^{189}Hg ε decay (7.6 min) 1996Wo04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, Balraj Singh	NDS 142, 1 (2017)	15-Apr-2017

Parent: ^{189}Hg: E=0; J$^{\pi}$=3/2^{-}; $T_{1/2}$=7.6 min *2*; Q(ε)=3960 *40*; %ε+%β^{+} decay=100.0

^{189}Hg-J$^{\pi}$,$T_{1/2}$: From ^{189}Hg Adopted Levels.

^{189}Hg-Q(ε): From 2017Wa10.

1996Wo04: mass separated ^{189g}Hg samples from the decay of ^{189}Tl following ^{181}Ta(^{16}O,8n) reaction. Measured Eγ, Iγ, Ice, $\gamma\gamma$, ceγ, γ(x ray) and e(x ray) coincidences. Deduced levels, J^{π}. Ge(Li), Si(Li) detectors. See also 1976Wo10 where several authors are the same as in 1996Wo04.

1988Ko22: ^{189}Au structure from ε decay of ^{189g}Hg and ^{189m}Hg produced by heavy ion induced reaction. Measured $\gamma\gamma$, γ(x rays), γ(ce), and ce(x rays) coincidences. Ge(Li) and Si(Li) detectors. Deduced band structure. Several authors in 1988Ko22 are the same as in 1996Wo04.

1975Be17: ^{189g}Hg, ^{189m}Hg from Pb(p,xn3p), mass separated; Measured Eγ, Iγ, Ice, $\gamma\gamma$, (ce)γ. Deduced levels, J^{π}, $T_{1/2}$. Ge(Li), Si(Li) and magnetic spectrometer.

^{189}Au Levels

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$[‡]	Comments
0.0[#]	1/2^{+}	28.7 min *4*	
9.93[#] *12*	3/2^{+}	30 ns *4*	$T_{1/2}$: from ce(x ray)(t) and ce-ce(t) (1975Be17).
203.77[#] *12*	3/2^{+}		
247.25[@] *16*	11/2^{-}	4.59 min *11*	%ε+%$\beta^{+}\approx$100; %IT=? E(level): from Adopted Levels.
248.59[#] *12*	5/2^{+}		
307.77[#] *14*	5/2^{+}		
325.10[&] *22*	9/2^{-}	190 ns *15*	$T_{1/2}$: from ce(x ray)(t) (1975Be17).
483.99[@] *18*	7/2^{-}	0.15 ns *5*	$T_{1/2}$: from ce(γ)(t) (1975Be17).
491.51[&] *21*	5/2^{-}	0.30 ns *3*	$T_{1/2}$: from ce(Compton continuum in 120-300 keV region)(t) (1975Be17).
512.43[#] *19*	7/2^{+}		
602.92 *16*	1/2^{+},3/2^{+}		
647.13[#] *14*	7/2^{+}		
770.73[&] *21*	7/2^{-}		
801.96 *18*	1/2^{+},3/2^{+}		
811.79 *24*	(5/2,3/2,1/2)$^{+}$		
814.3 *3*	1/2^{-}		
862.2[@] *3*	9/2^{-}		
879.67 *23*	+		
887.2 *3*	(3/2,5/2)$^{-}$		
911.0 *3*	7/2^{-}		
977.8 *10*			
1058.73[@] *14*	3/2^{-}		
1098.1 *3*			
1104.79[&] *24*	3/2^{-}		
1107.4 *11*			
1116.05 *23*	7/2^{-},5/2^{-}		
1133.6 *6*			
1156.0 *3*	(5/2^{-},7/2^{-})		
1165.0 *10*			
1165.7 *6*			
1254.23[@] *20*	5/2^{-},7/2^{-}		
1260.8 *10*			

Continued on next page (footnotes at end of table)

^{189}Hg ε decay (7.6 min) 1996Wo04 (continued)

^{189}Au Levels (continued)

E(level)†	Jπ‡	Comments
1286.3 *11*		
1346.6 *5*		
1358.9 *5*		
1371.3 *11*		
1431.9 *4*		Jπ: in 1996Wo04, this level is shown in their Figure 15 with other low-lying negative parity levels. However no J^{π} was assigned to this level.
1476.1 *4*		
1755.0 *11*		
1767.0 *11*		
1808.4 *4*		
1851.0 *11*		
1862.9 *8*	−	
1863.4 *3*		
1879.0 *3*		
1913.5 *5*		
1960.1 *4*		
1970.8 *4*		
2030.88 *22*		
2031.0 *3*		
2034.2 *3*		
2034.7 *4*		
2036.1 *6*		
2061.5 *11*		
2066.2 *11*		
2066.48 *18*	3/2−,5/2−	
2074.05 *21*	−	
2074.7 *3*	(−)	
2092.8 *3*	−	
2093.62 *23*	−	
2099.7 *6*		
2101.46 *18*		
2101.8 *3*	(−)	
2109.8 *10*		
2154.6 *4*	−	
2155.3 *5*		
2157.4 *5*		
2209.8 *10*		
2258.7 *3*		

† From least-squares fit to Eγ values.
‡ From Adopted Levels unless otherwise stated.
\# $\pi(s_{1/2},d_{3/2},d_{5/2})^{-1}$ structure.
@ $\pi h^{-1}_{11/2}$ structure.
& $\pi h_{9/2}$ structure.

γ(^{189}Au)

Annihilation intensity Iγ($\gamma^{\pm}$)=50 *5*.

In the absence of unknown $\varepsilon+\beta^{+}$ feeding to the g.s, the decay scheme has not been normalized.

The experimental subshell ratios and conversion coefficients are from 1996Wo04. When specified as 'other', those values are from 1975Be17.

E_γ†	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α&	$I_{(\gamma+ce)}$	Comments
9.9 *2*		9.93	3/2+	0.0	1/2+	[M1]		278 *18*	>250	ce(M)/(γ+ce)=0.77 *4* ce(N)/(γ+ce)=0.191 *16*; ce(O)/(γ+ce)=0.035 *4*; ce(P)/(γ+ce)=0.00237 *22* α(M)=214 *14* α(N)=53 *4*; α(O)=9.8 *7*; α(P)=0.66 *5* E_γ: observed as M-conversion line in singles and ce-γ coin by 1975Be17. $I_{(\gamma+ce)}$: from intensity balance by evaluators.
44.7 *2*		248.59	5/2+	203.77	3/2+	M1+E2	0.15 *2*	18.2 *13*	5	α(L)=13.9 *10*; α(M)=3.3 *3*; α(N)=0.82 *7*; α(O)=0.146 *10*; α(P)=0.00742 *15* L3/L12=0.14 *3*; M/L12=0.37 *7* $I_{(\gamma+ce)}$: from intensity balance (1996Wo04). δ=0.14 *2* from ce data in the present experiment.
59.2 *2*		307.77	5/2+	248.59	5/2+				3	$I_{(\gamma+ce)}$: from 1996Wo04.
77.9 *2*		325.10	9/2−	247.25	11/2−	M1+E2	0.3 *2*	3.7 *15*	>140	α(L)=2.8 *11*; α(M)=0.68 *29* α(N)=0.168 *69*; α(O)=0.029 *11*; α(P)=0.00138 *16* M/L12=0.29 *7*; L3/L12≤0.15; L/M=4.2 *4* $I_{(\gamma+ce)}$: from intensity balance. δ<0.6 from ce data in the present experiment.
104 *1*		307.77	5/2+	203.77	3/2+					
135 *1*		647.13	7/2+	512.43	7/2+	M1+E2	0.7 *+4−5*	2.6 *5*		α(K)=1.83 *62*; α(L)=0.57 *13*; α(M)=0.139 *37* α(N)=0.0344 *89*; α(O)=0.0059 *13*; α(P)=2.18×10^{-4} *76* L12/K=0.25 *9*; M/K=0.09 *9*; L3/K≤0.06
166.5 *2*	70 *15*	491.51	5/2−	325.10	9/2−	E2		0.714		α(K)=0.264 *4*; α(L)=0.338 *5*; α(M)=0.0872 *13* α(N)=0.0215 *4*; α(O)=0.00348 *6*; α(P)=2.70×10^{-5} *4* α(K)exp=0.26 *7*; L12/K=1.00 *24*; L3/K=0.56 *15*; M/K=0.50 *14*; N/K=0.17 *6*
176.3 *2*	9.8 *25*	483.99	7/2−	307.77	5/2+	E1		0.0988		α(K)=0.0807 *12*; α(L)=0.01393 *20*; α(M)=0.00323 *5* α(N)=0.000795 *12*; α(O)=0.0001398 *20*; α(P)=7.19×10^{-6} *11* α(K)exp=0.14 *5*
(194)	<0.7	203.77	3/2+	9.93	3/2+					
195.6 *4*	1.4 *5*	1254.23	5/2−,7/2−	1058.73	3/2−	E2		0.404 *7*		α(K)=0.179 *3*; α(L)=0.169 *3*; α(M)=0.0434 *8* α(N)=0.01070 *18*; α(O)=0.00175 *3*; α(P)=1.83×10^{-5} *3* α(K)exp=0.79 *25*; L12/K=0.67 *19*
203.9 *2*	89 *10*	203.77	3/2+	0.0	1/2+	M1+E2	0.63 *+14−15*	0.79 *6*		α(K)=0.61 *7*; α(L)=0.1345 *22*; α(M)=0.0322 *8*

From ENSDF

$\gamma(^{189}$Au) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α&	Comments
									α(N)=0.00799 *18*; α(O)=0.001418 *22*; α(P)=7.2×10^{-5} *8* α(K)exp=0.63 *9*; L12/K=0.18 *3*; L3/K=0.041 *6*; K/L=6.1 *6*; M/K=0.042 *7* L3/K taken from Table 2 of 1996Wo04 as the value listed in authors′ Table 3 seems a misprint. δ=0.67 *+14−15* from ce data in the present experiment.
217 *1*	2.9 *8*	1104.79	3/2⁻	887.2	(3/2,5/2)⁻	M1(+E2)	<1.3	0.64 *17*	α(K)=0.50 *17*; α(L)=0.1102 *23*; α(M)=0.0264 *10* α(N)=0.00655 *22*; α(O)=0.00116 *3*; α(P)=5.9×10^{-5} *21* α(K)exp=0.52 *18*
229 *1*	3.7 *15*	1116.05	7/2⁻,5/2⁻	887.2	(3/2,5/2)⁻	M1+E2	0.8 *3*	0.52 *9*	α(K)=0.40 *9*; α(L)=0.0923 *24*; α(M)=0.0222 *5* α(N)=0.00551 *12*; α(O)=0.00097 *3*; α(P)=4.7×10^{-5} *11* α(K)exp=0.41 *8*
235 *1*	15 *5*	483.99	7/2⁻	248.59	5/2⁺	E1		0.0484 *9*	α(K)=0.0398 *7*; α(L)=0.00664 *12*; α(M)=0.00154 *3* α(N)=0.000379 *7*; α(O)=6.73×10^{-5} *12*; α(P)=3.68×10^{-6} *7* Mult.: α(K)exp≤0.04 from ^{189m}Hg ε decay; ≈0.03 from ^{189g}Hg ε decay (1996Wo04).
236 *1*	48 *7*	483.99	7/2⁻	247.25	11/2⁻	E2		0.216 *5*	α(K)=0.1125 *20*; α(L)=0.0777 *18*; α(M)=0.0198 *5* α(N)=0.00489 *11*; α(O)=0.000805 *18*; α(P)=1.168×10^{-5} *21* α(K)exp=0.19 *6*; L12/K=0.69 *26*; M/K=0.33 *16*
238.7 *2*	47 *6*	248.59	5/2⁺	9.93	3/2⁺	M1+E2	2.3 *3*	0.274 *18*	α(K)=0.173 *17*; α(L)=0.0759 *12*; α(M)=0.0190 *3* α(N)=0.00470 *7*; α(O)=0.000790 *13*; α(P)=1.92×10^{-5} *21* α(K)exp=0.20 *3*; L12/K=0.33 *6*; L3/K=0.11 *2* Other: α(K)exp=0.21 *2*. δ=2.2 *+5−4* from ce data in the present experiment.
248.7 *2*	49 *6*	248.59	5/2⁺	0.0	1/2⁺	E2		0.182	α(K)=0.0987 *14*; α(L)=0.0629 *9*; α(M)=0.01601 *23* α(N)=0.00395 *6*; α(O)=0.000653 *10*; α(P)=1.031×10^{-5} *15* α(K)exp=0.11 *2*; L3/K=0.20 *4*; M/K=0.23 *5*
264.0 *2*	4.9 *10*	512.43	7/2⁺	248.59	5/2⁺	M1+E2	0.4 *+2−3*	0.43 *5*	α(K)=0.35 *4*; α(L)=0.0621 *21*; α(M)=0.0145 *4* α(N)=0.00362 *10*; α(O)=0.000658 *24*; α(P)=4.1×10^{-5} *5* α(K)exp=0.37 *9*; L12/K=0.20 *5*; L3/K<0.02; M/K=0.031 *4* δ<0.3 from ce data in the present experiment.
268.8 *3*	7.2 *14*	1156.0	(5/2⁻,7/2⁻)	887.2	(3/2,5/2)⁻	M1+E2	1.7 *+12−8*	0.221 *91*	α(K)=0.155 *85*; α(L)=0.050 *5*; α(M)=0.0124 *8* α(N)=0.00306 *19*; α(O)=0.00052 *5*; α(P)=1.8×10^{-5} *11* α(K)exp=0.26 *6*; L12/K=0.27 *5*; L3/K=0.15 *5*
279.3 *2*	13.4 *20*	770.73	7/2⁻	491.51	5/2⁻	M1+E2	0.9 *2*	0.28 *4*	α(K)=0.22 *4*; α(L)=0.048 *3*; α(M)=0.0115 *5* α(N)=0.00287 *13*; α(O)=0.00051 *4*; α(P)=2.5×10^{-5} *6* α(K)exp=0.22 *4*
290 *1*	4.0 *15*	1104.79	3/2⁻	814.3	1/2⁻	M1		0.364 *7*	α(K)=0.300 *5*; α(L)=0.0495 *9*; α(M)=0.01147 *20* α(N)=0.00286 *5*; α(O)=0.000526 *9*; α(P)=3.56×10^{-5} *6* α(K)exp=0.35 *8*
295[b]	<0.7	602.92	1/2⁺,3/2⁺	307.77	5/2⁺				E_γ: from level scheme Fig. 13 in 1996Wo04.
297.9 *2*	100 *10*	307.77	5/2⁺	9.93	3/2⁺	M1(+E2)	<0.8	0.29 *5*	α(K)=0.24 *5*; α(L)=0.043 *3*; α(M)=0.0101 *6*

$\gamma(^{189}$Au) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[&]	Comments
									α(N)=0.00252 *15*; α(O)=0.00046 *4*; α(P)=2.8×10^{-5} *6* α(K)exp=0.24 *3*; K/L=6.8 *15*; L12/K=0.175 *25*; M/K=0.048 *8*; L3/K<0.03
(308)	<3	307.77	5/2$^+$	0.0	1/2$^+$				
308 *1*	1.0[@] *5*	512.43	7/2$^+$	203.77	3/2$^+$	E2		0.0947 *16*	α(K)=0.0582 *10*; α(L)=0.0275 *6*; α(M)=0.00693 *13* α(N)=0.00171 *4*; α(O)=0.000286 *6*; α(P)=6.23×10^{-6} *10* α(K)exp≤0.17 Mult.: E2(+M1),δ>0.9 from 1996Wo04, but ΔJ=2 requires pure E2.
322.9 *3*	40 *6*	814.3	1/2$^-$	491.51	5/2$^-$	E2		0.0825	α(K)=0.0519 *8*; α(L)=0.0231 *4*; α(M)=0.00580 *9* α(N)=0.001433 *21*; α(O)=0.000241 *4*; α(P)=5.58×10^{-6} *8* α(K)exp=0.050 *13*; L12/K=0.50 *2*; L3/K=0.2 *1*; M/K=0.15 *10*
(334)	<0.6	1104.79	3/2$^-$	770.73	7/2$^-$				
345.2 *3*	6.7 *12*	1116.05	7/2$^-$,5/2$^-$	770.73	7/2$^-$	M1		0.227	α(K)=0.187 *3*; α(L)=0.0307 *5*; α(M)=0.00712 *11* α(N)=0.00177 *3*; α(O)=0.000326 *5*; α(P)=2.21×10^{-5} *4* α(K)exp=0.19 *6*
356[b]	<0.3	602.92	1/2$^+$,3/2$^+$	248.59	5/2$^+$				E_γ: from level scheme Fig. 13 in 1996Wo04.
378.3 *3*	2.3 *7*	862.2	9/2$^-$	483.99	7/2$^-$	M1(+E2)	<0.5	0.165 *13*	α(K)=0.135 *12*; α(L)=0.0229 *12*; α(M)=0.00532 *25* α(N)=0.00132 *7*; α(O)=0.000242 *13*; α(P)=1.59×10^{-5} *14* α(K)exp=0.14 *1*; L12/K=0.22 *4*; M/K=0.058 *20*; L3/K<0.007
385 *1*	4.8 *10*	1156.0	(5/2$^-$,7/2$^-$)	770.73	7/2$^-$	M1		0.169 *3*	α(K)=0.1395 *22*; α(L)=0.0229 *4*; α(M)=0.00529 *9* α(N)=0.001319 *21*; α(O)=0.000243 *4*; α(P)=1.65×10^{-5} *3* α(K)exp=0.15 *6*
(392)	<0.5	1254.23	5/2$^-$,7/2$^-$	862.2	9/2$^-$				
395.7 *2*	34 *5*	887.2	(3/2,5/2)$^-$	491.51	5/2$^-$	M1+E2	1.1 *+4−3*	0.097 *18*	α(K)=0.076 *16*; α(L)=0.0158 *16*; α(M)=0.0038 *4* α(N)=0.00093 *9*; α(O)=0.000166 *18*; α(P)=8.8×10^{-6} *19* α(K)exp=0.074 *14*; L12/K=0.15 *8*; L3/K≈0.05
399[a] *1*	6.0[a] *20*	602.92	1/2$^+$,3/2$^+$	203.77	3/2$^+$	M1+E2	1.0 *+5−4*	0.100 *26*	α(K)=0.079 *23*; α(L)=0.0159 *24*; α(M)=0.0038 *5* α(N)=0.00093 *13*; α(O)=0.00017 *3*; α(P)=9.2×10^{-6} *28* α(K)exp=0.08 *2*
399[a] *1*	7.6[a] *20*	647.13	7/2$^+$	248.59	5/2$^+$	M1		0.1539	α(K)=0.1269 *18*; α(L)=0.0208 *3*; α(M)=0.00481 *7* α(N)=0.001198 *17*; α(O)=0.000221 *4*; α(P)=1.498×10^{-5} *22* α(K)exp=0.09 *4* δ<2.1 from ce data in the present experiment.
419.5 *3*	12.4 *25*	911.0	7/2$^-$	491.51	5/2$^-$	M1+E2	0.8 *+5−4*	0.098 *24*	α(K)=0.079 *21*; α(L)=0.0147 *23*; α(M)=0.0035 *5* α(N)=0.00086 *13*; α(O)=0.000155 *25*; α(P)=9.2×10^{-6} *26* α(K)exp=0.11 *3*; L12/K=0.23 *8* δ<0.9 from ce data in the present experiment.
443.4 *4*	1.0[@] *5*	647.13	7/2$^+$	203.77	3/2$^+$				
445.6 *2*	14.8 *20*	770.73	7/2$^-$	325.10	9/2$^-$	M1+E2	0.8 *3*	0.083 *16*	α(K)=0.067 *14*; α(L)=0.0124 *15*; α(M)=0.0029 *4* α(N)=0.00072 *9*; α(O)=0.000131 *17*; α(P)=7.8×10^{-6} *17* α(K)exp=0.068 *11*; L12/K=0.22 *5*

γ(^{189}Au) (continued)

Eγ†	Iγ‡	Ei(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α&	Comments
456 1	2.3 7	1058.73	3/2⁻	602.92	1/2⁺,3/2⁺				
472 1	2.7 8	1286.3		814.3	1/2⁻				
502.3 3	12 2	512.43	7/2⁺	9.93	3/2⁺	E2		0.0255	α(K)=0.0187 3; α(L)=0.00521 8; α(M)=0.001273 18 α(N)=0.000315 5; α(O)=5.45×10^{-5} 8; α(P)=2.07×10^{-6} 3 α(K)exp≈0.025
504 1	2.9 9	811.79	(5/2,3/2,1/2)⁺	307.77	5/2⁺				
544.7[b] 3	3.6 9	1431.9		887.2	(3/2,5/2)⁻				
553 1	1.8 9	801.96	1/2⁺,3/2⁺	248.59	5/2⁺				
557 1	2.7 8	1371.3		814.3	1/2⁻				
571 1	2.5 12	879.67	+	307.77	5/2⁺				
574.8 3	29 4	1058.73	3/2⁻	483.99	7/2⁻	E2		0.0186	α(K)=0.01397 20; α(L)=0.00349 5; α(M)=0.000845 12 α(N)=0.000209 3; α(O)=3.66×10^{-5} 6; α(P)=1.552×10^{-6} 22 α(K)exp=0.019 3
585.9 3	5.5 12	911.0	7/2⁻	325.10	9/2⁻	M1		0.0558	α(K)=0.0461 7; α(L)=0.00747 11; α(M)=0.001726 25 α(N)=0.000430 6; α(O)=7.91×10^{-5} 12; α(P)=5.40×10^{-6} 8 α(K)exp=0.047 12
593[b]	<0.4	602.92	1/2⁺,3/2⁺	9.93	3/2⁺				Eγ: from level scheme Fig. 13 in 1996Wo04.
595 1	2.0 10	1107.4		512.43	7/2⁺				
598.4 3	8.7 15	801.96	1/2⁺,3/2⁺	203.77	3/2⁺	M1+E2	≈1.0	≈0.0349	α(K)≈0.0282; α(L)≈0.00509; α(M)≈0.001192 α(N)≈0.000296; α(O)≈5.37×10^{-5}; α(P)≈3.27×10^{-6} α(K)exp≈0.03
603.0 2	21 3	602.92	1/2⁺,3/2⁺	0.0	1/2⁺	M1		0.0518	α(K)=0.0428 6; α(L)=0.00692 10; α(M)=0.001600 23 α(N)=0.000398 6; α(O)=7.34×10^{-5} 11; α(P)=5.01×10^{-6} 7 α(K)exp=0.050 9; M/K=0.07 3; L3/K<0.03
608.5 4	2.5 12	811.79	(5/2,3/2,1/2)⁺	203.77	3/2⁺	E2(+M1)	>2	0.020 4	α(K)=0.015 3; α(L)=0.0033 4; α(M)=0.00080 9 α(N)=0.000199 22; α(O)=3.5×10^{-5} 4; α(P)=1.7×10^{-6} 4 α(K)exp=0.013 5
613.2 2	12.9 25	1104.79	3/2⁻	491.51	5/2⁻	M1(+E2)	<0.8	0.043 7	α(K)=0.035 6; α(L)=0.0059 8; α(M)=0.00137 17 α(N)=0.00034 4; α(O)=6.2×10^{-5} 8; α(P)=4.1×10^{-6} 7 α(K)exp=0.04 1
614.8 3	1.7@ 6	862.2	9/2⁻	247.25	11/2⁻	M1		0.0492	α(K)=0.0407 6; α(L)=0.00658 10; α(M)=0.001520 22 α(N)=0.000379 6; α(O)=6.97×10^{-5} 10; α(P)=4.76×10^{-6} 7 α(K)exp=0.041 5; L12/K=0.19 3
624.6 2	5.5 20	1116.05	7/2⁻,5/2⁻	491.51	5/2⁻	M1		0.0473	α(K)=0.0391 6; α(L)=0.00631 9; α(M)=0.001458 21 α(N)=0.000363 5; α(O)=6.69×10^{-5} 10; α(P)=4.57×10^{-6} 7 Mult.: α(K)exp=0.055 1 from ^{189g}Hg ε decay (1996Wo04). Other: α(K)exp=0.019 5 from ^{189}Hg ε decay (7.6 min+8.6 min) (1975Be17), implies a M1+E2 transition of δ≈1.8.
637.2 1	1.0@ 5	647.13	7/2⁺	9.93	3/2⁺	E2		0.01469	α(K)=0.01127 16; α(L)=0.00261 4; α(M)=0.000629 9 α(N)=0.0001559 22; α(O)=2.74×10^{-5} 4; α(P)=1.252×10^{-6} 18 α(K)exp=0.008 2
664 1	7.4 15	1156.0	(5/2⁻,7/2⁻)	491.51	5/2⁻	M1+E2	≈0.4	≈0.0366	α(K)≈0.0302; α(L)≈0.00496; α(M)≈0.001148

$^{189}_{79}$Au$_{110}$-6

γ(^{189}Au) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	α [&]	$I_{(\gamma+ce)}$	Comments
										α(N)≈0.000286; α(O)≈5.25×10^{-5}; α(P)≈3.52×10^{-6} α(K)exp≈0.03
670 *1*	3.3 *9*	977.8		307.77	5/2$^+$					
675.9 *2*	11.2 *20*	879.67	$^+$	203.77	3/2$^+$	E2(+M1)				α(K)exp≈0.01
751.1 *3*	2.3 *7*	1058.73	3/2$^-$	307.77	5/2$^+$					
770.2 *2*	13.5 *20*	1254.23	5/2$^-$,7/2$^-$	483.99	7/2$^-$	M1		0.0275		α(K)=0.0228 *4*; α(L)=0.00365 *6*; α(M)=0.000844 *12* α(N)=0.000210 *3*; α(O)=3.87×10^{-5} *6*; α(P)=2.65×10^{-6} *4* α(K)exp=0.027 *4* Other: α(K)exp=0.007 *2* from ^{189}Hg ε decay (7.6 min+8.6 min) (1975Be17), implies a pure E2 transition.
791.7 *3*	2.5 *7*	801.96	1/2$^+$,3/2$^+$	9.93	3/2$^+$					
802 *1*	2.0 *10*	811.79	(5/2,3/2,1/2)$^+$	9.93	3/2$^+$					
802.1 *3*	8.0 *15*	801.96	1/2$^+$,3/2$^+$	0.0	1/2$^+$	M1(+E2)	<0.8	0.022 *4*		α(K)=0.018 *3*; α(L)=0.0029 *4*; α(M)=0.00068 *9* α(N)=0.000169 *21*; α(O)=3.1×10^{-5} *4*; α(P)=2.1×10^{-6} *4* α(K)exp=0.021 *5*
809.6 *3*	3.6 *9*	1058.73	3/2$^-$	248.59	5/2$^+$					
811.5 *3*	2.4 *8*	811.79	(5/2,3/2,1/2)$^+$	0.0	1/2$^+$					
825.8 *5*	1.8 *6*	1133.6		307.77	5/2$^+$					
844 *1*	2.0 *10*	1755.0		911.0	7/2$^-$					
848[a] *1*	3.0[a] *10*	1156.0	(5/2$^-$,7/2$^-$)	307.77	5/2$^+$	[E1]		0.00299		α(K)=0.00251 *4*; α(L)=0.000376 *6*; α(M)=8.59×10^{-5} *13* Mult.: M1 in 2003Wu02 evaluation is inconsistent with ΔJ^π; α(K)exp=0.037 *12* is consistent with M1 for the second component from the 2101.8 level.
848[a] *1*	3.0[a] *10*	2101.8	($^-$)	1254.23	5/2$^-$,7/2$^-$	(M1)		0.0215		α(K)exp=0.037 *12* α(K)=0.0178 *3*; α(L)=0.00285 *4*; α(M)=0.000657 *10*; α(N)=0.0001637 *24*
855.5 *4*	4.8 *10*	1058.73	3/2$^-$	203.77	3/2$^+$	E1		0.00295		α(K)=0.00247 *4*; α(L)=0.000369 *6*; α(M)=8.45×10^{-5} *12* α(N)=2.09×10^{-5} *3*; α(O)=3.82×10^{-6} *6*; α(P)=2.51×10^{-7} *4* α(K)exp<0.004
894.9 *5*	1.7 *6*	1098.1		203.77	3/2$^+$					
900.4 *3*	4.5 *5*	2154.6	$^-$	1254.23	5/2$^-$,7/2$^-$	M1(+E2)				I_γ: from table 3 of 1996Wo04. Mult.: α(K)exp=0.020 *8* if Iγ=2.5 *10* is used. However, if Iγ=4.5 *5* from table 4 is used, α(K)exp=0.011 *4* and δ=0.9 *+16−8*.
^{x}912.0 *7*	2.1 *15*									

From ENSDF

γ(^{189}Au) (continued)

Eγ†	Iγ‡	Ei(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α&	Comments
917.1 5	1.8 5	1165.7		248.59	5/2$^+$				
918.8 3	5.3 6	2074.7	($^-$)	1156.0	(5/2$^-$,7/2$^-$)	M1+E2	0.8 +8−6	0.0133 38	α(K)=0.0110 32; α(L)=0.0018 5; α(M)=0.00042 11 α(N)=0.00010 3; α(O)=1.92×10^{-5} 49; α(P)=1.26×10^{-6} 38 α(K)exp=0.011 3
926 1	2.1 7	2030.88		1104.79	3/2$^-$				
933.4[b] 4	2.4 5	2030.88		1098.1					
936.6 3	7.5 8	2092.8	$^-$	1156.0	(5/2$^-$,7/2$^-$)	M1		0.01669	α(K)=0.01382 20; α(L)=0.00220 3; α(M)=0.000509 8 α(N)=0.0001267 18; α(O)=2.33×10^{-5} 4; α(P)=1.604×10^{-6} 23 α(K)exp=0.016 3
946.3 3	2.5 10	1254.23	5/2$^-$,7/2$^-$	307.77	5/2$^+$				
952[b] 1	2.0 7	1156.0	(5/2$^-$,7/2$^-$)	203.77	3/2$^+$				
952 1	5.3 6	1862.9	$^-$	911.0	7/2$^-$	M1		0.01601	α(K)=0.01326 19; α(L)=0.00211 3; α(M)=0.000488 7 α(N)=0.0001215 18; α(O)=2.24×10^{-5} 4; α(P)=1.538×10^{-6} 22 α(K)exp=0.017 4
958.6 3	5.4 6	2074.7	($^-$)	1116.05	7/2$^-$,5/2$^-$	M1		0.01573	α(K)=0.01303 19; α(L)=0.00208 3; α(M)=0.000479 7 α(N)=0.0001193 17; α(O)=2.20×10^{-5} 3; α(P)=1.511×10^{-6} 22 α(K)exp=0.015 4
969.0 3	4.1 10	2074.05	$^-$	1104.79	3/2$^-$				
972 1	1.5 6	2030.88		1058.73	3/2$^-$				
977.7 3	3.4 3	2093.62	$^-$	1116.05	7/2$^-$,5/2$^-$	M1		0.01496	α(K)=0.01240 18; α(L)=0.00197 3; α(M)=0.000455 7 α(N)=0.0001134 16; α(O)=2.09×10^{-5} 3; α(P)=1.437×10^{-6} 21 α(K)exp=0.026 6
995.5[b] 4	2.0 10	2101.46		1104.79	3/2$^-$				
1004.2 3	3.1 8	2258.7		1254.23	5/2$^-$,7/2$^-$				
1007.7 2	11.0 11	2066.48	3/2$^-$,5/2$^-$	1058.73	3/2$^-$	M1		0.01386	α(K)=0.01148 16; α(L)=0.00183 3; α(M)=0.000421 6 α(N)=0.0001049 15; α(O)=1.93×10^{-5} 3; α(P)=1.330×10^{-6} 19 α(K)exp=0.013 2
1015.3 3	9.2 10	2074.05	$^-$	1058.73	3/2$^-$	M1		0.01360	α(K)=0.01127 16; α(L)=0.00179 3; α(M)=0.000413 6 α(N)=0.0001029 15; α(O)=1.90×10^{-5} 3; α(P)=1.305×10^{-6} 19 α(K)exp=0.011 3
1034.6 3	7.5 8	2093.62	$^-$	1058.73	3/2$^-$	M1		0.01296	α(K)=0.01074 15; α(L)=0.001708 24; α(M)=0.000394 6 α(N)=9.81×10^{-5} 14; α(O)=1.81×10^{-5} 3; α(P)=1.244×10^{-6} 18 α(K)exp=0.016 3
1048 1	1.4 5	1058.73	3/2$^-$	9.93	3/2$^+$				
1057 1	1.8 5	1260.8		203.77	3/2$^+$				

$^{189}_{79}$Au$_{110}$-8

γ(^{189}Au) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[&]	Comments
1058.5 *3*	9.7 *10*	1058.73	3/2⁻	0.0	1/2⁺	E1	0.00199	α(K)=0.001673 *24*; α(L)=0.000247 *4*; α(M)=5.65×10^{-5} *8* α(N)=1.400×10^{-5} *20*; α(O)=2.56×10^{-6} *4*; α(P)=1.714×10^{-7} *24* α(K)exp≤0.0016
1087.9 *3*	4.1 *10*	1098.1		9.93	3/2⁺			
1096.6 *4*	2.3 *7*	2155.3		1058.73	3/2⁻			
1142.8 *4*	1.9 *6*	1346.6		203.77	3/2⁺			
1155.1 *4*	3.0 *8*	1358.9		203.77	3/2⁺			
1165 *1*	2.4 *8*	1165.0		0.0	1/2⁺			
1179 *1*	1.0 *5*	2066.2		887.2	(3/2,5/2)⁻			
1200 *1*	2.0 *7*	2258.7		1058.73	3/2⁻			
1221[a] *1*	2.0[a] *7*	2034.7		814.3	1/2⁻			
1221[a] *1*	2.0[a] *9*	2101.46		879.67	⁺			
1259.9 *3*	4.5 *10*	2074.05	⁻	814.3	1/2⁻			
1272.1 *5*	2.9 *8*	1476.1		203.77	3/2⁺			
1278 *1*	3.1 *8*	2092.8	⁻	814.3	1/2⁻			
1283[b] *1*	2.0 *12*	1767.0		483.99	7/2⁻			
1299.5 *6*	1.8 *10*	2101.46		801.96	1/2⁺,3/2⁺			
1331.0 *3*	2.6 *8*	2101.46		770.73	7/2⁻			
1367 *1*	2.0 *10*	1851.0		483.99	7/2⁻			
1379.4 *2*	8.6 *20*	1863.4		483.99	7/2⁻			
1428.1 *2*	6.3 *12*	2030.88		602.92	1/2⁺,3/2⁺			
1431.7 *3*	2.0 *7*	2034.7		602.92	1/2⁺,3/2⁺			
1454.4 *3*	5.5 *12*	2101.46		647.13	7/2⁺			
1463.5 *3*	4.5 *10*	2066.48	3/2⁻,5/2⁻	602.92	1/2⁺,3/2⁺			
1466.3 *4*	2.8 *8*	1476.1		9.93	3/2⁺			
1471 *1*	2.8 *15*	2074.05	⁻	602.92	1/2⁺,3/2⁺			
1476.1 *3*	3.5 *9*	1960.1		483.99	7/2⁻			
1487 *1*	1.7 *10*	1970.8		483.99	7/2⁻			
1555 *1*	2.5 *8*	1862.9	⁻	307.77	5/2⁺			
1559.8 *3*	2.7 *8*	1808.4		248.59	5/2⁺			
1570 *1*	3.2 *11*	2061.5		491.51	5/2⁻			
1571.3 *5*	3.0 *8*	1879.0		307.77	5/2⁺			
1589.4 *4*	2.7 *8*	2101.8	(⁻)	512.43	7/2⁺			
1663.0 *4*	3.9 *9*	1970.8		307.77	5/2⁺			
1664.9 *4*	2.7 *8*	1913.5		248.59	5/2⁺			
1675.2 *3*	4.3 *10*	1879.0		203.77	3/2⁺			
1766.4 *3*	14.5 *15*	2074.05	⁻	307.77	5/2⁺			
1786.0 *5*	4.6 *10*	2093.62	⁻	307.77	5/2⁺			
1787.5 *5*	2.5 *10*	2036.1		248.59	5/2⁺			
1793.8 *4*	3.0 *10*	2101.8	(⁻)	307.77	5/2⁺			
1802 *1*	2.0 *10*	2109.8		307.77	5/2⁺			
1818.3 *5*	2.5 *10*	2066.48	3/2⁻,5/2⁻	248.59	5/2⁺			
1826.6 *4*	2.4 *8*	2030.88		203.77	3/2⁺			

$^{189}_{79}Au_{110}$-9

γ(^{189}Au) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f	E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f
1845.3 *5*	2.0 *6*	2093.62	$^-$	248.59	$5/2^+$	2034.2 *3*	16.2 *16*	2034.2		0.0	$1/2^+$
1862.7 *3*	4.4 *10*	2066.48	$3/2^-,5/2^-$	203.77	$3/2^+$	2091.3 *4*	4.8 *10*	2101.46		9.93	$3/2^+$
1895.9 *5*	3.5 *12*	2099.7		203.77	$3/2^+$	2093.2 *4*	4.6 *10*	2092.8	$^-$	0.0	$1/2^+$
1908.8 *4*	2.0 *7*	2157.4		248.59	$5/2^+$	2101.3 *3*	4.2 *10*	2101.46		0.0	$1/2^+$
2006 *1*	1.8 *9*	2209.8		203.77	$3/2^+$	[x]2181.6 *4*	2.6 *8*				
2021.5 *3*	15.3 *15*	2031.0		9.93	$3/2^+$	2249.1 *4*	2.1 *7*	2258.7		9.93	$3/2^+$
2030.3 *4*	4.6 *10*	2031.0		0.0	$1/2^+$						

[†] From 1996Wo04, except as noted.

[‡] Values are from table 3 of 1996Wo04 except for Eγ=900.4, 918.8, 936.6, 952, 958.6, 977.7, 1007.7, 1015.3, 1034.6, 1058.5, which are taken from more precise values quoted in authors′ table 4, and in Sept. 5, 2003 communication with J. Wood, as noted by S. -C. Wu in 2003-NDS.

[#] From Adopted Gammas, where the multipolarity and mixing ratios are based mainly on the conversion electron measurements in 1996Wo04.

[@] Estimated from ^{189m}Hg ε decay.

[&] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr.

[a] Multiply placed with intensity suitably divided.

[b] Placement of transition in the level scheme is uncertain.

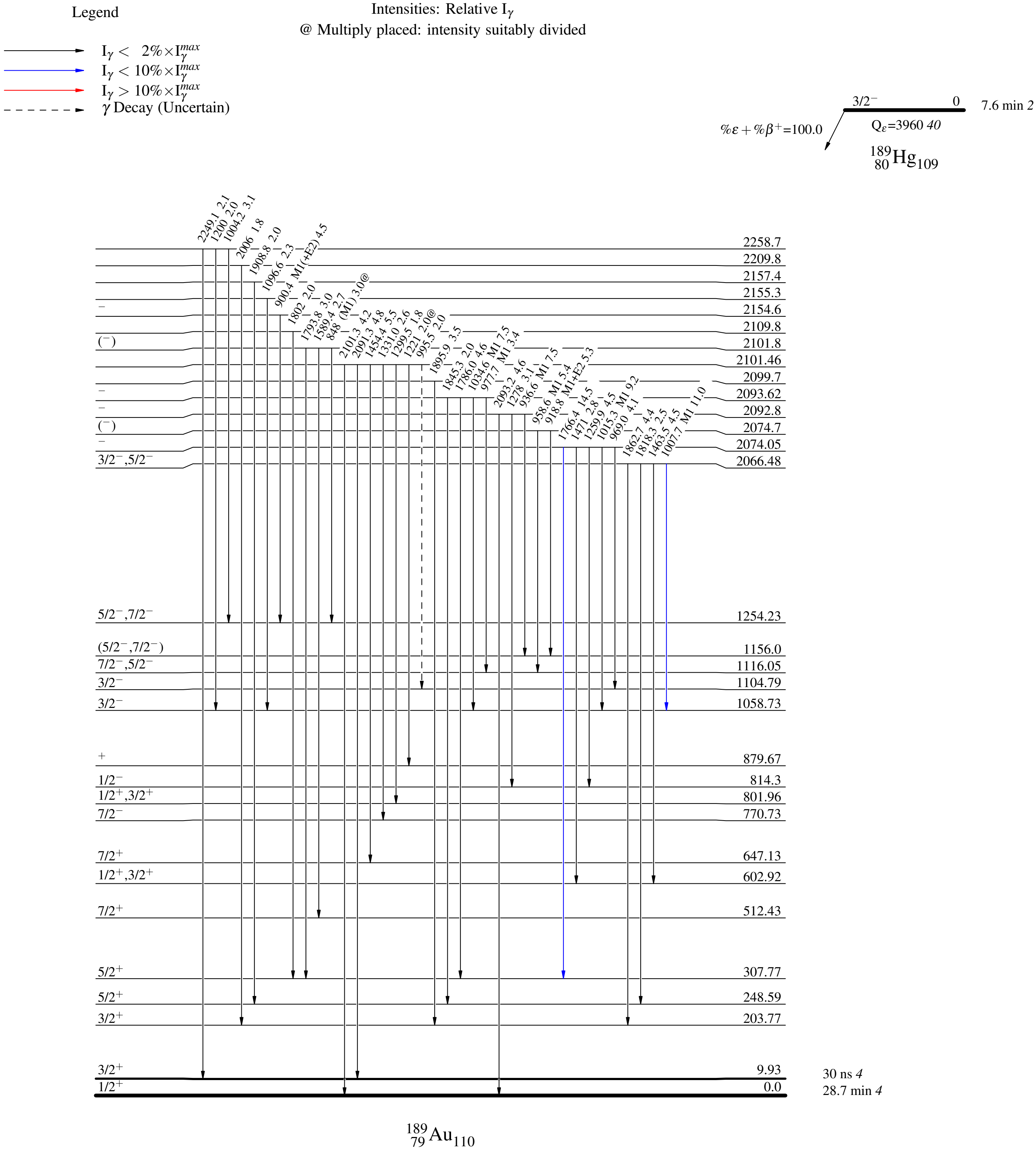
[x] γ ray not placed in level scheme.

^{189}Hg ε decay (7.6 min) 1996Wo04

Decay Scheme

Intensities: Relative I_γ

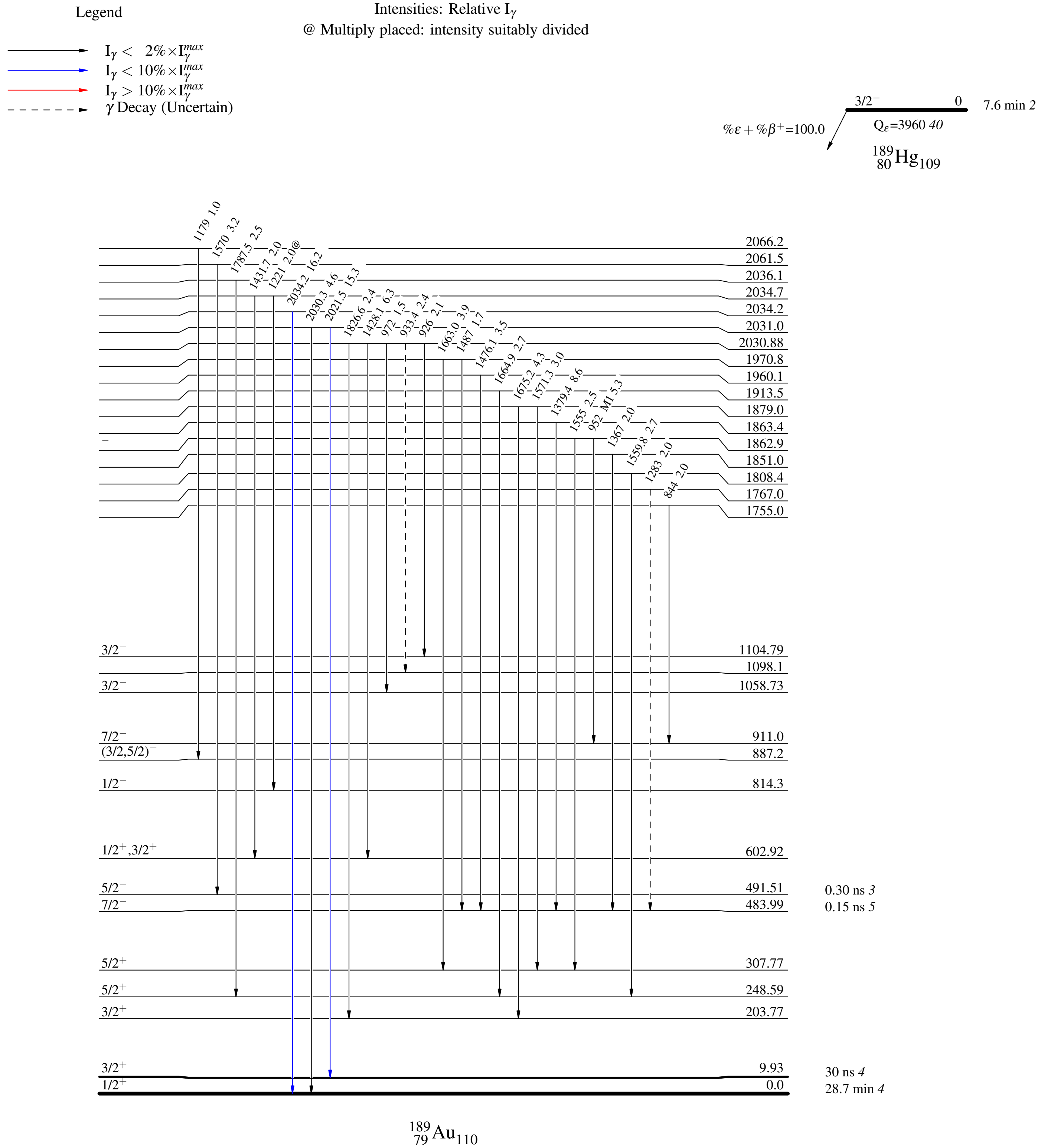
@ Multiply placed: intensity suitably divided



^{189}Hg ε decay (7.6 min) 1996Wo04

Decay Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

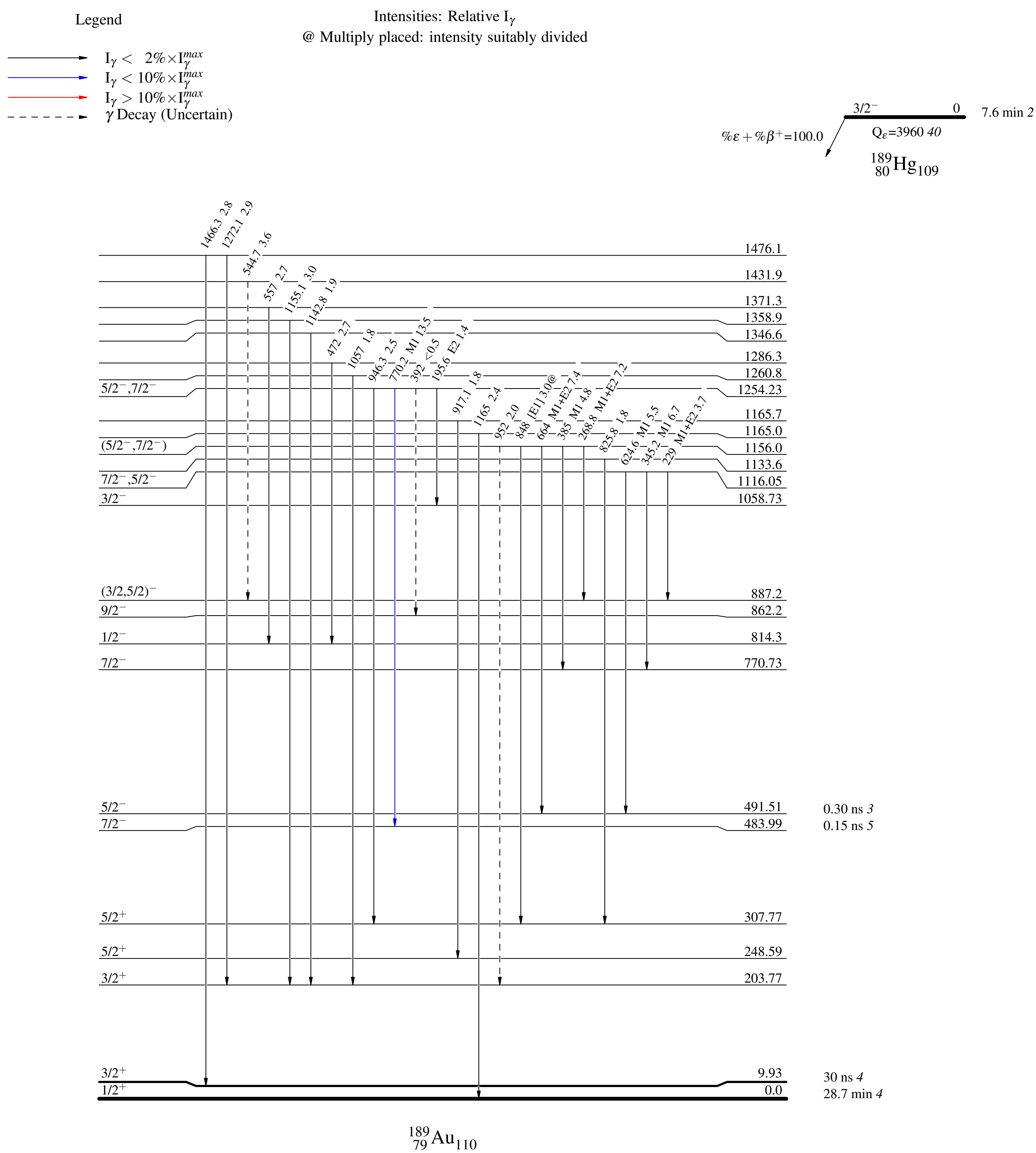


^{189}Hg ε decay (7.6 min) 1996Wo04

Decay Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided

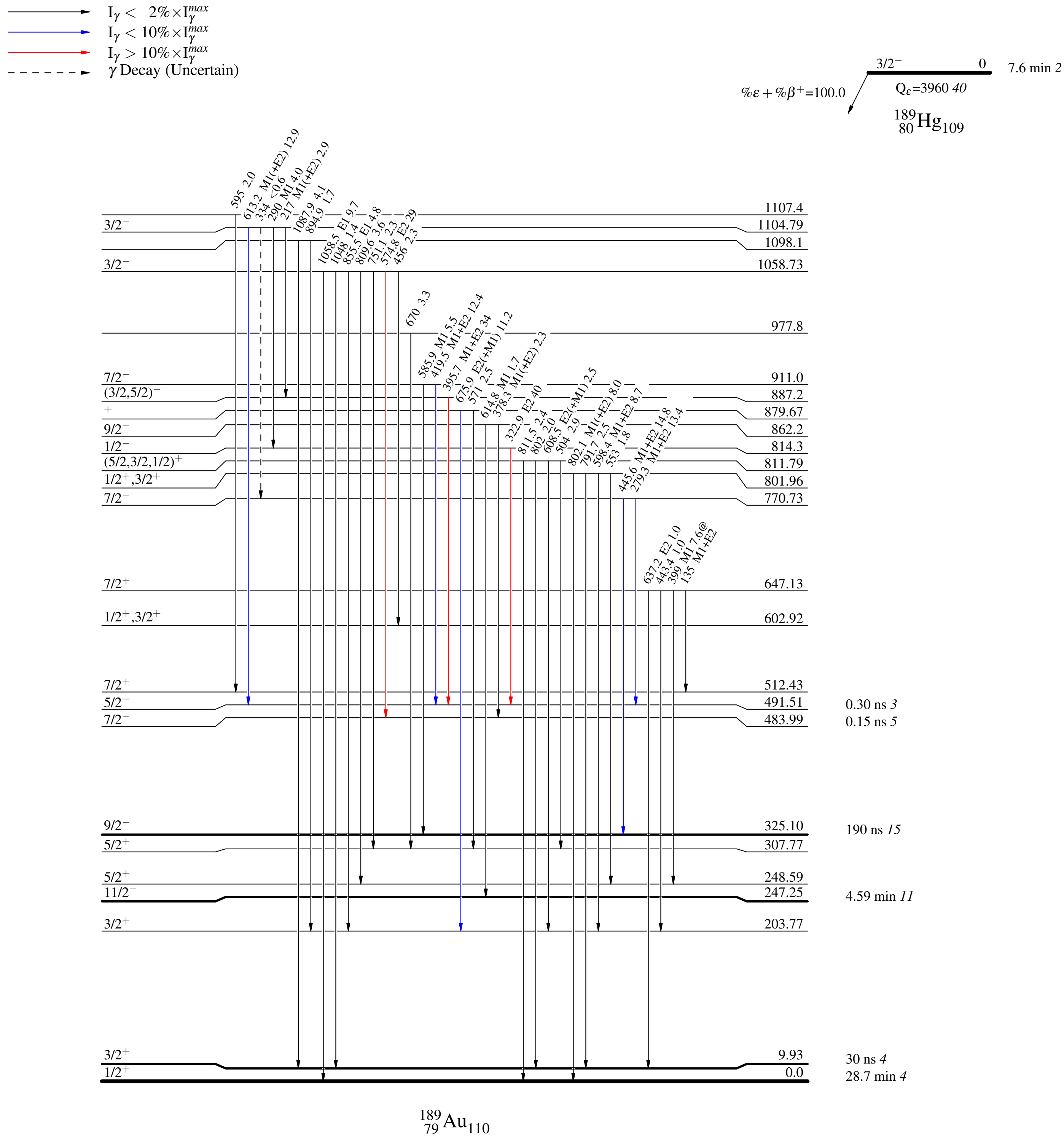


^{189}Hg ε decay (7.6 min) 1996Wo04

Decay Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



^{189}Hg ε decay (7.6 min) 1996Wo04

Decay Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided