^{191}Au $\varepsilon+\beta^+$ decay (3.18 h) 1976Pi06,1967Jo06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

Parent: ^{191}Au: E=0.0; J$^{\pi}$=3/2^{+}; $T_{1/2}$=3.18 h *8*; Q(ε)=1900 *6*; %ε+%β^+ decay=100

Others: 1954Gi04, 1955Sm42, 1957Hu89, 1961An03, 1962Di01, 1962Ma18, 1973ViZJ, 1975ViZK, 1976Pi06, 1976ViZM.

1976Pi06: ^{191}Au was produced by the ^{191}Ir(α,4n) reaction, E=50 MeV, 95% enriched target. Ge(Li) (FWHM 2.0 keV for 1332 keV γ) and a low energy photon Ge(Li) (FWHM 650 eV for 122 keV γ). Measured Eγ, Iγ, $\gamma\gamma$-coin. Deduced levels, α(K) (using Ice data of 1967Jo06 and normalizing to the Iγ(253.95) assuming E2 character), γ-ray multipolarity.

1967Jo06: The gold activity was produced by (p,xn) reactions, E=70 MeV, with natural targets; chemical separation was done, double-focusing spectrometer, proportional counter, 10 surface barrier semiconductor detectors; Measured ce, (ce)(ce) coin; Determined internal conversion coefficients, γ-ray multipolarity. Other ICC measurements: 1954Gi04, 1955Sm42, 1957Hu89, 1961An03, 1962Di01, 1962Ma18.

^{191}Pt Levels

E(level)†	J$^{\pi}$‡	$T_{1/2}$	Comments
0.0	3/2^{-}	2.83 d *2*	$T_{1/2}$: From Adopted Levels.
9.554 *16*	(5/2)$^{-}$		
30.399 *9*	1/2^{-},3/2^{-}		
100.668 *20*	(9/2)$^{-}$	>1 μs	$T_{1/2}$: From Adopted Levels.
149.040 *22*	(13/2)$^{+}$	104 μs *4*	$T_{1/2}$: From Adopted Levels.
158.81 *3*	1/2^{-},3/2^{-},5/2^{-}		
166.518 *13*	(3/2)$^{-}$		
173.433 *24*	(11/2)$^{+}$		
253.947 *21*	(7/2,5/2)$^{-}$		
277.880 *21*	(3/2,5/2)$^{-}$		
281.188 *25*	(3/2,5/2,7/2)$^{-}$		
293.457 *14*	(5/2)$^{-}$		
306.34 *3*	(9/2)$^{+}$		
399.835 *19*	7/2^{-}		
451.84 *3*	(3/2)$^{-}$		
453.83 *3*	(7/2)$^{+}$		
487.584 *18*	(7/2)$^{-}$		
535.29 *3*	(3/2,5/2)$^{-}$		
574.66 *4*	(1/2)$^{-}$		
594.29 *6*	$^{-}$		
613.15 *4*	(1/2,3/2,5/2)$^{-}$		
625.85 *9*	$^{-}$		
660.23 *3*	(5/2)$^{+}$		
662.27 *5*	(3/2,5/2)$^{-}$		
732.37 *8*	1/2^{-},3/2^{-}		
863.93 *5*	(5/2)$^{+}$		
929.20 *15*			
986.46 *7*			
1074.03 *3*	(5/2)$^{+}$		
1113.49 *8*	(5/2)$^{+}$		
1174.65 *9*	$^{-}$		
1289.97 *15*			
1300.9 *3*			
1453.3 *3*			

† From a least-squares fit to adopted γ-ray energies, excluding 206.39 and 451.85 doublets.
‡ From Adopted Levels.

^{191}Au $\varepsilon+\beta^+$ decay (3.18 h) 1976Pi06,1967Jo06 (continued)

ε,β^+ radiations

E(decay)	E(level)	$I\beta^+$ ‡	$I\varepsilon$ †‡	Log *ft*	$I(\varepsilon+\beta^+)$ ‡	Comments
(447 *6*)	1453.3		≈0.1	≈7.6	≈0.1	εK=0.7665 *10*; εL=0.1753 *7*; εM+=0.0581 *3*
(599 *6*)	1300.9		≈0.1	≈7.9	≈0.1	εK=0.7827 *5*; εL=0.1637 *4*; εM+=0.05360 *13*
(610 *6*)	1289.97		≈0.3	≈7.5	≈0.3	εK=0.7835 *5*; εL=0.1632 *4*; εM+=0.05338 *13*
(725 *6*)	1174.65		≈0.7	≈7.3	≈0.7	εK=0.7902 *3*; εL=0.15829 *21*; εM+=0.05149 *9*
(787 *6*)	1113.49		≈3	≈6.7	≈3	εK=0.7929 *3*; εL=0.15635 *18*; εM+=0.05074 *7*
(826 *6*)	1074.03		≈30	≈5.8	≈30	εK=0.7944 *3*; εL=0.15526 *16*; εM+=0.05032 *6*
(914 *6*)	986.46		≈0.4	≈7.7	≈0.4	εK=0.7972 *2*; εL=0.1532 *2*; εM+=0.04954 *5*
(971 *6*)	929.20		≈0.2	≈8.1	≈0.2	εK=0.7988 *2*; εL=0.1521 *1*; εM+=0.04911 *5*
(1168 *6*)	732.37		≈0.6	≈7.8	≈0.6	εK=0.8028 *1*; εL=0.14918 *8*; εM+=0.04798 *3*
(1240 *6*)	660.23		≈1	≈7.6	≈1	εK=0.80396 *9*; εL=0.14836 *7*; εM+=0.04767 *3*
(1274 *6*)	625.85		≈0.7	≈7.8	≈0.7	εK=0.80443 *8*; εL=0.14799 *7*; εM+=0.04753 *3*
(1287 *6*)	613.15		≈0.1	≈8.7	≈0.1	εK=0.8046; εL=0.14787 *6*; εM+=0.04748 *3*
(1306 *6*)	594.29		≈0.1	≈8.7	≈0.1	εK=0.8048; εL=0.14768 *6*; εM+=0.04741 *3*
(1325 *6*)	574.66		≈1	≈7.7	≈1	εK=0.8051; εL=0.14749 *6*; εM+=0.04734 *3*
(1365 *6*)	535.29		≈1	≈7.7	≈1	εK=0.8055; εL=0.14712 *6*; εM+=0.04720 *2*
(1412 *6*)	487.584		≤2	≥8.3^{1u}	≤2	εK=0.7884 *2*; εL=0.1595 *2*; εM+=0.05205 *5*
(1446 *6*)	453.83		≤2	≥7.5	≤2	εK=0.8062; εL=0.14642 *5*; εM+=0.04693 *2*
(1448 *6*)	451.84	≈0.002	≈5	≈7.1	≈5	av Eβ=212.1 *28*; εK=0.8062; εL=0.14640 *5*; εM+=0.04692 *2*
(1500 *6*)	399.835	≤0.001	≤2	≥7.5	≤2	av Eβ=235.5 *27*; εK=0.8065; εL=0.14597 *5*; εM+=0.04676 *2*
(1607 *6*)	293.457	≈0.01	≈8	≈7.0	≈8	av Eβ=283.0 *27*; εK=0.8067; εL=0.14513 *5*; εM+=0.04645 *2*
(1619 *6*)	281.188	≤0.004	≤2	≥7.6	≤2	av Eβ=288.4 *27*; εK=0.8067; εL=0.14503 *5*; εM+=0.04641 *2*
(1622 *6*)	277.880	≈0.021	≈11	≈6.8	≈11	av Eβ=289.9 *27*; εK=0.8067; εL=0.14501 *5*; εM+=0.04640 *2* Eβ+=425 keV *61* (1976ViZM).
(1646 *6*)	253.947	≈0.007	≈3	≈7.4	≈3	av Eβ=300.5 *27*; εK=0.8067; εL=0.14482 *5*; εM+=0.04633 *2*
(1734 *6*)	166.518	≈0.03	≈7	≈7.1	≈7	av Eβ=339.4 *27*; εK=0.8062; εL=0.14413 *5*; εM+=0.04608 *2*
(1741 *6*)	158.81	≈0.008	≈2	≈7.6	≈2	av Eβ=342.8 *27*; εK=0.8061; εL=0.14406 *5*; εM+=0.04606 *2*
(1870 *6*)	30.399	≤0.01	≤2	≥7.7	≤2	av Eβ=399.0 *27*; εK=0.8044 *1*; εL=0.14299 *6*; εM+=0.04568 *2* I(ε+β⁺): Iε≈5% given by 1976Pi06 is not consistent with experimental Iγ=269 *40* and theoretical α=40.4 for 30.4γ.
(1890 *6*)	9.554	0.091	12	6.9	12.	av Eβ=408.1 *27*; εK=0.8040 *2*; εL=0.14280 *6*; εM+=0.04561 *2* I(ε+β⁺): calculated by assuming log *ft*=6.9 (as for ^{193}Au ε decay).
(1900 *6*)	0.0	0.095	12	6.9	12.	av Eβ=412.3 *27*; εK=0.8038 *2*; εL=0.14272 *6*; εM+=0.04558 *2* I(ε+β⁺): calculated by assuming log *ft*=6.9 (as for ^{193}Au ε decay to 14 keV 5/2⁻ level). Eβ+=808 keV *50* (1976ViZM). Others: 1973ViZJ, 1975ViZK.

† from γ-ray intensity balance and assuming 12% ε feeding for both g.s. (J^π=3/2⁻) and 9.55 (J^π=(5/2)⁻) levels (resultant log *ft*=6.9), as for the 14.3 (J^π=5/2⁻) state populated in ^{193}Au ε decay (2017Ba21).

‡ Absolute intensity per 100 decays.

γ(^{191}Pt)

Iγ normalization: Calculated by assuming 12% ε feeding for both the g.s. and 9.56 levels (resultant log *ft*=6.9, as for ^{193}Au ε decay (2017Ba21)), and I(γ+ce)(g.s. + 9.55)≈76%.

ce: From 1967Jo06. For subshell data with an upper limit are noted for coincidence with other lines.

E_γ[†]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
(9.56)		9.554	(5/2)$^-$	0.0	3/2$^-$				E_γ: deduced from Eγ's (cascade and crossover). Placed via $\gamma\gamma$-coin about initial states.
24.39[‡#] *1*	1.9[a] *4*	173.433	(11/2)$^+$	149.040	(13/2)$^+$	M1+E2	0.158 *29*	1.7×10^2 *4*	α(L)=129 *28*; α(M)=32 *7* α(N)=7.7 *17*; α(O)=1.27 *26*; α(P)=0.0394 *6* Mult.,δ: from ce data fit: Mult(24.39γ): from ce(L1):ce(L2):ce(L3):ce(M1):ce(M2):ce(M3):ce(N1): ce(N23) exp: 95 *25*:56 *25*:86 *30*:20 *4*:14 *3*:19 *3*:10 *3*:12 *3* (1967Jo06). 1967Jo06 assigned an E1 multipolarity to this transition based on the L subshell ratios; however, M1 + 2% E2 gives a best fit and is consistent with the placement of the 24.39-keV transition on the level scheme given in 1976Pi06. L1/L2=1.7 *9*, L1/L3=1.1 *5*, M1/M2=1.4 *4*, M1/M3=1.1 *3*.
30.40[‡] *1*	15.0[a] *11*	30.399	1/2$^-$,3/2$^-$	0.0	3/2$^-$	M1+E2	0.034 *17*	40.4 *20*	α(L)=31.0 *15*; α(M)=7.2 *4* α(N)=1.78 *9*; α(O)=0.319 *14*; α(P)=0.02070 *29* E_γ: Other: 30.27 *6* (1976Pi06). I_γ: Other: 269 *40* (1976Pi06). Mult.,δ: from ce(L1):ce(L2):ce(L3):ce(M1):ce(M2):ce(N1) exp=403 *40*:50 *11*:14 *5*: 88 *7*:10 *3*:28 *5* (1967Jo06). L1/L2=8.1 *19*, L1/L3=29 *11*, M1/M2=8.8 *27*.
48.37[‡#] *1*	0.96[a] *5*	149.040	(13/2)$^+$	100.668	(9/2)$^-$	M2		455 *6*	α(L)=339 *5*; α(M)=89.2 *13* α(N)=22.43 *31*; α(O)=3.88 *5*; α(P)=0.2032 *29* Mult.: from ce(L1):ce(L2):ce(L3):ce(M1):ce(M2):ce(M3): ce(N1):ce(N3): ce(O1) exp=205 *15*:20 *5*:95 *15*:52 *5*:5.3 *15*:23 *4*: 18 *3*: 10 *4*: 4.0 *15* (1967Jo06).
^{x}56.78[@] *7*	19 *3*								
87.74[‡] *2*	4.4[a] *6*	487.584	(7/2)$^-$	399.835	7/2$^-$	M1+E2	0.27 *+7−5*	9.61 *14*	α(K)=7.47 *28*; α(L)=1.64 *16*; α(M)=0.39 *4* α(N)=0.096 *10*; α(O)=0.0166 *16*; α(P)=0.000869 *31* E_γ: Other: : 87.55 *6* (1976Pi06). I_γ: Other: 12 *1* (1976Pi06). Mult.,δ: from ce(L1):ce(L2):ce(L3):ce(M1) exp=4.4 *6*:1.5 *6*:0.55 *22*:0.8 *2* (1967Jo06). L1/L2=2.9 *12*, L1/L3=8.0 *34*.
91.11[‡] *2*	99 *7*	100.668	(9/2)$^-$	9.554	(5/2)$^-$	E2		7.23 *10*	α(K)=0.754 *11*; α(L)=4.86 *7*; α(M)=1.259 *18* α(N)=0.307 *4*; α(O)=0.0477 *7*; α(P)=0.0001103 *15*

From ENSDF

γ(^{191}Pt) (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[b]	δ[c]	α[d]	Comments
									Iγ=85 16 from ce data, considering ce(M2)<230 as 115 115. Mult.: from ce(L1):ce(L2):ce(L3):ce(M2):ce(M3):ce(O) exp=9.0 15:210 20:185 20: <230:54 6:4.0 14 (1967Jo06); discarded ce(K) exp=17 4, outlier in ce data fit, and ce(N2) exp=28 5.
106.36[@] 5	3 1	399.835	7/2$^-$	293.457	(5/2)$^-$	M1+E2	1.0 6	4.7 6	α(K)=2.6 14; α(L)=1.6 6; α(M)=0.39 16 α(N)=0.10 4; α(O)=0.016 6; α(P)=3.0×10^{-4} 16 Mult.,δ: from α(K)exp=2.7 11, obtained from 29.97 keV ce line observed by 1967Jo06 with Ice=8 2 and assigning it to K conversion.
^{x}122.71[@] 5	3 1								
126.92[‡] 2	8.5 14	293.457	(5/2)$^-$	166.518	(3/2)$^-$	M1+E2	0.56 +24−25	3.02 23	α(K)=2.23 35; α(L)=0.60 9; α(M)=0.145 25 α(N)=0.036 6; α(O)=0.0061 9; α(P)=0.00025 4 Mult.,δ: From ce(K):ce(L1):ce(L2) exp=16 2:3.9 5: <0.50 (mix with other lines) (1967Jo06). α(K)=1.9 4, α(L1)=0.46 10. I_γ: From ce data of 1967Jo06, considering ce(L2)<0.5 as 0.25 25. Other: 9 1 from 1976Pi06.
^{x}132.00[@] 5	21 2								
132.89[‡] 2	72 6	306.34	(9/2)$^+$	173.433	(11/2)$^+$	M1+E2	0.25 4	2.88 5	α(K)=2.32 5; α(L)=0.429 10; α(M)=0.1006 28 α(N)=0.0248 7; α(O)=0.00440 10; α(P)=0.000265 6 E_γ: Other: 132.98 4 (1976Pi06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp=151 10:25.4 15:3.5 5:2.1 5: 4.9 7 (1967Jo06). α(K)exp=0.18 3, L1/L2=7.3 11, L1/L3=12 3.
^{x}133.70[@] 5	16 2								
136.09[‡] 2	40 4	166.518	(3/2)$^-$	30.399	1/2$^-$,3/2$^-$	M1+E2	0.42 8	2.56 8	α(K)=2.00 10; α(L)=0.435 20; α(M)=0.104 6 α(N)=0.0255 14; α(O)=0.00442 19; α(P)=0.000228 11 E_γ: Other: : 136.16 4 (1976Pi06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3):ce(M):ce(N) exp=66 5:10.2 10: 3.1 4: 1.4 3:5.8 8:1.8 4 (1967Jo06). α(K)=1.65 21, L1/L2=3.3 5, L1/L3=7.3 17.
^{x}142.51[@] 5	14 1								
145.95[@] 5	6 1	399.835	7/2$^-$	253.947	(7/2,5/2)$^-$	(M1)		2.265 32	α(K)=1.865 26; α(L)=0.308 4; α(M)=0.0713 10 α(N)=0.01764 25; α(O)=0.00317 4; α(P)=0.0002138 30 Mult.: from α(K)exp=2.0 11, obtained from 67.47 keV ce line observed by 1967Jo06 with Ice=12 4 and assigning it to K conversion.
147.49[@] 4	51 3	453.83	(7/2)$^+$	306.34	(9/2)$^+$	M1,E2		1.6 6	α(K)=1.1 7; α(L)=0.42 12; α(M)=0.103 34

$^{191}_{78}Pt_{113}$-4

γ(^{191}Pt) (continued)

E_γ [†]	I_γ [&e]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [b]	δ [c]	α [d]	Comments
									α(N)=0.025 *8*; α(O)=0.0042 *11*; α(P)=1.2×10^{-4} *9* Mult.: from α(K)exp=1.3 *7*, obtained from 69.00 keV ce line observed by 1967Jo06 with Ice=65 *20* and assigning it to K conversion.
156.97 *5*	29 *4*	166.518	(3/2)$^-$	9.554	(5/2)$^-$	[M1,E2]		1.3 *5*	α(K)=0.9 *6*; α(L)=0.33 *8*; α(M)=0.081 *23* α(N)=0.020 *6*; α(O)=0.0033 *7*; α(P)=1.0×10^{-4} *7*
157.33 [@] *5*	40 *6*	306.34	(9/2)$^+$	149.040	(13/2)$^+$	[E2]		0.838 *12*	α(K)=0.305 *4*; α(L)=0.401 *6*; α(M)=0.1030 *14* α(N)=0.02515 *35*; α(O)=0.00396 *6*; α(P)=2.89×10^{-5} *4*
158.86 *3*	87 *6*	158.81	1/2$^-$,3/2$^-$,5/2$^-$	0.0	3/2$^-$	M1+E2	0.59 *22*	1.53 *14*	α(K)=1.17 *16*; α(L)=0.279 *20*; α(M)=0.067 *6* α(N)=0.0165 *14*; α(O)=0.00283 *18*; α(P)=0.000132 *19* E_γ: Weighted average of 158.89 *4* (1976Pi06) and 158.83 *4* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(M):ce(N) exp=80 *20*:21 *2*:6.9 *14* (coin with lines of other isotope):9.7 *15*: 1.4 *2* (1967Jo06). α(K)=0.92 *24*, L1/L2=3.0 *7*, α(M)=0.11 *2*, α(N)=0.016 *3*.
166.50 [‡] *2*	195 *14*	166.518	(3/2)$^-$	0.0	3/2$^-$	M1+E2	0.53 *8*	1.37 *5*	α(K)=1.06 *5*; α(L)=0.234 *6*; α(M)=0.0559 *18* α(N)=0.0138 *4*; α(O)=0.00238 *6*; α(P)=0.000120 *7* E_γ: Other: : 166.56 *3* (1976Pi06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3):ce(M):ce(N) exp=<230 (coin with other lines):29 *3*:9.4 *15*: 5.1 *10*: 10 *2*:<24 (coin with other lines) (1967Jo06). L1/L2=3.1 *6*, L1/L3=5.7 *13*, α(M)=0.051 *11*.
192.82 [@] *4*	15 *2*	293.457	(5/2)$^-$	100.668	(9/2)$^-$	E2		0.407 *6*	α(K)=0.1862 *26*; α(L)=0.1664 *23*; α(M)=0.0425 *6* α(N)=0.01039 *15*; α(O)=0.001651 *23*; α(P)=1.773×10^{-5} *25* Mult.: from α(K)exp=0.13 *5*, obtained from 114.37 keV ce line observed by 1967Jo06 with Ice=2.0 *5* and assigning it to K conversion.
194.14 *3*	161 *11*	487.584	(7/2)$^-$	293.457	(5/2)$^-$	M1+E2	0.41 +*8*−*6*	0.926 *33*	α(K)=0.742 *34*; α(L)=0.1410 *23*; α(M)=0.0332 *7* α(N)=0.00819 *16*; α(O)=0.001443 *22*; α(P)=8.4×10^{-5} *4* Weighted average of 194.17 *3* (1976Pi06) and 194.11 *3* (1967Jo06). Mult.,δ: From ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp=93 *10* (coin with other lines):18.8 *15*:2.3 *4* (coin with other lines):1.6 *3*: 4.7 *8* (1967Jo06). α(K)=0.58 *7*, L1/L2=8.2 *16*, L1/L3=11.8 *24*.
[x]202.43 [@] *4*	6 *1*								

γ(^{191}Pt) (continued)

Eγ[†]	Iγ[&e]	Ei(level)	J_i^π	Ef	J_f^π	Mult.[b]	δ[c]	α[d]	Comments
206.39[‡] *3*	48 *20*	487.584	(7/2)$^-$	281.188	(3/2,5/2,7/2)$^-$	[M1,E2]		0.59 *27*	α(K)=0.43 *27*; α(L)=0.120 *5*; α(M)=0.0293 *26* α(N)=0.0072 *6*; α(O)=0.001217 *30*; α(P)=4.8×10^{-5} *33* Eγ: Other: 206.46 *5* (1976Pi06). Iγ: from doublet Iγ=130 *10* (1976Pi06) minus Iγ=82 *17* from 660 keV level decay. Mult.: α(K)exp=0.58 (76(ce)/130(Iγ)) for the doublet is compatible with assignment. ce(K):ce(L1):ce(2):ce(M) exp = 76 *5*: 14.0 *28*: <31: 5.3 *8* (1967Jo06).
206.39 *3*	82 *17*	660.23	(5/2)$^+$	453.83	(7/2)$^+$	[M1,E2]		0.59 *27*	α(K)=0.43 *27*; α(L)=0.120 *5*; α(M)=0.0293 *26* α(N)=0.0072 *6*; α(O)=0.001217 *30*; α(P)=4.8×10^{-5} *33* Iγ: from Iγ(206γ)/Iγ(353γ)=0.45 *9* in adopted gammas. Mult.: α(K)exp=0.56 for the doublet is compatible with assignment.
210.09 *4*	35 *3*	1074.03	(5/2)$^+$	863.93	(5/2)$^+$	M1+E2	0.35 *+16−14*	0.76 *5*	α(K)=0.61 *5*; α(L)=0.1109 *17*; α(M)=0.0259 *5* α(N)=0.00641 *13*; α(O)=0.001137 *16*; α(P)=7.0×10^{-5} *6* Eγ: Other: 210.05 *8* (1967Jo06). Mult.,δ: From ce(K):ce(L1):ce(L2):ce(M) exp=19.4 *20*:4.0 *5*:0.57 *15*:2.6 *5* (1967Jo06). α(K)=0.55 *7*, L1/L2=7.0 *20*.
223.63[@] *5*	13 *1*	253.947	(7/2,5/2)$^-$	30.399	1/2$^-$,3/2$^-$	[M1,E2]		0.47 *22*	α(K)=0.35 *22*; α(L)=0.0912 *19*; α(M)=0.0221 *8* α(N)=0.00544 *16*; α(O)=0.000923 *33*; α(P)=3.8×10^{-5} *26*
244.38 *4*	57 *4*	253.947	(7/2,5/2)$^-$	9.554	(5/2)$^-$	M1+E2	0.62 *14*	0.438 *32*	α(K)=0.347 *31*; α(L)=0.0697 *13*; α(M)=0.01648 *24* α(N)=0.00407 *6*; α(O)=0.000711 *15*; α(P)=3.9×10^{-5} *4* Eγ: Other: 244.32 *6* (1967Jo06). Mult.: from α(L)exp=0.06 *2* ((Σ ce(L) (1967Jo06))/Iγ). δ: from ce(L1):ce(L2):ce(L3) exp=2.5 *5*:0.63 *10*:0.29 *10*; ce(M) exp=0.13 *3* rejected, outlier in ce data fit. ce(K)<24 (coin with other lines) (1967Jo06). L1/L2=4.0 *10*, L1/L3=8.6 *34*.
247.50 *4*	44 *3*	277.880	(3/2,5/2)$^-$	30.399	1/2$^-$,3/2$^-$	M1+E2	2.3 *1*	0.232 *5*	α(K)=0.151 *5*; α(L)=0.0612 *9*; α(M)=0.01524 *21* α(N)=0.00374 *5*; α(O)=0.000614 *9*; α(P)=1.59×10^{-5} *5* Eγ: Other: 247.43 *8* (1967Jo06). Mult.,δ: From ce(K):ce(L1):ce(L2) exp=6.7 *8*:1.12 *15*:1.34 *20* (1967Jo06). α(K)=0.15 *2*, L1/L2=0.8 *2*.

$^{191}_{78}$Pt$_{113}$-6

γ(^{191}Pt) (continued)

Eγ[†]	Iγ[&e]	Ei(level)	J$^{π}_{i}$	Ef	J$^{π}_{f}$	Mult.[b]	δ[c]	α[d]	Comments
253.95 *3*	149 *10*	253.947	(7/2,5/2)$^{−}$	0.0	3/2$^{−}$	E2		0.1641 *23*	α(K)=0.0928 *13*; α(L)=0.0538 *8*; α(M)=0.01359 *19* α(N)=0.00333 *5*; α(O)=0.000536 *8*; α(P)=9.14×10$^{−6}$ *13* Eγ: Other: 253.90 *5* (1967Jo06). Mult.: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp=13.0 *10*:1.94 *20*:4.7 *5*:2.2 *4*: 3.5 *7*; ce(N) exp=2.1 *4* (1967Jo06) rejected, outlier.
263.09 *3*	91 *6*	293.457	(5/2)$^{−}$	30.399	1/2$^{−}$,3/2$^{−}$	E2		0.1469 *21*	α(K)=0.0849 *12*; α(L)=0.0468 *7*; α(M)=0.01181 *17* α(N)=0.00289 *4*; α(O)=0.000467 *7*; α(P)=8.40×10$^{−6}$ *12* Eγ: Other: 263.05 *15* (1967Jo06). Mult.: from ce(K):ce(L3):ce(M) exp=7.8 *10*:1.9 *3*: <2.2 (coin with other lines) (1967Jo06).
268.33 *4*	116 *9*	277.880	(3/2,5/2)$^{−}$	9.554	(5/2)$^{−}$	M1+E2	0.31 *21*	0.390 *35*	α(K)=0.319 *33*; α(L)=0.0548 *17*; α(M)=0.01273 *31* α(N)=0.00315 *8*; α(O)=0.000562 *19*; α(P)=3.6×10$^{−5}$ *4* Eγ: Other: 268.25 *10* (1967Jo06). Mult.,δ: From ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp=31 *7*:5.0 *15*:0.61 *20*:0.14 *6*: 2.5 *10* − all had coin with other lines (1967Jo06). α(K)=0.27 *6*, L1/L2=8 *4*, L1/L3=36 *19*.
271.65 *3*	148 *10*	281.188	(3/2,5/2,7/2)$^{−}$	9.554	(5/2)$^{−}$	M1+E2	1.00 *10*	0.267 *15*	α(K)=0.204 *14*; α(L)=0.0477 *9*; α(M)=0.01144 *19* α(N)=0.00282 *5*; α(O)=0.000484 *10*; α(P)=2.27×10$^{−5}$ *16* Eγ: Other: 271.62 *5* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp= <31 (coin with other lines): 4.1 *3*:1.74 *20*: <2.2 (coin with other lines): 2.3 *3* (1967Jo06). L1/L2=2.4 *3*.
277.86 *3*	424 *28*	277.880	(3/2,5/2)$^{−}$	0.0	3/2$^{−}$	M1		0.376 *5*	α(K)=0.311 *4*; α(L)=0.0507 *7*; α(M)=0.01172 *16* α(N)=0.00290 *4*; α(O)=0.000522 *7*; α(P)=3.53×10$^{−5}$ *5* Eγ: Other: 277.84 *3* (1967Jo06). Mult.: from ce(K):ce(L1):ce(L2):ce(L3):ce(M):ce(N) exp=100: 16.9 *10*: 1.5 *3*:0.12 *6*:4.1 *4*: <3.6 (coin with other lines) (1967Jo06).
280.40 *3*	173 *11*	453.83	(7/2)$^{+}$	173.433	(11/2)$^{+}$	E2		0.1207 *17*	α(K)=0.0723 *10*; α(L)=0.0366 *5*; α(M)=0.00919 *13* α(N)=0.002251 *32*; α(O)=0.000365 *5*; α(P)=7.22×10$^{−6}$ *10* Eγ: Other: 280.34 *10* (1967Jo06). Mult.: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp=11.7 *10*:1.54 *20*: 2.81 *30*:1.71 *20*: <3.6 (1967Jo06).
283.90 *3*	396 *25*	293.457	(5/2)$^{−}$	9.554	(5/2)$^{−}$	M1+E2	0.63 *+8−7*	0.287 *13*	α(K)=0.230 *12*; α(L)=0.0441 *9*; α(M)=0.01040 *19* α(N)=0.00257 *5*; α(O)=0.000451 *10*; α(P)=2.58×10$^{−5}$ *14* Eγ: Other: 283.88 *6* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp=79 *4*:11.4 *10*:1.64 *20*: 1.06 *15*: <6.5 (coin with other lines) (1967Jo06). α(K)=0.20 *2*, L1/L2=7.0 *10*, L1/L3=10.8 *18*.
293.45 *3*	167 *11*	293.457	(5/2)$^{−}$	0.0	3/2$^{−}$	M1+E2	0.9 *3*	0.23 *4*	α(K)=0.18 *4*; α(L)=0.0379 *24*; α(M)=0.0090 *5*

From ENSDF

$\gamma(^{191}$Pt) (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
									α(N)=0.00222 *12*; α(O)=0.000386 *27*; α(P)=2.0×10^{-5} *4* E_γ: Other: 293.45 *6* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(M) exp=30 *5* (coin with other lines):5.3 *10* (coin with other lines):<2.5 (coin with other lines): 2.3 *5* (coin with other lines) (1967Jo06). α(K)exp=0.18 *3*.
316.5[@] *5*	≈5	929.20		613.15	(1/2,3/2,5/2)$^-$				
332.03[@] *5*	9 *1*	613.15	(1/2,3/2,5/2)$^-$	281.188	(3/2,5/2,7/2)$^-$				
340.35 *5*	9 *1*	594.29	$^-$	253.947	(7/2,5/2)$^-$	(M1)		0.2170 *30*	α(K)=0.1791 *25*; α(L)=0.0291 *4*; α(M)=0.00672 *9* α(N)=0.001664 *23*; α(O)=0.000300 *4*; α(P)=2.028×10^{-5} *28* E_γ: Other: 340.24 *15* (1967Jo06). Mult.: from α(K)exp=0.22 *5* (from ce(K)=2.0 *4* (1967Jo06)).
[x]347.54[@] *5*	32 *3*								
353.88 *3*	183 *12*	660.23	(5/2)$^+$	306.34	(9/2)$^+$	(E2)		0.0611 *9*	α(K)=0.0407 *6*; α(L)=0.01547 *22*; α(M)=0.00384 *5* α(N)=0.000942 *13*; α(O)=0.0001552 *22*; α(P)=4.18×10^{-6} *6* E_γ: Other: 353.91 *12* (1967Jo06). Mult.: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp= 6.0 *6*:1.56 *15*:1.37 *15*:0.89 *15*:0.46 *15* (1967Jo06).
[x]359.85[@] *5*	10 *2*								The assignment of this γ to the decay of 613.1 level by 1976Pi06 is in disagreement with the level energy difference, 359.19 *5* keV.
368.66 *4*	26 *2*	535.29	(3/2,5/2)$^-$	166.518	(3/2)$^-$	M1+E2	1.3 *3*	0.099 *16*	α(K)=0.077 *14*; α(L)=0.0171 *13*; α(M)=0.00410 *27* α(N)=0.00101 *7*; α(O)=0.000174 *14*; α(P)=8.5×10^{-6} *16* E_γ: Other: 368.89 *12* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2) exp=2.1 *5*:0.33 *8*:0.13 *5* (1967Jo06). α(K)=0.081 *20*, L1/L2=2.5 *12*.
376.56[@] *4*	25 *2*	535.29	(3/2,5/2)$^-$	158.81	1/2$^-$,3/2$^-$,5/2$^-$	[M1,E2]		0.11 *6*	α(K)=0.09 *5*; α(L)=0.017 *5*; α(M)=0.0041 *10* α(N)=1.01×10^{-3} *26*; α(O)=1.8×10^{-4} *5*; α(P)=1.0×10^{-5} *6*

$\gamma(^{191}$Pt) (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
386.90 *3*	212 *14*	487.584	(7/2)$^-$	100.668	(9/2)$^-$	M1+E2	1.05 +*11*−*9*	0.098 *5*	α(K)=0.078 *5*; α(L)=0.0157 *5*; α(M)=0.00373 *11* α(N)=0.000919 *27*; α(O)=0.000160 *5*; α(P)=8.6×10^{-6} *6* E_γ: Other: 386.92 *5* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3):ce(M):ce(N) exp=24.0 *15*: 3.7 *3*:<5.9:0.60 *15*:1.61 *20*:<1.9 (1967Jo06). α(K)=0.11 *1*, L1/L2=6.2 *16*.
390.25 *3*	160 *11*	399.835	7/2$^-$	9.554	(5/2)$^-$	M1+E2	0.41 *15*	0.1354 *99*	α(K)=0.111 *9*; α(L)=0.0188 *9*; α(M)=0.00436 *19* α(N)=0.00108 *5*; α(O)=0.000193 *10*; α(P)=1.25×10^{-5} *10* E_γ: Weighted average of 390.23 *5* (1967Jo06) and 390.27 *4* (1976Pi06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3) exp=17.9 *15*:3.4 *3*:0.44 *10*:0.6 *3* (1967Jo06). α(K)exp=0.112 *12*, L1/L2=7.7 *19*.
399.84 *4*	279 *19*	399.835	7/2$^-$	0.0	3/2$^-$	E2		0.0438 *6*	α(K)=0.0304 *4*; α(L)=0.01014 *14*; α(M)=0.002499 *35* α(N)=0.000613 *9*; α(O)=0.0001019 *14*; α(P)=3.16×10^{-6} *4* E_γ: Other: 399.84 *7* (1967Jo06). Mult.: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp=7.9 *6*: <1.9 (coin with other lines):1.7 *3*:0.5 *3*: <1.5 (coin with other lines) (1967Jo06).
408.21 *6*	54 *7*	574.66	(1/2)$^-$	166.518	(3/2)$^-$	M1+E2	1.36 *23*	0.074 *8*	α(K)=0.057 *7*; α(L)=0.0124 *8*; α(M)=0.00295 *16* α(N)=0.00073 *4*; α(O)=0.000126 *8*; α(P)=6.3×10^{-6} *8* E_γ: Other: 408.20 *12* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(M) exp=4.0 *4*:0.79 *9*:0.33 *6*:0.31 *6* (1967Jo06). α(K)=0.074 *12*, L1/L2=2.4 *5*.
410.20[‡] *15*	26 *5*	863.93	(5/2)$^+$	453.83	(7/2)$^+$	M1+E2	1.2 *4*	0.078 *18*	α(K)=0.061 *16*; α(L)=0.0127 *17*; α(M)=0.0030 *4* α(N)=0.00074 *9*; α(O)=0.000129 *18*; α(P)=6.8×10^{-6} *19* Mult.,δ: from α(K)exp=0.063 *14* using ce(K):ce(L12) = 1.64 *20*: <1.5 (1967Jo06).
411.5[@] *2*	15 *3*	1074.03	(5/2)$^+$	662.27	(3/2,5/2)$^-$				
413.76 *4*	217 *14*	1074.03	(5/2)$^+$	660.23	(5/2)$^+$	M1+E2	0.78 +*19*−*17*	0.095 *10*	α(K)=0.077 *8*; α(L)=0.0141 *9*; α(M)=0.00331 *19* α(N)=0.00082 *5*; α(O)=0.000144 *9*; α(P)=8.6×10^{-6} *10* E_γ: Weighted average of 713.81 *6* (1967Jo06) and 413.73 *5* (1976Pi06). Mult.,δ: from ce(K):ce(L12):ce(L3):ce(M):ce(N) exp=19.4 *10*:<20.9: 0.29 *4*:1.7 *3*: <1.4 (1967Jo06). α(K)=0.089 *7*, α(L3)=0.0013 *2*, α(M)=0.0078 *15*.
421.44 *4*	203 *14*	451.84	(3/2)$^-$	30.399	1/2$^-$,3/2$^-$	M1(+E2)	0.55 +*18*−*17*	0.103 *10*	α(K)=0.084 *9*; α(L)=0.0145 *9*; α(M)=0.00338 *20* α(N)=0.00084 *5*; α(O)=0.000149 *10*; α(P)=9.4×10^{-6} *10* E_γ: Other: 421.44 *6* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(M) exp=16.3

γ(^{191}Pt) (continued)

Eγ[†]	Iγ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	α[d]	Comments
								15:3.05 *20*:0.35 *11*:0.46 *7* (1967Jo06). α(K)exp=0.080 *9*, L1/L2=8.7 *28*.
[x]427.33 *6*	13 *1*							Eγ: Other: 427.31 *15* (1967Jo06). ce(K):ce(L1) exp=0.95 *12*:<0.14.
[x]432.42[@] *10*	9 *1*							
442.27 *5*	35 *3*	451.84	(3/2)$^-$	9.554	(5/2)$^-$	M1	0.1077 *15*	α(K)=0.0891 *12*; α(L)=0.01438 *20*; α(M)=0.00332 *5* α(N)=0.000820 *11*; α(O)=0.0001477 *21*; α(P)=1.003×10^{-5} *14* Eγ: Other: 442.18 *10* (1967Jo06). Mult.,δ: from ce(K):ce(L12):ce(M) exp=3.4 *3*:0.51 *8*:0.37 *6* (1967Jo06). α(K)=0.097 *12*.
446.58 *6*	21 *2*	613.15	(1/2,3/2,5/2)$^-$	166.518	(3/2)$^-$	(M1)	0.1050 *15*	α(K)=0.0868 *12*; α(L)=0.01401 *20*; α(M)=0.00323 *5* α(N)=0.000799 *11*; α(O)=0.0001440 *20*; α(P)=9.77×10^{-6} *14* Eγ: Other: 446.55 *15* (1967Jo06). Mult.: from ce(K):ce(L12) exp=1.73 *20*:0.30 *5*, and α(K)exp=0.08 *3* (1967Jo06).
[x]450.69 *11*	9 *2*							Eγ: Other: 450.26 *15* (1967Jo06). ce(K):ce(L12) exp=1.92 *25*:0.22 *4* (1967Jo06).
451.21[f] *13*	79[f] *6*	1113.49	(5/2)$^+$	662.27	(3/2,5/2)$^-$	[E1]	0.01031 *14*	α(K)=0.00858 *12*; α(L)=0.001334 *19*; α(M)=0.000306 *4* α(N)=7.52×10^{-5} *11*; α(O)=1.328×10^{-5} *19*; α(P)=8.12×10^{-7} *11* Eγ: Quoted value is the level energy difference, which disagrees with doublet energy (451.85 *5* keV – 1976Pi06), and was not included in the level energies fit. Placement from 1976Pi06 γ-γ coincidence measurement. Other: 451.87 *10* (1967Jo06). Iγ: For doublet with 451.85γ, placed from 451 keV level. Mult.: same as for the γ from 451.83 level.
451.85[f] *5*	79[f] *6*	451.84	(3/2)$^-$	0.0	3/2$^-$			α(K)=0.05 *3*; α(L)=0.010 *4*; α(M)=0.0024 *8*; α(N+..)=0.00070 *23* α(N)=0.00059 *19*; α(O)=0.00010 *4*; α(P)=6.E−6 *4* Eγ: Other: 451.87 *10* (1967Jo06). Iγ: For doublet with 451.21γ, placed from 1113.4 keV level. Mult.: α(K)exp<0.076, α(L1)exp=0.021 *2*, α(L2)exp<0.004, α(L3)exp=0.0053 *8* (deduced value using ce(K):ce(L1):ce(L2):ce(L3)= <5.9:1.63 *15*:<0.3: 0.42 *6* – (1967Jo06) and Iγ) for the doublet, and theory: E2 (0.023,0.003,0.0025,0.0011) and M1 (0.084,0.012,0.0011,0,0001), would require multipolarity ≥3 for at least one of the transitions forming the doublet.
460.94[@] *12*	14 *2*	1074.03	(5/2)$^+$	613.15	(1/2,3/2,5/2)$^-$	[E1]	0.00984 *14*	α(K)=0.00819 *11*; α(L)=0.001271 *18*; α(M)=0.000291 *4* α(N)=7.16×10^{-5} *10*; α(O)=1.266×10^{-5} *18*; α(P)=7.76×10^{-7} *11*
467.04 *8*	44 *6*	625.85	$^-$	158.81	1/2$^-$,3/2$^-$,5/2$^-$	(M1)	0.0933 *13*	α(K)=0.0771 *11*; α(L)=0.01243 *17*; α(M)=0.00287 *4*

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γ(^{191}Pt) (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
									α(N)=0.000709 *10*; α(O)=0.0001277 *18*; α(P)=8.68×10^{-6} *12* E_γ: Other: 467.06 *8* (1967Jo06). Mult.: from α(K)exp=0.08 *3*, α(L12)exp=0.012 *3* (deduced value using ce data ce(K):ce(L12) = 3.5 *5*:0.53 *8* of 1967Jo06 and Iγ).
478.04 *4*	232 *16*	487.584	(7/2)$^-$	9.554	(5/2)$^-$	M1+E2	0.90 *11*	0.061 *4*	α(K)=0.0491 *34*; α(L)=0.0090 *4*; α(M)=0.00211 *9* α(N)=0.000520 *22*; α(O)=9.2×10^{-5} *4*; α(P)=5.5×10^{-6} *4* E_γ: Other: 477.98 *7* (1967Jo06). Mult.,δ: from ce(K):ce(L1):ce(L2):ce(L3):ce(M):ce(N) exp= <20.9:2.62 *20*:0.43 *6*: 0.17 *2*:0.87 *10*: <0.21 (1967Jo06). L1/L2=6.1 *10*, L1/L3=15.4 *22*. I_γ: Other: 347 *35* from ce data fit.
487.61 *4*	163 *11*	487.584	(7/2)$^-$	0.0	3/2$^-$	E2		0.0263 *4*	α(K)=0.01932 *27*; α(L)=0.00534 *7*; α(M)=0.001298 *18* α(N)=0.000319 *4*; α(O)=5.38×10^{-5} *8*; α(P)=2.032×10^{-6} *28* E_γ: Other: 487.58 *7* (1967Jo06). Mult.: from ce(K):ce(L1):ce(L2):ce(L3):ce(M) exp= 3.27 *20*:0.62 *10*:0.31 *15*:0.18 *2*:0.18 *3* (1967Jo06).
495.74 *5*	34 *3*	662.27	(3/2,5/2)$^-$	166.518	(3/2)$^-$	M1		0.0797 *11*	α(K)=0.0659 *9*; α(L)=0.01061 *15*; α(M)=0.002445 *34* α(N)=0.000605 *8*; α(O)=0.0001090 *15*; α(P)=7.41×10^{-6} *10* E_γ: Other: 495.72 *12* (1967Jo06). Mult.: from α(K)exp=0.08 *3*, α(L12)exp=0.0106 *22*, α(M)exp=0.0046 *23* − (deduced using ce data ce(K):ce(L12):ce(M)=2.7 *3*: 0.36 *4*: 0.16 *3* of 1967Jo06 and Iγ).
499.62[@] *12*	27 *3*	1074.03	(5/2)$^+$	574.66	(1/2)$^-$	[M2]		0.2348 *33*	α(K)=0.1865 *26*; α(L)=0.0370 *5*; α(M)=0.00878 *12* α(N)=0.002180 *31*; α(O)=0.000390 *5*; α(P)=2.504×10^{-5} *35* E_γ: Uncertainty increased from 1976Pi06 value (499.62 *5*); outlier in level energy fit, original uncertainty appeared to be incompatible with the complexity of the energy spectrum in the region. A closer Eγ=502.09 *15* in 1967Jo06.
525.79 *5*	51 *4*	535.29	(3/2,5/2)$^-$	9.554	(5/2)$^-$	M1		0.0683 *10*	α(K)=0.0565 *8*; α(L)=0.00908 *13*; α(M)=0.002092 *29* α(N)=0.000518 *7*; α(O)=9.32×10^{-5} *13*; α(P)=6.34×10^{-6} *9* E_γ: Other: 525.75 *8* (1967Jo06). Mult.: from α(K)exp=0.067 *20* and α(L12)exp=0.012 *3* (deduced from ce data ce(K):ce(L12):ce(M) exp = 3.4 *3*:0.60 *7*: 0.13 *2* (1967Jo06)).
532.63[@] *6*	23 *3*	986.46		453.83	(7/2)$^+$				
^{x}535.25 *12*	8 *2*								E_γ: Other: 535.07 *15* (1967Jo06). ce(K):ce(L12) exp=0.39 *4*:0.16 *3* (1967Jo06).

From ENSDF

$^{191}_{78}$Pt$_{113}$-11

γ(^{191}Pt) (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
538.7 *3*	48 *8*	1074.03	(5/2)$^+$	535.29	(3/2,5/2)$^-$	E1		0.00706 *10*	α(K)=0.00589 *8*; α(L)=0.000903 *13*; α(M)=0.0002068 *29* α(N)=5.09×10^{-5} *7*; α(O)=9.01×10^{-6} *13*; α(P)=5.64×10^{-7} *8* E_γ: Other: 538.65 *20* (1967Jo06). Mult.: from α(K)exp=0.0050 *13* using ce(K)=0.24 *4* (1967Jo06).
544.35[@] *10*	9 *2*	574.66	(1/2)$^-$	30.399	1/2$^-$,3/2$^-$				
557.51 *8*	13 *2*	863.93	(5/2)$^+$	306.34	(9/2)$^+$	E2		0.01908 *27*	α(K)=0.01440 *20*; α(L)=0.00357 *5*; α(M)=0.000861 *12* α(N)=0.0002118 *30*; α(O)=3.61×10^{-5} *5*; α(P)=1.521×10^{-6} *21* E_γ: Other: 557.16 *20* (1967Jo06). Mult.: from α(K)exp=0.011 *3* using ce(K)=0.14 *2* (1967Jo06).
561.72 *15*	4 *1*	1174.65	$^-$	613.15	(1/2,3/2,5/2)$^-$	(M1)		0.0575 *8*	α(K)=0.0476 *7*; α(L)=0.00763 *11*; α(M)=0.001757 *25* α(N)=0.000435 *6*; α(O)=7.83×10^{-5} *11*; α(P)=5.33×10^{-6} *7* E_γ: Weighted average of 561.90 *17* (1967Jo06) and 561.59 *14* (1976Pi06). Mult.: form α(K)exp=0.08 *3* from ce(K)=0.32 *4* (1967Jo06).
565.13 *5*	29 *3*	574.66	(1/2)$^-$	9.554	(5/2)$^-$	E2		0.01848 *26*	α(K)=0.01398 *20*; α(L)=0.00343 *5*; α(M)=0.000827 *12* α(N)=0.0002034 *28*; α(O)=3.47×10^{-5} *5*; α(P)=1.478×10^{-6} *21* E_γ: Other: 565.06 *7* (1967Jo06). Mult.: from ce(K):ce(L1):ce(L2):ce(M) exp=0.83 *9*:0.18 *3*:0.11 *3*:0.12 *3*.
^{x}565.91[‡] *18*									ce(K)=0.18 *3* (1967Jo06).
^{x}568.29 *10*	10 *2*								E_γ: Other: 568.00 *17* (1967Jo06). ce(K):ce(L12) exp= 0.30 *3*: 0.06 *1* (1967Jo06).
574.54[@] *7*	10 *2*	574.66	(1/2)$^-$	0.0	3/2$^-$	M1+E2	1.8 *5*	0.026 *5*	α(K)=0.021 *4*; α(L)=0.0042 *5*; α(M)=0.00099 *12* α(N)=0.000245 *30*; α(O)=4.3×10^{-5} *6*; α(P)=2.3×10^{-6} *5* Mult.,δ: from α(K)exp=0.021 *6*, obtained from 496.1 keV ce line observed by 1967Jo06 with Ice=0.21 *4* and assigning it to K conversion.
^{x}577.26[‡] *20*									ce(K)=0.32 *3* (1967Jo06).
580.5[@] *3*	≈5	1174.65	$^-$	594.29	$^-$				
586.44 *4*	1000	1074.03	(5/2)$^+$	487.584	(7/2)$^-$	E1		0.00593 *8*	α(K)=0.00495 *7*; α(L)=0.000754 *11*; α(M)=0.0001724 *24* α(N)=4.24×10^{-5} *6*; α(O)=7.53×10^{-6} *11*; α(P)=4.76×10^{-7} *7* E_γ: Other: 586.46 *8* (1967Jo06). Mult.: from ce(K):ce(L12):ce(L3):ce(M) exp=5.2 *5*:0.77 *7*:0.064 *20*: <0.4 (1967Jo06); ce(N)=0.19 *4* discarded, outlier in ce data fit.
^{x}591.73[‡] *20*									ce(K):ce(L12) exp= 0.44 *9*: 0.10 *3* (1967Jo06).

From ENSDF

γ(^{191}Pt) (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
^{x}595.90 *10*	20 *2*					E2		0.01635 *23*	α(K)=0.01249 *17*; α(L)=0.00295 *4*; α(M)=0.000708 *10* α(N)=0.0001743 *24*; α(O)=2.98×10^{-5} *4*; α(P)=1.321×10^{-6} *19* E_γ: Other: 595.57 *20* (1967Jo06). Mult.: from ce(K):ce(L12):ce(L3):ce(M) exp=0.67 *7*:0.16 *4*: <0.4:0.08 *2* (1967Jo06).
^{x}596.60[‡] *20*									ce(K) exp= 0.35 *10* (1967Jo06).
^{x}608.36[‡#] *20*									ce(K)=0.18 *2* (1967Jo06).
^{x}616.26 *10*	22 *3*					E2+M1	2.2 *3*	0.0203 *14*	α(K)=0.0160 *12*; α(L)=0.00325 *16*; α(M)=0.000769 *35* α(N)=0.000190 *9*; α(O)=3.30×10^{-5} *16*; α(P)=1.74×10^{-6} *14* E_γ: Other: 616.35 *20* (1967Jo06). Mult.,δ: from α(K)exp=0.016 *3*. ce(K):ce(L12) exp= 0.35 *5*:<0.23 (coin with other lines) (1967Jo06).
620.31 *8*	64 *6*	1074.03	(5/2)$^+$	453.83	(7/2)$^+$	M1+E2	0.93 *24*	0.031 *4*	α(K)=0.025 *4*; α(L)=0.0044 *5*; α(M)=0.00102 *10* α(N)=0.000252 *26*; α(O)=4.5×10^{-5} *5*; α(P)=2.8×10^{-6} *4* E_γ: Other: 620.15 *12* (1967Jo06). Mult.,δ: from α(K)exp=0.025 *3* (ce(K):ce(L12):ce(L3):ce(M) exp=1.57 *15*:0.36 *4*:0.12 *3* (1967Jo06)).
625.85[g] *12*	53 *8*	1113.49	(5/2)$^+$	487.584	(7/2)$^-$				E_γ: Other: 625.93 *20* (1967Jo06). E2+M1, δ=0.73 *23*, from α(K)exp=0.018 *6* (1967Jo06). Inconsistent with 1976Pi06 placement on level scheme from γ-γ coinc measurement.
627.74 *15*	12 *3*	1289.97		662.27	(3/2,5/2)$^-$	(M1)		0.0431 *6*	α(K)=0.0357 *5*; α(L)=0.00570 *8*; α(M)=0.001312 *18* α(N)=0.000324 *5*; α(O)=5.85×10^{-5} *8*; α(P)=3.99×10^{-6} *6* E_γ: Other: 627.61 *20* (1967Jo06). Mult.: from α(K)exp=0.057 *22* and α(L12)exp=0.010 *5* from ce(K):ce(L12)=0.68 *7*: 0.12 *3* (1967Jo06).
^{x}634.59[‡#] *25*									ce(K)=0.084 *15* (1967Jo06).
647.97[@] *15*	6 *2*	929.20		281.188	(3/2,5/2,7/2)$^-$				
659.69 *12*	17 *2*	1113.49	(5/2)$^+$	453.83	(7/2)$^+$	M1+E2	1.2 *+4−3*	0.023 *4*	α(K)=0.0188 *30*; α(L)=0.0034 *4*; α(M)=0.00079 *9* α(N)=0.000194 *22*; α(O)=3.4×10^{-5} *4*; α(P)=2.07×10^{-6} *35* E_γ: Other: 659.63 *25* (1967Jo06). Mult.,δ: from α(K)exp=0.018 *7* and α(L12)exp=0.0034 *11* using ce(K):ce(L12) exp =0.31 *5*:0.057 *10* (1967Jo06) α(K)=0.018 *3*, α(L12)=0.0034 *7*.
^{x}669.59 *15*	4 *1*					(M1)		0.0364 *5*	α(K)=0.0302 *4*; α(L)=0.00481 *7*; α(M)=0.001108 *16* α(N)=0.000274 *4*; α(O)=4.94×10^{-5} *7*; α(P)=3.37×10^{-6} *5*

$\gamma(^{191}Pt)$ (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[b]	α[d]	Comments
								E_γ: Other: 669.76 25 (1967Jo06). Mult.: From α(K)exp=0.04 2. ce(K):ce(L12) exp= 0.16 4:<0.31 (coin with other lines) (1967Jo06).
674.22 6	402 29	1074.03	(5/2)$^+$	399.835	7/2$^-$	E1	0.00448 6	α(K)=0.00374 5; α(L)=0.000564 8; α(M)=0.0001289 18 α(N)=3.17×10^{-5} 4; α(O)=5.65×10^{-6} 8; α(P)=3.62×10^{-7} 5 E_γ: Other: 674.21 8 (1967Jo06). Mult.: from ce(K):ce(L12):ce(L3):ce(M) exp =1.74 15:0.22 3:<0.06:0.09 2 (1967Jo06).
^{x}680.74 15	4 1							E_γ: Other: 680.60 25 (1967Jo06).
701.94 8	32 3	732.37	1/2$^-$,3/2$^-$	30.399	1/2$^-$,3/2$^-$	(M1)	0.0323 5	α(K)=0.0267 4; α(L)=0.00426 6; α(M)=0.000980 14 α(N)=0.0002423 34; α(O)=4.37×10^{-5} 6; α(P)=2.98×10^{-6} 4 E_γ: Weighted average of 701.93 10 (1967Jo06) and 701.96 12 (1976Pi06). Mult.: from α(K)exp=0.030 10, α(L12)exp=0.0059 21 using ce(K):ce(L12) = 0.97 10:0.19 4 (1967Jo06).
732.48 16	6 1	732.37	1/2$^-$,3/2$^-$	0.0	3/2$^-$	(M1)	0.0289 4	α(K)=0.02398 34; α(L)=0.00381 5; α(M)=0.000877 12 α(N)=0.0002169 30; α(O)=3.91×10^{-5} 5; α(P)=2.67×10^{-6} 4 E_γ: Other: 732.40 25 (1967Jo06). Mult.: from α(K)exp=0.023 6 from ce(K):ce(L12) = 0.14 2:<0.10 (1967Jo06).
^{x}734.37 13	8 1							E_γ: Weighted average of 734.51 16 (1976Pi06) and 134.25 15 (1967Jo06). α(K)exp < 0.04. ce(K):ce(L12) exp=<0.31 (coin with other lines):<0.12 (mix of lines of other isotope) (1967Jo06).
^{x}751.62[‡#] 25								ce(K)=0.114 25 (1967Jo06).
767.75 16	12 2	1074.03	(5/2)$^+$	306.34	(9/2)$^+$			
780.51[@] 16	15 2	1074.03	(5/2)$^+$	293.457	(5/2)$^-$			
792.78 15	42 4	1074.03	(5/2)$^+$	281.188	(3/2,5/2,7/2)$^-$	E1	0.00327 5	α(K)=0.00274 4; α(L)=0.000408 6; α(M)=9.31×10^{-5} 13 α(N)=2.292×10^{-5} 32; α(O)=4.09×10^{-6} 6; α(P)=2.67×10^{-7} 4 E_γ: Other: 792.30 25 (1967Jo06). Mult.: from ce(K):ce(L12) exp =0.18 3:0.046 12 (1967Jo06).
820.07[@] 18	21 2	1074.03	(5/2)$^+$	253.947	(7/2,5/2)$^-$			
^{x}829.88[@] 20	4 1							
835.53 16	40 2	1113.49	(5/2)$^+$	277.880	(3/2,5/2)$^-$	E1	0.00296 4	α(K)=0.002479 35; α(L)=0.000368 5; α(M)=8.39×10^{-5} 12 α(N)=2.068×10^{-5} 29; α(O)=3.69×10^{-6} 5; α(P)=2.420×10^{-7} 34 E_γ: Other: 835.69 25 (1967Jo06). Mult.: from α(K)exp=0.0035 13 from ce(K)=0.14 3 (1967Jo06).
^{x}839.64[‡#] 35								ce(K)=0.054 20 (1967Jo06).
^{x}854.28[@] 20	4 1							

$^{191}_{78}Pt_{113}$-14

γ(^{191}Pt) (continued)

Eγ[†]	Iγ[&e]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[b]	α[d]	Comments
859.57[@] *19*	18 *2*	1113.49	(5/2)+	253.947	(7/2,5/2)−			
x870.54 *22*	6 *1*							Eγ: Other: 870.20 *30* (1967Jo06). ce(K)=0.097 *15* (1967Jo06).
x878.56[‡#] *25*								ce(K):ce(L12):ce(M) exp=0.35 *7* (coin with lines of other isotope):<0.11 (mix of lines from other isotopes):<0.04 (mix with lines from other isotopes) (1967Jo06).
880.77[@] *21*	11 *1*	1174.65	−	293.457	(5/2)−			
896.58[@] *23*	8 *1*	1174.65	−	277.880	(3/2,5/2)−			
920.81 *18*	5 *1*	1174.65	−	253.947	(7/2,5/2)−	(M1)	0.01613 *23*	α(K)=0.01339 *19*; α(L)=0.002112 *30*; α(M)=0.000486 *7* α(N)=0.0001201 *17*; α(O)=2.166×10^{-5} *30*; α(P)=1.485×10^{-6} *21* Eγ: Weighted average of 920.96 *25* (1967Jo06) and 920.66 *25* (1976Pi06). Mult.: from α(K)exp=0.013 *6* from ce(K)=0.65 *15* (coin with other lines) (1967Jo06).
x924.04[‡#] *30*								ce(K):ce(L12) exp=0.16 *2*:0.020 *7*.
x929.16[‡#] *30*								ce(K):ce(L12) exp=0.084 *20*:0.030 *10*.
x971.32[‡#] *35*								ce(K):ce(L12) exp=0.114 *20*:<0.1 (coin with lines of other isotopes) (1967Jo06).
x981.71[‡#] *35*								
x985.36[‡#] *35*								
x1006.3[@] *3*	4 *1*							
1023.0 *3*	6 *1*	1300.9		277.880	(3/2,5/2)−	(M1)	0.01236 *17*	α(K)=0.01026 *14*; α(L)=0.001613 *23*; α(M)=0.000371 *5* α(N)=9.17×10^{-5} *13*; α(O)=1.654×10^{-5} *23*; α(P)=1.136×10^{-6} *16* Eγ: Other: 1023.43 *35* (1967Jo06). Mult.: from α(K)exp=0.017 *7* using ce(K)=0.104 *20* (1967Jo06).
x1028.0[@] *3*	7 *1*							
1035.80[‡] *35*	5 *1*	1289.97		253.947	(7/2,5/2)−			
1064.7[@] *3*	9 *1*	1074.03	(5/2)+	9.554	(5/2)−			
1074.2[@] *3*	10 *1*	1074.03	(5/2)+	0.0	3/2−			
x1086.9[@] *4*	4 *1*							
x1096.8[@] *3*	7 *1*							
x1101.9[‡] *4*	8 *1*					(M1)	0.01025 *14*	α(K)=0.00851 *12*; α(L)=0.001335 *19*; α(M)=0.000307 *4* α(N)=7.59×10^{-5} *11*; α(O)=1.369×10^{-5} *19*; α(P)=9.41×10^{-7} *13*; α(IPF)=3.00×10^{-7} *7* Mult.: from α(K)exp=0.014 *5*. ce(K)=0.108 *20* (1967Jo06).
1113.6[@] *3*	15 *2*	1113.49	(5/2)+	0.0	3/2−			

$^{191}_{78}$Pt$_{113}$-15

γ(^{191}Pt) (continued)

E_γ[†]	I_γ[&e]	E_i(level)	J_i^π	E_f	J_f^π
[x]1161.2[@] *3*	11 *2*				
1164.9[@] *3*	12 *2*	1174.65	$^-$	9.554	(5/2)$^-$
1174.0[g] *4*	8 *1*	1174.65	$^-$	0.0	3/2$^-$
1199.3[@] *3*	9 *1*	1453.3		253.947	(7/2,5/2)$^-$
[x]1259.6[@] *3*	17 *2*				
[x]1302.3[@] *4*	9 *2*				

[†] From 1976Pi06, unless otherwise specified; energies from 1967Jo06 are compatible with 1976Pi06 values, and were adopted when more precise.

[‡] From 1967Jo06.

[#] Not observed by 1976Pi06.

[@] Not observed by 1967Jo06.

[&] From 1976Pi06, unless otherwise specified. Iγ from 1976Pi06 and those deduced from ce data of 1967Jo06 are discrepant below 130 keV sometimes. The intensity balance at the 149 keV (J^π=13/2$^+$) level using electron intensities of 1967Jo06 for 24.4γ and 48.4γ shows no ε feeding to this level, supporting the correctness of Ice low-energy transition measurements. For energies above 130 keV, the Iγ from 1976Pi06 agrees with those deduced from the ce data of 1967Jo06.

[a] Deduced value using Ice data in 1967Jo06.

[b] Multipolarities are from shell and subshell ratios whenever possible; when this procedure did not have sufficient precision, conversion coefficients were calculated by evaluator using Iγ from 1976Pi06 and Ice from 1967Jo06.

[c] Deduced using the ce data of 1967Jo06. α=ce/Iγ and subshell ratios were used for BriccMixing code – as listed in the comments.

[d] Additional information 1.

[e] For absolute intensity per 100 decays, multiply by ≈0.014.

[f] Multiply placed with undivided intensity.

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

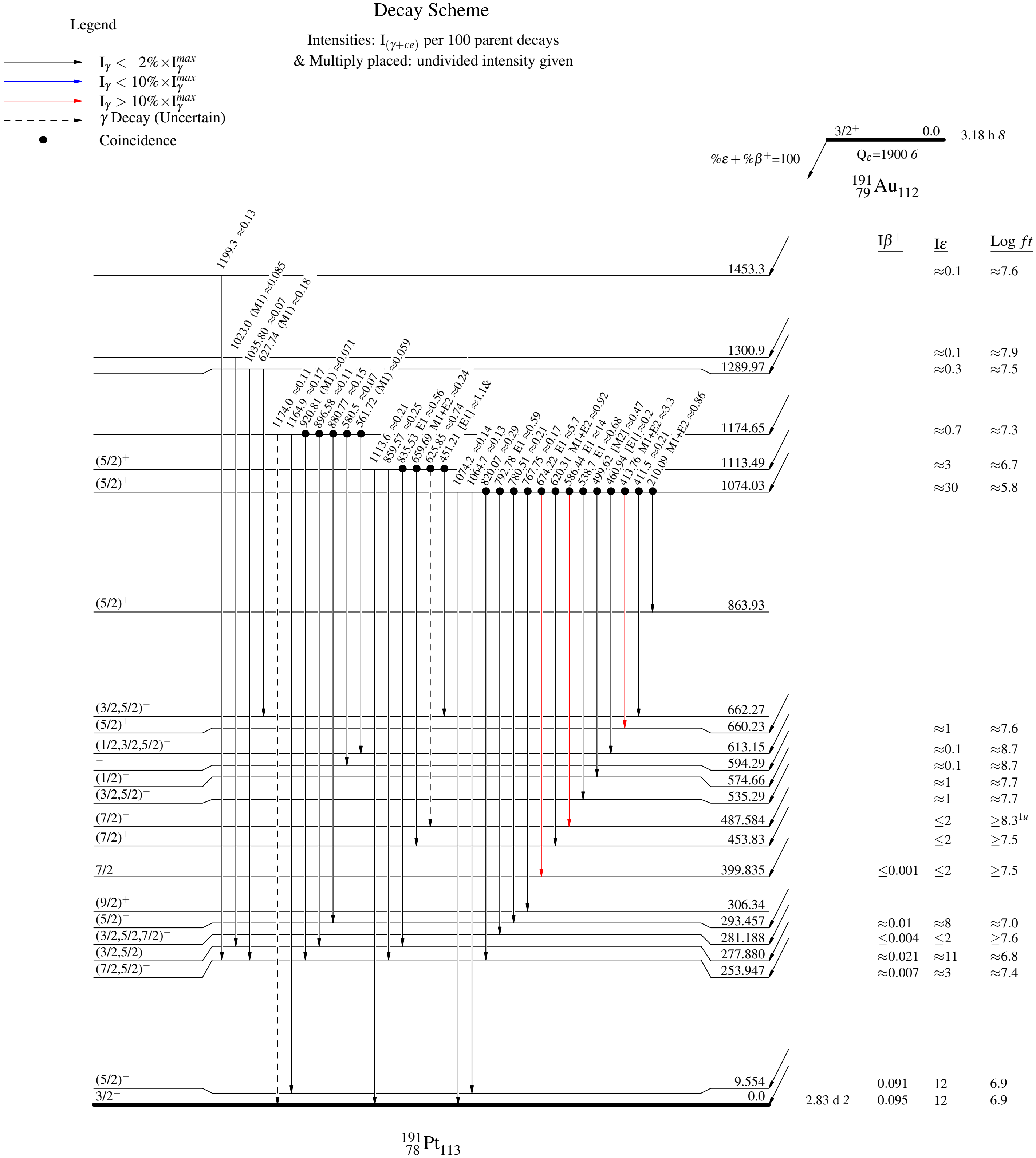
[x] γ ray not placed in level scheme.

$^{191}_{78}$Pt$_{113}$-16

^{191}Au ε decay (3.18 h) 1976Pi06,1967Jo06

Decay Scheme

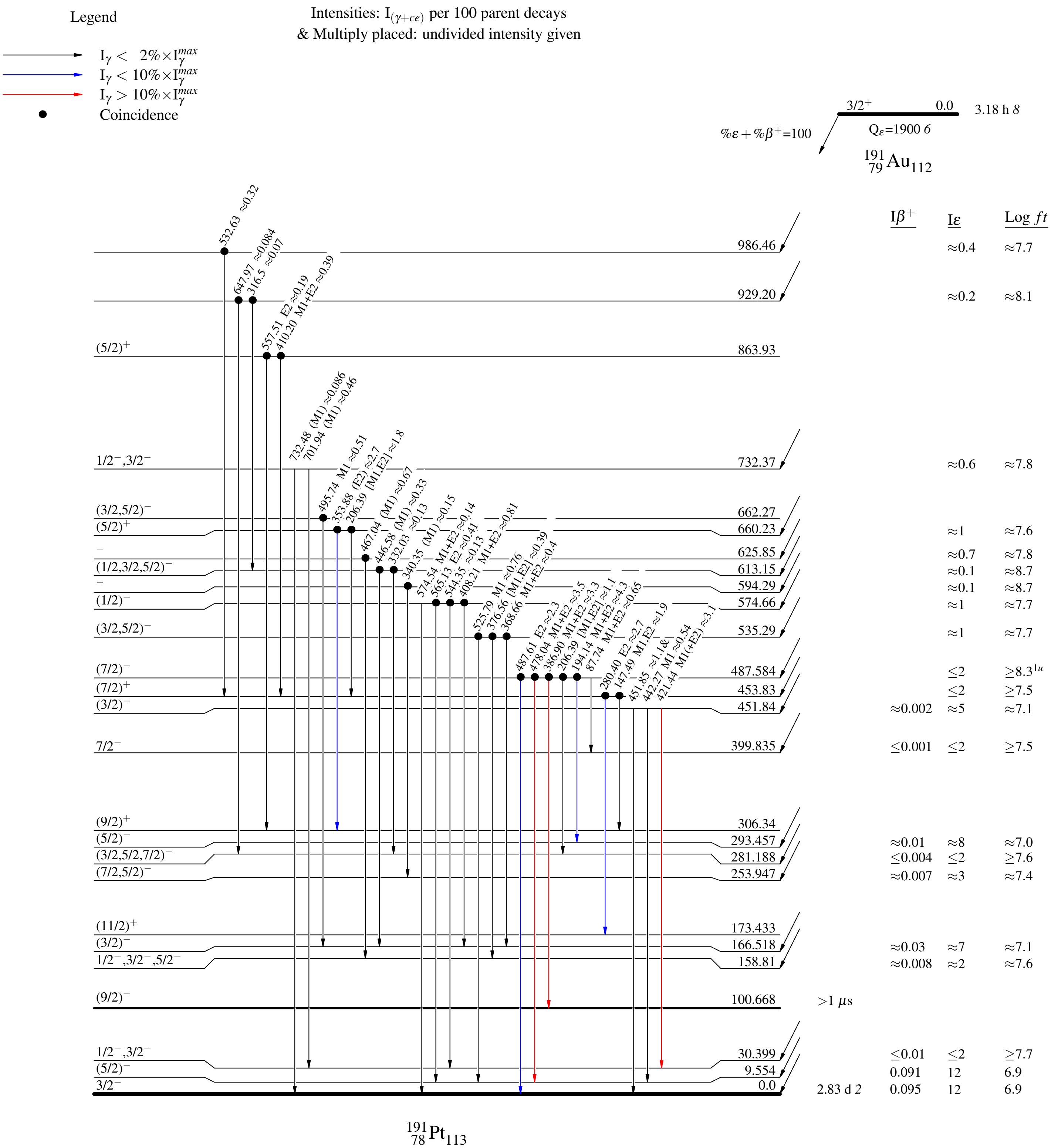
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{191}Au ε decay (3.18 h) 1976Pi06,1967Jo06

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{191}Au ε decay (3.18 h) 1976Pi06,1967Jo06

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given