^{195}Hg ε decay (10.53 h) 1973Vi09,1974Fa06,1971Fr03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong and Kang Mengxiao	NDS 121, 395 (2014)	1-Mar-2014

Parent: ^{195}Hg: E=0.0; J$^{\pi}$=1/2^{-}; T$_{1/2}$=10.53 h *3*; Q(ε)=1570 *23*; %ε+%β^{+} decay=100.0

Others: 1955Jo22, 1958Br88, 1966Ha47, 1967Fr05, 1970Ca07, 1970Fo08.

Sources produced by ^{194}Pt(^{3}He,2n) (1971Fr03), ^{196}Hg(γ,n) (1974Fa06), ^{197}Au(p,3n) (1973Vi09), daughter ^{195}Tl (1955Kn34).

1973Vi09: Eγ, Iγ, Ice, γγ-coin measured with a double focusing π 2*1/2 spectrometer and Si(Li) or Ge(Li). Interpreted with the intermediate coupling models.

1974Fa06: Eγ, Iγ, γγ-coin measured with Ge(Li) and Si(Li). Interpreted with core-excitation model.

1971Fr03: Eγ, Iγ, E(ce), Ice, γγ-coin measured with Ge(Li) and Si(Li).

Energy balance: total decay energy of 1538 keV *170* deduced (using RADLIST code) from proposed decay scheme is in agreement with the expected value of 1579 keV *23*, suggesting that the decay scheme is reasonably complete.

γγ(θ) directional correlation measurements (1970Ca07)

cascade	A$_2$	A$_4$	spin sequence	δ
585γ-207γ	+0.060 *16*	-0.010 *17*	3/2(Q)7/2(Q)11/2	
600γ-180γ	+0.170 *23*	+0.002 *25*	1/2(D+Q)3/2(D)1/2	-0.08 *3* or +2.1 *2*
			3/2(D+Q)3/2(D)1/2	+0.55 *6* or +3.9 *7*
931γ-180γ	+0.220 *50*	-0.050 *60*	1/2(D+Q)3/2(D)1/2	-0.02 *6* or +1.8 *3*
			3/2(D+Q)3/2(D)1/2	+0.7 *2* or +2.7 *10*

^{195}Au Levels

E(level)†	J$^{\pi}$‡	T$_{1/2}$‡
0.0	3/2^{+}	186.01 d *6*
61.434 *24*	1/2^{+}	3.0# ns *2*
241.56 *4*	3/2^{+}	<30# ps
261.79 *3*	5/2^{+}	54# ps *10*
318.58 *4*	11/2^{-}	30.5 s *2*
439.53 *9*	3/2^{+},5/2^{+}	
525.67 *6*	7/2^{-}	
778.22? *19*		
841.23 *4*	3/2^{+}	
1082.93 *6*	3/2^{+}	
1110.78 *7*	3/2^{-}	
1172.44 *6*	3/2^{+}	
1250.96 *10*	(3/2^{+}),5/2^{+}	
1324.64 *20*	1/2,3/2,5/2^{+}	
1353.61 *24*	3/2^{+}	
1433.0? *3*	1/2,3/2,5/2^{+}	
1443.16 *25*	1/2,3/2	

† From scheme and Eγ using least-squares fit to data.
‡ From Adopted Levels, except as noted.
# From delay coin (1970Fo08).

ε,β^{+} radiations

E(decay)	E(level)	Iε†‡	Log *ft*	I(ε+β^{+})†‡	Comments
(127 *23*)	1443.16	0.014 *4*	7.5 *4*	0.014 *4*	εK=0.42 *20*; εL=0.42 *14*; εM+=0.16 *7*
(137# *23*)	1433.0?	0.0027 *7*	8.3 *3*	0.0027 *7*	εK=0.48 *16*; εL=0.38 *11*; εM+=0.14 *5*
(216 *23*)	1353.61	0.023 *5*	8.03 *17*	0.023 *5*	εK=0.67 *3*; εL=0.247 *22*; εM+=0.087 *9*
(245 *23*)	1324.64	0.008 *2*	8.64 *16*	0.008 *2*	εK=0.692 *21*; εL=0.228 *15*; εM+=0.080 *6*
(319 *23*)	1250.96	0.095 *16*	7.86 *11*	0.095 *16*	εK=0.731 *10*; εL=0.200 *7*; εM+=0.068 *3*
(398 *23*)	1172.44	3.3 *5*	6.55 *9*	3.3 *5*	εK=0.753 *6*; εL=0.185 *4*; εM+=0.0622 *15*
(459 *23*)	1110.78	2.1 *3*	6.90 *9*	2.1 *3*	εK=0.764 *4*; εL=0.177 *3*; εM+=0.0591 *11*
(487 *23*)	1082.93	0.94 *13*	7.31 *8*	0.94 *13*	εK=0.768 *4*; εL=0.1742 *23*; εM+=0.0580 *9*

Continued on next page (footnotes at end of table)

^{195}Hg ε decay (10.53 h) 1973Vi09,1974Fa06,1971Fr03 (continued)

ε,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ ‡	Iε†‡	Log *ft*	I(ε+β^+)†‡	Comments
(729 *23*)	841.23		9.4 *11*	6.70 *6*	9.4 *11*	εK=0.7871 *12*; εL=0.1603 *9*; εM+=0.0526 *4*
(1130 *23*)	439.53		0.093 *18*	9.76[1u] *10*	0.093 *18*	εK=0.7749 *11*; εL=0.1690 *8*; εM+=0.0561 *4*
(1328 *23*)	241.56		1.9 *4*	7.96 *10*	1.9 *4*	εK=0.8024 *3*; εL=0.14920 *23*; εM+=0.04826 *9*
(1509 *23*)	61.434	0.053 *14*	71 *11*	6.50 *7*	71 *11*	av Eβ=240 *11*; εK=0.8040 *2*; εL=0.14759 *20*; εM+=0.04765 *8*
(1570 *23*)	0.0	0.012 *3*	10.0 *20*	7.39 *9*	10.0 *20*	av Eβ=267 *11*; εK=0.8042; εL=0.14709 *19*; εM+=0.04746 *7*

† From I(γ+ce) intensity imbalance from each level. Iε/I(ε+β^+) is calculated by LOGFT code.
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

γ(^{195}Au)

Iγ normalization: Assuming I(ε+β$^+$ to g.s.)=10% *+10−5* based on log *ft*=7.3 *3* for analogous transitions in A=193,197,199, γ+ce feeding to g.s. would lie in the range 80% to 95%. A γ+ce g.s. feeding of 88% *8* is adopted.

E_γ[‡]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ	α[†]	$I_{(\gamma+ce)}$[e]	Comments
56.80 *3*	0.0091 *11*	318.58	11/2$^-$	261.79	5/2$^+$	E3[c]		3.29×10^3	30.7 *35*	ce(L)/(γ+ce)=0.722 *8*; ce(M)/(γ+ce)=0.215 *4*; ce(N+)/(γ+ce)=0.0625 *13* $I_{(\gamma+ce)}$: from adopted branching ratio and intensity balance at 318 level. I_γ: from I(γ+ce)/(1+α). Other Iγ=0.003 *2* (1974Fa06).
61.46 *3*	91 *6*	61.434	1/2$^+$	0.0	3/2$^+$	M1+E2[c]	0.45 *1*	12.2 *3*		α(L)=9.26 *23*; α(M)=2.31 *6*; α(N+..)=0.668 *17*
180.11 *4*	27.9 *13*	241.56	3/2$^+$	61.434	1/2$^+$	M1+E2	≈0.16	1.342		α(K)=1.097; α(L)=0.188; α(M)=0.0437; α(N+..)=0.01302 α: α(K)exp=1.18 *11*, α(K)exp/α(L)exp=6.3 *3* other α(K)exp: 1.10 *6* (1971Fr03), 0.96 *10* (1970Ca07). δ: from α(L1)exp:α(L2)exp:α(L3)exp=100 *9*:11.5 *14*:2.4 *7* (1973Vi09), 100:11.8 *18*:≈2 (1971Fr03).
200.38 *4*	0.51 *5*	261.79	5/2$^+$	61.434	1/2$^+$	E2[c]		0.372		α(K)=0.1690 *24*; α(L)=0.1526 *22*; α(M)=0.0392 *6*; α(N+..)=0.01125 *16*
207.10 *4*	23.1 *26*	525.67	7/2$^-$	318.58	11/2$^-$	E2		0.333		α(K)=0.1557 *22*; α(L)=0.1329 *19*; α(M)=0.0341 *5*; α(N+..)=0.00979 *14*
241.50 *10*	1.01 *16*	241.56	3/2$^+$	0.0	3/2$^+$	E2+M1	≈2.2	0.269		α(K)=0.1728; α(L)=0.0727; α(M)=0.0182; α(N+..)=0.00527 δ: from α(K)exp=0.18 *5*.
261.75 *4*	22.3 *38*	261.79	5/2$^+$	0.0	3/2$^+$	M1+E2[c]	0.51 *1*	0.415 *7*	31.9	ce(K)/(γ+ce)=0.235 *3*; ce(L)/(γ+ce)=0.0443 *7*; ce(M)/(γ+ce)=0.01044 *16*; ce(N+)/(γ+ce)=0.00309 *5*
318.60 *10*	0.0127 *20*	318.58	11/2$^-$	0.0	3/2$^+$	M4[c]		11.67	0.165 *26*	ce(K)/(γ+ce)=0.490 *7*; ce(L)/(γ+ce)=0.318 *5*; ce(M)/(γ+ce)=0.0872 *16*; ce(N+)/(γ+ce)=0.0261 *5* $I_{(\gamma+ce)}$: from adopted branching ratio and intensity balance at 318 level. I_γ: from I(γ+ce)/(1+α). Others: 0.016 *3* (1966Ha47), 0.022 *11* (1974Fa06).
^{x}330.5 *3*	0.19[a] *4*									

$\gamma(^{195}$Au) (continued)

E_γ [‡]	I_γ [&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [b]	δ	α [†]	Comments
360.2 *3*	0.18[a] *4*	1443.16	1/2,3/2	1082.93	3/2+				
401.74[@] *15*	0.071 *24*	841.23	3/2+	439.53	3/2+,5/2+	[M1+E2][d]		0.10 *6*	α(K)=0.08 *5*; α(L)=0.016 *5*; α(M)=0.0037 *11*; α(N+..)=0.0011 *4*
439.50 *15*	1.82 *16*	439.53	3/2+,5/2+	0.0	3/2+	M1		0.1189	α(K)=0.0981 *14*; α(L)=0.01602 *23*; α(M)=0.00371 *6*; α(N+..)=0.001105 *16* α(K)exp=0.118 *26*.
546.40 *23*	0.018 *8*	1324.64	1/2,3/2,5/2+	778.22?					
585.13 *5*	29.2 *11*	1110.78	3/2−	525.67	7/2−	E2		0.01781	α(K)=0.01346 *19*; α(L)=0.00332 *5*; α(M)=0.000802 *12*; α(N+..)=0.000235 *4* α: α(K)exp=0.0112 *11*, α(L)exp=0.0040 *7*, E(L1+L2)C/α(L3)exp=7.3 *20*; other α(K)exp: 0.015 *2* (1971Fr03), 0.011 *1* (1970Ca07,1966Ha47).
599.66 *4*	26.2 *9*	841.23	3/2+	241.56	3/2+	M1+E2	+0.55 *6*	0.0443 *16*	α(K)=0.0363 *13*; α(L)=0.00611 *18*; α(M)=0.00142 *4*; α(N+..)=0.000422 *12* α: α(K)exp=0.042 *4*, α(K)exp/α(L12)exp=6.1 *6*. Other α(K)exp: 0.048 *7* (1971Fr03), 0.043 *4* (1970Ca07,1966Ha47). δ: from A_2=+0.170 *23* (1970Ca07). Other $\delta\approx$0.33 from α(K)exp=0.042.
671.13 *25*	0.35 *4*	1110.78	3/2−	439.53	3/2+,5/2+	[E1][d]		0.00470	α(K)=0.00392 *6*; α(L)=0.000597 *9*; α(M)=0.0001369 *20*; α(N+..)=4.05×10^{-5} *6*
716.79[#] *23*	0.12 *5*	778.22?		61.434	1/2+				
778.0[#] *6*	0.009 *4*	778.22?		0.0	3/2+				
779.80 *5*	100	841.23	3/2+	61.434	1/2+	M1		0.0267	α(K)=0.0221 *3*; α(L)=0.00354 *5*; α(M)=0.000817 *12*; α(N+..)=0.000243 *4* α: α(K)exp=0.0245 *24*, α(K)exp/α(L12)exp=6.6 *8*; other α(K)exp: 0.022 *2* (1971Fr03), 0.020 *2* (1970Ca07,1966Ha47).
811.40 *15*	0.27 *9*	1250.96	(3/2+),5/2+	439.53	3/2+,5/2+	(M1)		0.0241	α(K)=0.0199 *3*; α(L)=0.00319 *5*; α(M)=0.000737 *11*; α(N+..)=0.000220 *3* I_γ: authors quote 0.272 *9*. The evaluator assumes that the uncertainty is a misprint. α(K)exp=0.04 *2* (1971Fr03).
821.08 *10*	4.3 *4*	1082.93	3/2+	261.79	5/2+	M1(+E2)		0.016 *8*	α(K)=0.013 *7*; α(L)=0.0022 *9*; α(M)=0.00052 *20*; α(N+..)=0.00015 *6* α: α(K)exp=0.0182 *30*, α(L1)exp+α(L2)exp=0.0043 *13*; other α(K)exp: 0.0165 *25* (1971Fr03), 0.021 *2* (1970Ca07,1966Ha47).
841.27[f] *10*	4.0[f] *9*	841.23	3/2+	0.0	3/2+	M1,E2		0.015 *7*	α(K)=0.012 *6*; α(L)=0.0021 *9*; α(M)=0.00049 *19*; α(N+..)=0.00014 *6*

$^{195}_{79}$Au$_{116}$-4

γ(^{195}Au) (continued)

E_γ[‡]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ	α[†]	Comments
									α: doublet α(K)exp=0.0121 *23*, α(L1)exp+α(L2)exp=0.0029 *7*; other α(K)exp: 0.010 *2* (1970Ca07,1971Fr03,1966Ha47).
841.27[f] *10*	5.3[f] *9*	1082.93	3/2$^+$	241.56	3/2$^+$	M1,E2		0.015 *7*	α(K)=0.012 *6*; α(L)=0.0021 *9*; α(M)=0.00049 *19*; α(N+..)=0.00014 *6* I_γ: doublet apportioned via γγ-coin is inconsistent; Iγ(841γ to g.s.)=43% (1974Fa06,1971Fr03), 61% (1973Vi09,1970Ca07) of Iγ composite.
^{x}861.0 *4*	0.07[a] *2*								
868.9 *3*	0.051 *19*	1110.78	3/2$^-$	241.56	3/2$^+$	[E1][d]		0.00286	α(K)=0.00240 *4*; α(L)=0.000358 *5*; α(M)=8.20×10^{-5} *12*; α(N+..)=2.43×10^{-5} *4*
910.63 *15*	0.92 *17*	1172.44	3/2$^+$	261.79	5/2$^+$	M1+E2	≈1.4	0.01064	α(K)=0.00869; α(L)=0.001501; α(M)=0.000350; α(N+..)=0.0001038 I_γ: authors quote 0.921 *17*. The evaluator assumes that the uncertainty is a misprint. α(K)exp=0.0088 *23*. δ: from α(K)exp.
930.90 *7*	6.2 *5*	1172.44	3/2$^+$	241.56	3/2$^+$	M1+E2	+0.7 *2*	0.0136 *14*	α(K)=0.0112 *12*; α(L)=0.00183 *17*; α(M)=0.00042 *4*; α(N+..)=0.000126 *11* α: α(K)exp=0.0118 *24*, α(L1)exp+α(L2)exp=0.0021 *6* (1973Vi09); other α(K)exp: 0.0072 *14* (1971Fr03), 0.0079 *8* (1970Ca07,1966Ha47). δ: from A_2=+0.22 *5* (1970Ca07). Other δ≈0.66 from α(K)exp=0.0118 2.
989.15 *20*	0.16 *6*	1250.96	(3/2$^+$),5/2$^+$	261.79	5/2$^+$				
1009.35 *20*	0.40 *8*	1250.96	(3/2$^+$),5/2$^+$	241.56	3/2$^+$	(M1)		0.01380	α(K)=0.01144 *16*; α(L)=0.00182 *3*; α(M)=0.000420 *6*; α(N+..)=0.0001251 *18* α(K)exp=0.018 *8*.
1021.56 *7*	2.75 *28*	1082.93	3/2$^+$	61.434	1/2$^+$	M1		0.01339	α(K)=0.01109 *16*; α(L)=0.001764 *25*; α(M)=0.000407 *6*; α(N+..)=0.0001213 *17* α(K)exp=0.0114 *28*, α(L1)exp+α(L2)exp=0.0025 *11*; other α(K)exp: 0.007 *3* (1971Fr03), 0.0077 *16* (1970Ca07,1966Ha47).
1049.27 *25*	0.29 *9*	1110.78	3/2$^-$	61.434	1/2$^+$	[E1][d]		0.00203	α(K)=0.00170; α(L)=0.00025
1082.90 *20*	1.02 *13*	1082.93	3/2$^+$	0.0	3/2$^+$	(E2)		0.00492	α(K)=0.00399 *6*; α(L)=0.000712 *10*; α(M)=0.0001667 *24*; α(N+..)=4.93×10^{-5} *7* α: α(K)exp=0.0048 *23*.
1091.7 *4*	0.11 *5*	1353.61	3/2$^+$	261.79	5/2$^+$	[M1+E2][d]		0.008 *4*	α(K)=0.007 *3*; α(L)=0.0011 *4*; α(M)=0.00025 *9*; α(N+..)=8.E−5 *3*
1111.04 *10*	21.2 *19*	1172.44	3/2$^+$	61.434	1/2$^+$	M1		0.01082	α(K)=0.00897 *13*; α(L)=0.001423 *20*; α(M)=0.000328 *5*; α(N+..)=9.83×10^{-5} *14* α: α(K)exp=0.0110 *13*, α(L1)exp+α(L2)exp=0.0020 *3* (1973Vi09); other α(K)exp: 0.0074 *14* (1971Fr03), 0.0092 *10* (1970Ca07,1966Ha47).

$^{195}_{79}$Au$_{116}$-5

γ(^{195}Au) (continued)

E_γ[‡]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	α[†]	Comments
1172.38 *10*	18.3 *16*	1172.44	3/2+	0.0	3/2+	M1	0.00945	α(K)=0.00784 *11*; α(L)=0.001241 *18*; α(M)=0.000286 *4*; α(N+..)=8.88×10^{-5} *13* α: α(K)exp=0.0090 *3*, α(L1)exp+α(L2)exp=0.0013 *3* (1973Vi09); other α(K)exp: 0.0061 *12* (1971Fr03), 0.0071 *14* (1970Ca07,1966Ha47).
1189.5 *3*	0.31 *6*	1250.96	(3/2+),5/2+	61.434	1/2+			
1251.14 *25*	0.21 *4*	1250.96	(3/2+),5/2+	0.0	3/2+			
1263.2 *3*	0.071 *20*	1324.64	1/2,3/2,5/2+	61.434	1/2+			
1292.2 *4*	0.072 *16*	1353.61	3/2+	61.434	1/2+	[M1+E2][d]	0.0055 *20*	α(K)=0.0045 *17*; α(L)=0.00073 *25*; α(M)=0.00017 *6*; α(N+..)=7.0×10^{-5} *22*
1324.7 *4*	0.021 *7*	1324.64	1/2,3/2,5/2+	0.0	3/2+			
[x]1339.8 *5*	0.007[a] *3*							
1353.7 *4*	0.145 *32*	1353.61	3/2+	0.0	3/2+	[M1+E2][d]	0.0049 *17*	α(K)=0.0040 *15*; α(L)=0.00065 *21*; α(M)=0.00015 *5*; α(N+..)=7.9×10^{-5} *23*
[x]1368.3 *4*	0.019[a] *5*							
1372.0 *4*	0.026[a] *7*	1433.0?	1/2,3/2,5/2+	61.434	1/2+			
1432.6 *4*	0.012[a] *4*	1433.0?	1/2,3/2,5/2+	0.0	3/2+			
1443.2 *4*	0.014[a] *4*	1443.16	1/2,3/2	0.0	3/2+			

† α(K)exp, α(L)exp, ce-ratios are from 1973Vi09, except as noted.
‡ From high-resolution ce and photon studies (1973Vi09), except as noted.
# From 1974Fa06.
@ From 1971Fr03.
& Relative photon intensity normalized to Iγ(Eγ=779.80)=100. Values are from 1974Fa06, except as noted.
a From 1973Vi09.
b Deduced from α(K)exp, α(L)exp, L-subshell ratios (1973Vi09).
c Deduced from α(K)exp, α(L)exp, L- and M-subshell ratios (41.6-h ^{195}Hg decay).
d Deduced from ΔJ and Δπ.
e For absolute intensity per 100 decays, multiply by 0.070 *8*.
f Multiply placed with intensity suitably divided.
x γ ray not placed in level scheme.

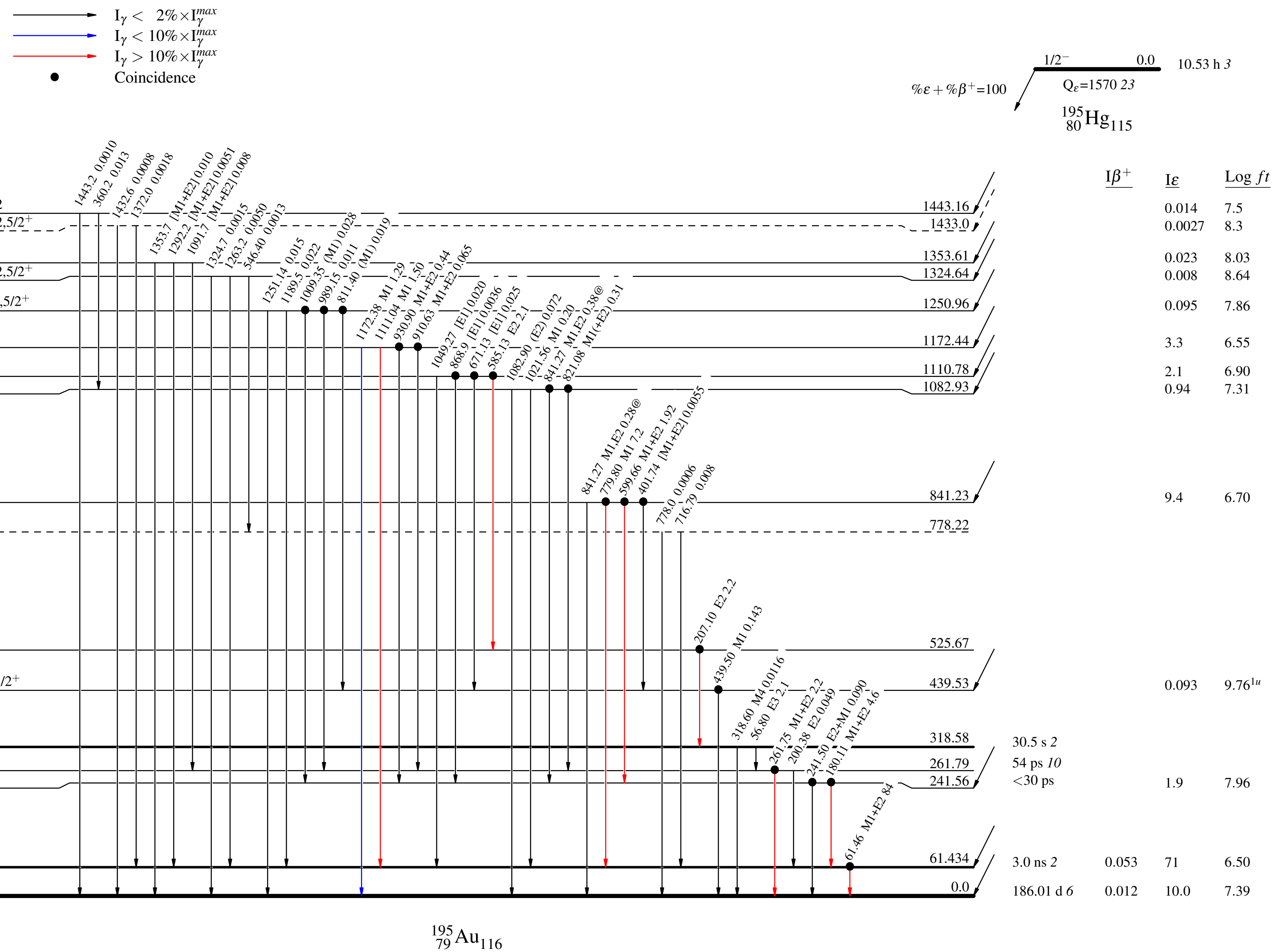
$^{195}_{79}$Au$_{116}$-6

^{195}Hg ε decay (10.53 h) 1973Vi09,1974Fa06,1971Fr03

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

@ Multiply placed: intensity suitably divided



From ENSDF

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$^{195}_{79}Au_{116}$-7