K)=0.01038 *15*; α(L)=0.00245 *4*; α(M)=0.000594 *9* α(N)=0.0001506 *22*; α(O)=2.90×10^{-5} *4*; α(P)=2.56×10^{-6} *4* Mult.: α(K)exp=0.0104 (1976Li09).
858.3 *5*	2.2 *3*	2555.4	(21/2$^+$)	1697.2	17/2$^+$	[E2]	0.00901	2.8 *4*	α(K)=0.00707 *10*; α(L)=0.001479 *21*; α(M)=0.000355 *5* α(N)=8.99×10^{-5} *13*; α(O)=1.747×10^{-5} *25*; α(P)=1.630×10^{-6} *23*
987.5 *5*	112 *7*	987.5	9/2$^-$	0	5/2$^-$	[E2]	0.00682	209 *15*	α(K)=0.00543 *8*; α(L)=0.001063 *15*; α(M)=0.000253 *4* α(N)=6.41×10^{-5} *9*; α(O)=1.253×10^{-5} *18*; α(P)=1.205×10^{-6} *17*
1013.7 *5*	3.7 *3*	1013.7	13/2$^+$	0	5/2$^-$	[M4]	0.1475	1.5 *2*	α(K)=0.1099 *16*; α(L)=0.0284 *4*; α(M)=0.00706 *10* α(N)=0.00181 *3*; α(O)=0.000355 *5*; α(P)=3.41×10^{-5} *5* I$_\gamma$: Possibly doublet.
1147.4 *5*	44 *2*	3167.7	21/2$^-$	2020.4	19/2$^+$	E1	0.00196	90 *6*	α(K)=0.001637 *23*; α(L)=0.000247 *4*; α(M)=5.70×10^{-5} *8* α(N)=1.443×10^{-5} *21*; α(O)=2.86×10^{-6} *4*; α(P)=2.98×10^{-7} *5*; α(IPF)=4.18×10^{-6} *9* Mult.: A_2=−0.17 *5*; α(K)exp=0.0015 *3* (1976Li09); A_2=−0.17 *5* and A_4=0.10 *5* (1973Be32).
1154.4 *5*	0.9 *5*	5064.3	29/2$^+$	3909.9	27/2$^-$	[E1]	0.00194	1.1 *2*	α(K)=0.001620 *23*; α(L)=0.000245 *4*; α(M)=5.64×10^{-5} *8* α(N)=1.427×10^{-5} *20*; α(O)=2.83×10^{-6} *4*; α(P)=2.95×10^{-7} *5*; α(IPF)=5.15×10^{-6} *11*
1175.1 *5*	6.8 *4*	3195.5	25/2$^-$	2020.4	19/2$^+$	E3	0.01077 *16*	13 *1*	α(K)=0.00821 *12*; α(L)=0.00194 *3*; α(M)=0.000473 *7* α(N)=0.0001201 *17*; α(O)=2.33×10^{-5} *4*; α(P)=2.19×10^{-6} *3*; α(IPF)=6.21×10^{-7} *13* Mult.: A_2=+0.33 *4*; α(K)exp=0.0067 *14* (1976Li09); A_2=0.33 *4* and A_4=0.08 *6* (1973Be32).
1251.7 *5*	0.5 *2*	5161.5	33/2$^+$	3909.9	27/2$^-$	[E3]	0.00939	0.7 *1*	α(K)=0.00722 *11*; α(L)=0.001641 *23*; α(M)=0.000398 *6* α(N)=0.0001010 *15*; α(O)=1.97×10^{-5} *3*; α(P)=1.87×10^{-6} *3*; α(IPF)=3.11×10^{-6} *5*

$^{205}_{82}Pb_{123}$-3

^{204}Hg(α,3nγ) 1976Li09,1973Be32 (continued)

$\gamma(^{205}Pb)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[#]	Iγ delayed[†]	Comments
1438.4 *5*	2.6 *3*	5064.3	29/2$^+$	3625.9	29/2$^-$	[E1]	1.45×10^{-3}	1.5 *2*	α(K)=0.001109 *16*; α(L)=0.0001659 *24*; α(M)=3.82×10^{-5} *6* α(N)=9.66×10^{-6} *14*; α(O)=1.92×10^{-6} *3*; α(P)=2.02×10^{-7} *3*; α(IPF)=0.0001300 *19*
1535.6 *5*	2.0 *3*	5161.5	33/2$^+$	3625.9	29/2$^-$	[M2]	0.01409	3.2 *3*	α(K)=0.01144 *16*; α(L)=0.00200 *3*; α(M)=0.000469 *7* α(N)=0.0001194 *17*; α(O)=2.38×10^{-5} *4*; α(P)=2.54×10^{-6} *4*; α(IPF)=4.56×10^{-5} *7*

[†] From 1976Li09, unless otherwise stated. $\Delta E\gamma$ has been estimated by the evaluator.
[‡] From the measured $\gamma(\theta)$, α(K)exp, α(exp) and the observed multiple decay branches in 1976Li09 and 1973Be32.
[#] Additional information 1.

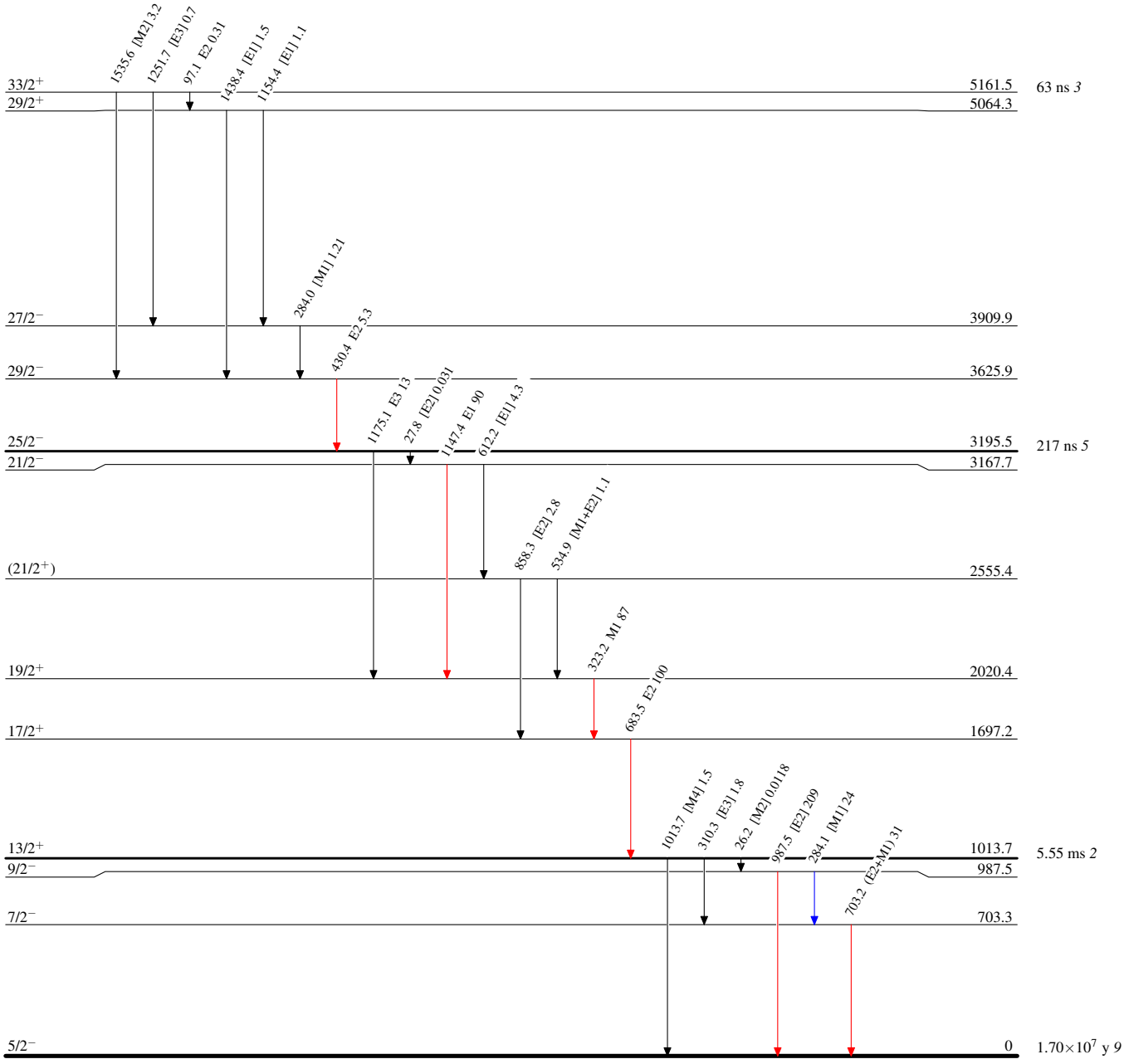
$^{205}_{82}Pb_{123}$-4

^{204}Hg(α,3nγ) 1976Li09,1973Be32

Level Scheme

Intensities: Relative $I_{(\gamma+ce)}$

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)



$^{205}_{82}Pb_{123}$