^{188}Au ε decay (8.84 min) 1978CoYZ,1972Fi12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Juutinen, D. J. Hartley	NDS 150, 1 (2018)	1-Feb-2018

Parent: ^{188}Au: E=0.0; $J^{\pi}=1^{-}$; $T_{1/2}$=8.84 min *6*; Q(ε)=5450 *6*; %ε+%β^{+} decay=100.0

1978CoYZ: ^{188}Tl parent nuclei produced using ^{181}Ta(^{16}O,9n) and ^{180}W(^{14}N,6n) reactions at beam energies of 143-145 MeV and 184-188 MeV, respectively. The residues were mass separated using the UNISOR on-line mass separator at ORNL and implanted on an aluminium mylar tape. The ^{188}Au decay was studied by collecting activities for six minutes and then multiscalled to aquire six one minute spectra. γ-time and γ-γ-t events were detected using two Ge(Li) detectors. Measured: Eγ, Iγ, γ-γ coin. Deduced $T_{1/2}$, level scheme.

1972Fi12,1972HuZL,1970Fi16: ^{188}Hg parent nuclei were produced using spallation reactions in bombardment of a natural lead target with 600 MeV proton beams. The residues were mass separated on-line at the ISOLDE facility (CERN) and collected on Al foil, which was manually removed from the vacuum chamber of the separator and transfered by a pneumatic transport system to the counting station. Measured γ singles , γ-γ coin, ce singles, ce-γ coin using several Ge(Li) detectors and a 3-mm thick Si(Li) detector. A double-lens spectrometer and a fast plastic scintillator detector were used for short (ps) lifetime measurement. Deduced $T_{1/2}$, level scheme, ICC, Mult.

Others: 1971Hu02, 1970Jo02, 1969Na10, 1984DaZJ. 1975Ho03 and 1970Du09 reported measurements of β strength functions using total absorption γ-ray spectrometer.

The decay scheme is from 1978CoYZ, but the placement of several γ rays was made by the evaluators. It is consistent with that of 1972Fi12 and 1972HuZL. The authors of 1978CoYZ, 1972Fi12, 1972HuZL, and 1970Fi16 reported precise γ-ray intensities, but these are often discrepant within the quoted uncertainties. A large number of γ rays were not placed in the decay scheme and there is a large number of transitions with significant E0 components, whose ICC are unknown. In addition, the decay scheme is incomplete (pandemonium) and the ground-state (parent) to ground-state (daughter) decay in unknown. Thus, the β- feeding intensities and corresponding LOGFT values were not determined.

^{188}Pt Levels

E(level)†	J^{π}‡	$T_{1/2}$	Comments
0.0	0^{+}		
265.61 *5*	2^{+}	72 ps *13*	$T_{1/2}$: From β-266γ(t) in 1972Fi12.
605.69 *6*	2^{+}		
670.96 *6*	4^{+}		
798.75 *8*	0^{+}		
936.41 *6*	3^{+}		
1085.38 *8*	4^{+}		
1115.22 *5*	2^{+}		
1214.69 *9*	$(2)^{+}$		
1312.73 *6*	2^{+}		
1349.99 *6*	3^{-}		
1528.04 *13*	2^{+}		
1625.71 *8*	1^{+}		
1674.53 *22*	$(0^{+},1,2)$		
1685.6 *4*	$(0^{+},1,2)$		
1776.08 *7*	(1^{-})		
1810.57 *9*	$(2)^{+}$		
1954.26 *14*	$(1^{+},2)$		
2171.4 *4*	$(0^{+},1,2)$		
2210.2? *3*			
2295.61 *12*	$(1,2^{+})$		
2446.89 *22*	$(1,2^{+})$		
2468.4? *5*	$(1,2^{+})$		
2497.50 *13*			
2524.65? *19*			

Continued on next page (footnotes at end of table)

^{188}Au ε decay (8.84 min) 1978CoYZ,1972Fi12 (continued)

^{188}Pt Levels (continued)

E(level)†	J^{π}‡
2588.6? *3*	
2798.1? *5*	
2909.6? *3*	(2^{+})
3046.73 *14*	
3232.50 *17*	
3260.66 *18*	

† From least-squares fit to Eγ′s.
‡ From Adopted Levels.

$\gamma(^{188}Pt)$

Iγ normalization: Given that the decay scheme is incomplete (see the general comment above) and that the gs to gs decay branch is not known, no reliable normalization is possible.

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	α [&]	Comments
^{x}87.26 *19*	0.52 *12*							
^{x}132.40 *14*	0.51 *7*							
^{x}186.62 *18*	0.37 *8*							
192.89 *19*	0.17 *4*	798.75	0^+	605.69	2^+	[E2]	0.407	α(K)=0.186 *3*; α(L)=0.1662 *25*; α(M)=0.0425 *7* α(N)=0.01038 *16*; α(O)=0.001649 *24*; α(P)=1.77×10^{-5} *3*
198.1 *3*	0.21 *7*	1312.73	2^+	1115.22	2^+	[E2+M1]	0.959	α(K)=0.790 *12*; α(L)=0.1300 *19*; α(M)=0.0300 *5* α(N)=0.00743 *11*; α(O)=0.001337 *20*; α(P)=9.02×10^{-5} *14*
^{x}221.9[#] *5*	0.04[#] *1*							
234.8 *3*	0.24 *7*	1349.99	3^-	1115.22	2^+	[E1]	0.0471	α(K)=0.0388 *6*; α(L)=0.00640 *10*; α(M)=0.001476 *22* α(N)=0.000361 *6*; α(O)=6.28×10^{-5} *9*; α(P)=3.45×10^{-6} *5*
^{x}237.4[#] *5*	0.20[#] *2*							
^{x}238.8[#] *5*	0.13[#] *2*							
^{x}245.2[#] *5*	0.03[#] *1*							
^{x}253.5[#] *5*	0.13[#] *2*							
265.63 *6*	100 *3*	265.61	2^+	0.0	0^+	E2	0.1425	α(K)=0.0829 *12*; α(L)=0.0451 *7*; α(M)=0.01137 *16* α(N)=0.00278 *4*; α(O)=0.000450 *7*; α(P)=8.21×10^{-6} *12* E_γ: from ce data (1970Jo02), 266.02 *2* (1978CoYZ), 265.6 *5* (1972Fi12). Mult.: from K/L1=7.4 *14*, L1/L2=0.44 *9*, L1/L3=0.77 *17* (1970Jo02), K/L3=5.8 *7* and α(L3)exp=0.0143 *7* (1972Fi12); K/L=2.4, α(L)exp=0.032 (1971Hu02).
^{x}295.53 *7*	1.00 *8*							
313.0[‡] *5*	0.16 *2*	1625.71	1^+	1312.73	2^+	[M1]	0.272	α(K)=0.225 *4*; α(L)=0.0366 *6*; α(M)=0.00845 *13* α(N)=0.00209 *3*; α(O)=0.000376 *6*; α(P)=2.55×10^{-5} *4*
316.53 *9*	0.95 *9*	1115.22	2^+	798.75	0^+	[E2]	0.0841	α(K)=0.0535 *8*; α(L)=0.0232 *4*; α(M)=0.00579 *9* α(N)=0.001418 *20*; α(O)=0.000232 *4*; α(P)=5.42×10^{-6} *8*
^{x}320.2[#] *5*	0.13[#] *2*					M1+E2	0.256	α(K)=0.211 *3*; α(L)=0.0344 *5*; α(M)=0.00794 *12* α(N)=0.00197 *3*; α(O)=0.000354 *6*; α(P)=2.39×10^{-5} *4* Mult.: from α(K)exp=0.15 *5* (1972HuZL).
330.76 *5*	4.98 *19*	936.41	3^+	605.69	2^+	E2(+M1)	0.234	α(K)=0.193 *3*; α(L)=0.0315 *5*; α(M)=0.00727 *11* α(N)=0.00180 *3*; α(O)=0.000324 *5*; α(P)=2.19×10^{-5} *3* I_γ: Other: 7.9 *12* (1971Hu02) and 4.8 *2* (1972Fi12). Mult.: from α(L3)exp=0.0055 *7* (1972HuZL).
340.04 *5*	23.9 *8*	605.69	2^+	265.61	2^+	E2(+M1)	0.218	α(K)=0.180 *3*; α(L)=0.0292 *4*; α(M)=0.00674 *10* α(N)=0.001668 *24*; α(O)=0.000300 *5*; α(P)=2.03×10^{-5} *3* E_γ: from ce data (1970Jo02), 340.42 *2* (1978CoYZ), 339.9 *5* (1972Fi12). I_γ: Other: 22.7 *30* (1971Hu02) and 23.5 *5* (1972Fi12). Mult.: from α(L3)exp=0.0060 *4* (1972HuZL). Others: α(K)exp=0.055 *5* (1970Jo02)

γ(^{188}Pt) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[&]	Comments
								and K/M=13.9; α(K)exp=0.055, α(L)exp=0.004 (1971Hu02). However, 1972Fi12 pointed out that ce(K)(340γ) is complex.
[x]359.3 *5*	0.15 *8*							
[x]373.5 *3*	0.25 *8*							
376.70 *15*	0.51 *9*	1312.73	2^+	936.41	3^+	E2+M1	0.1652	α(K)=0.1364 *20*; α(L)=0.0221 *4*; α(M)=0.00511 *8* α(N)=0.001263 *18*; α(O)=0.000227 *4*; α(P)=1.542×10^{-5} *22* Mult.: from α(K)exp=0.074 *7* (1972HuZL). Also α(L)exp≈0.040 (1972Fi12).
[x]381.6[#] *5*	0.08[#] *2*							
405.49 *5*	9.1 *3*	670.96	4^+	265.61	2^+	E2	0.0422	α(K)=0.0295 *5*; α(L)=0.00967 *14*; α(M)=0.00238 *4* α(N)=0.000584 *9*; α(O)=9.73×10^{-5} *14*; α(P)=3.06×10^{-6} *5* E_γ: 405.49 in ce data (1970Jo02), 405.0 *5* (1972Fi12). I_γ: Other: 7.7 *20* (1971Hu02) and 8.2 *2* (1972Fi12). Mult.: from α(L3)exp=0.0023 *3* (1972HuZL). Also α(M)exp=0.0027 *5* (1972Fi12), but the authors pointed out that this line is complex in the ce data.
413.3[a] *5*	0.51 *3*	1349.99	3^-	936.41	3^+	[E1]	0.01250	α(K)=0.01039 *15*; α(L)=0.001627 *24*; α(M)=0.000373 *6* α(N)=9.17×10^{-5} *13*; α(O)=1.617×10^{-5} *23*; α(P)=9.77×10^{-7} *14* Mult.: see comment for 414.79γ.
414.79 *10*	0.90 *10*	1085.38	4^+	670.96	4^+	M1(+E2)	0.1277	α(K)=0.1056 *15*; α(L)=0.01708 *24*; α(M)=0.00394 *6* α(N)=0.000974 *14*; α(O)=0.0001755 *25*; α(P)=1.190×10^{-5} *17* Mult.: α(K)exp=0.078 *11* (1972Fi12) for 413.3γ+414.79γ.
426.5 *3*	0.33 *9*	1776.08	(1^-)	1349.99	3^-	(E2)	0.0370	α(K)=0.0262 *4*; α(L)=0.00818 *12*; α(M)=0.00201 *3* α(N)=0.000493 *7*; α(O)=8.23×10^{-5} *12*; α(P)=2.73×10^{-6} *4* Mult.: α(K)exp≈0.018 (1972HuZL).
444.18 *8*	1.08 *9*	1115.22	2^+	670.96	4^+	E2	0.0333	α(K)=0.0239 *4*; α(L)=0.00717 *10*; α(M)=0.001754 *25* α(N)=0.000431 *6*; α(O)=7.22×10^{-5} *11*; α(P)=2.50×10^{-6} *4* Mult.: from α(K)exp=0.023 *2* (1972HuZL). Also α(L3)exp=0.0066 *25*, α(M)exp=0.0050 *18* (1972Fi12). Authors′ α(L3)exp agrees with α(L) rather than with α(L3). Ice(L3) given by 1972Fi12 should possibly be interpreted as Ice(L).
[x]447.9[#] *5*	0.11[#] *2*					(E2+M1+E0)	0.1042	α(K)=0.0861 *13*; α(L)=0.01390 *20*; α(M)=0.00321 *5* α(N)=0.000793 *12*; α(O)=0.0001428 *21*; α(P)=9.70×10^{-6} *14* Mult.: α(K)exp=0.18 *4* (1972HuZL) suggests E0 admixtures.
[x]452.8[#] *5*	0.06[#] *2*					(M1)	0.1012	α(K)=0.0837 *12*; α(L)=0.01351 *20*; α(M)=0.00311 *5* α(N)=0.000770 *11*; α(O)=0.0001387 *20*; α(P)=9.42×10^{-6} *14* Mult.: α(K)exp≈0.083 (1972HuZL).
[x]455.8[#] *5*	0.16[#] *2*					M1(+E2)	0.0995 *15*	α(K)=0.0823 *12*; α(L)=0.01327 *19*; α(M)=0.00306 *5* α(N)=0.000757 *11*; α(O)=0.0001363 *20*; α(P)=9.26×10^{-6} *14* Mult.: from α(K)exp=0.084 *17* (1972HuZL).
[x]465.6[#] *5*	0.17[#] *1*					M1,E2	0.0940	α(K)=0.0778 *12*; α(L)=0.01254 *18*; α(M)=0.00289 *5* α(N)=0.000715 *11*; α(O)=0.0001288 *19*; α(P)=8.75×10^{-6} *13* Mult.: from α(K)exp≈0.059 (1972HuZL).

γ(^{188}Pt) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[&]	Comments
^{x}470.4[#] *5*	0.06[#] *1*							
471.1 *5*	0.22 *12*	1685.6	(0$^+$,1,2)	1214.69	(2)$^+$			ce(K)(471γ)/ce(K)(266γ)=0.16 *3* (1970Jo02) gives ce(K)(471γ)=2.8 *5* using ce(K)(266γ)=17.3 *7* (1972Fi12). However, no such transition reported in the ce data of 1972Fi12.
479.40 *9*	1.28 *13*	1085.38	4$^+$	605.69	2$^+$	E2	0.0275	α(K)=0.0201 *3*; α(L)=0.00563 *8*; α(M)=0.001370 *20* α(N)=0.000337 *5*; α(O)=5.67$\times10^{-5}$ *8*; α(P)=2.11$\times10^{-6}$ *3* I_γ: Other: 1.09 *3* (1972Fi12). Mult.: from α(L)exp=0.0057 *10* (1972HuZL).
^{x}492.2[#] *5*	0.05[#] *1*							
498.6[‡] *5*	0.54 *14*	1810.57	(2)$^+$	1312.73	2$^+$	(E0+M1+E2)	0.225 *14*	α(K)=0.0650 *10*; α(L)=0.01045 *15*; α(M)=0.00241 *4* α(N)=0.000596 *9*; α(O)=0.0001073 *16*; α(P)=7.30$\times10^{-6}$ *11* E_γ: From 1972Fi12. Other: 499.58 *25* in 1978CoYZ deviates by 5σ. I_γ: Other: 0.13 *1* (1972Fi12). Mult.: α(K)exp=0.11 *1* and α(L)exp=0.089 *8* (1972HuZL). α: 0.225 14 deduced from α(K)exp + α(L)exp $\times$ (1 + M/L + N/L).
^{x}523.8 *3*	0.38 *10*							
^{x}529.7 *6*	0.17 *11*							
533.4 *3*	5.86 *22*	798.75	0$^+$	265.61	2$^+$	E2	0.0212	α(K)=0.01585 *23*; α(L)=0.00407 *6*; α(M)=0.000983 *14* α(N)=0.000242 *4*; α(O)=4.10$\times10^{-5}$ *6*; α(P)=1.672$\times10^{-6}$ *24* I_γ: Other: 4.1 *20* (1971Hu02) and 5.49 *11* (1972Fi12). Mult.: from α(L)exp=0.0039 *4*, α(K)exp=0.014 (1971Hu02).
^{x}541.4 *2*	0.73 *11*					E1	0.00699	α(K)=0.00583 *9*; α(L)=0.000894 *13*; α(M)=0.000205 *3* α(N)=5.03$\times10^{-5}$ *7*; α(O)=8.92$\times10^{-6}$ *13*; α(P)=5.58$\times10^{-7}$ *8* I_γ: Other: 0.50 *3* (1972Fi12). Mult.: from α(K)exp$\approx$0.0083 (1972HuZL). Note misprint in 1972Fi12: ce(K) should read$\approx$0.05 instead of$\approx$0.5.
^{x}550.2[#] *5*	0.10[#] *2*					(M1)	0.0607	α(K)=0.0502 *8*; α(L)=0.00805 *12*; α(M)=0.00186 *3* α(N)=0.000459 *7*; α(O)=8.27$\times10^{-5}$ *12*; α(P)=5.63$\times10^{-6}$ *8* Mult.: from α(K)exp$\approx$0.050 (1972HuZL).
^{x}553.9 *3*	0.26 *8*							
^{x}558.2 *11*	0.08 *8*							
^{x}589.5[#] *5*	0.04[#] *2*							
591.4[a] *5*	0.15 *2*	1528.04	2$^+$	936.41	3$^+$	(M1)	0.0503	α(K)=0.0416 *6*; α(L)=0.00666 *10*; α(M)=0.001534 *22* α(N)=0.000379 *6*; α(O)=6.84$\times10^{-5}$ *10*; α(P)=4.66$\times10^{-6}$ *7* Mult.: from α(K)exp$\approx$0.056 (1972HuZL).
605.3 *2*	16.3 *6*	605.69	2$^+$	0.0	0$^+$	E2	0.01578	α(K)=0.01208 *17*; α(L)=0.00282 *4*; α(M)=0.000677 *10* α(N)=0.0001667 *24*; α(O)=2.85$\times10^{-5}$ *4*; α(P)=1.279$\times10^{-6}$ *18* E_γ: from ce data (1970Jo02), 606.06 *2* (1978CoYZ), 605.6 *5* (1972Fi12). I_γ: Other: 15.5 *21* (1971Hu02) and 14.6 *3* (1972Fi12). Mult.: from α(K)exp=0.0114 *4* (1972HuZL); α(K)exp=0.009 (1971Hu02).
^{x}618.8[#] *5*	0.10[#] *2*							

γ(^{188}Pt) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[&]	$I_{(\gamma+ce)}$	Comments
641.82 *18*	0.65 *11*	1312.73	2⁺	670.96	4⁺	(E2)	0.01383		α(K)=0.01069 *15*; α(L)=0.00240 *4*; α(M)=0.000574 *8* α(N)=0.0001413 *20*; α(O)=2.43×10⁻⁵ *4*; α(P)=1.132×10⁻⁶ *16* Mult.: α(K)exp=0.0071 *26* (1972HuZL).
ˣ667.9 *2*	0.65 *11*								I_γ: Other: 0.48 *2* (1972Fi12).
670.83 *5*	8.0 *3*	936.41	3⁺	265.61	2⁺	[M1]	0.0363		α(K)=0.0301 *5*; α(L)=0.00479 *7*; α(M)=0.001102 *16* α(N)=0.000273 *4*; α(O)=4.91×10⁻⁵ *7*; α(P)=3.35×10⁻⁶ *5* I_γ: Other: 5.2 *21* (1971Hu02) and 7.35 *15* (1972Fi12).
679.13 *6*	2.01 *12*	1349.99	3⁻	670.96	4⁺	E1	0.00441		α(K)=0.00369 *6*; α(L)=0.000556 *8*; α(M)=0.0001270 *18* α(N)=3.13×10⁻⁵ *5*; α(O)=5.56×10⁻⁶ *8*; α(P)=3.57×10⁻⁷ *5* Mult.: from α(K)exp≤0.0036 (1972HuZL).
689.1[‡] *3*	0.39 *11*	1625.71	1⁺	936.41	3⁺	E2	0.01182		α(K)=0.00923 *13*; α(L)=0.00198 *3*; α(M)=0.000472 *7* α(N)=0.0001163 *17*; α(O)=2.01×10⁻⁵ *3*; α(P)=9.77×10⁻⁷ *14* Mult.: from α(K)exp=0.010 *3* (1972HuZL).
695.4[‡] *5*	0.19 *2*	1810.57	(2)⁺	1115.22	2⁺	M1(+E2)	0.0331		α(K)=0.0274 *4*; α(L)=0.00436 *7*; α(M)=0.001004 *15* α(N)=0.000248 *4*; α(O)=4.48×10⁻⁵ *7*; α(P)=3.06×10⁻⁶ *5* Mult.: from α(K)exp=0.031 *11* (1972HuZL).
707.08 *14*	0.91 *11*	1312.73	2⁺	605.69	2⁺	E0+M1+E2	0.076 *5*		α(K)=0.0263 *4*; α(L)=0.00418 *6*; α(M)=0.000961 *14* α(N)=0.000238 *4*; α(O)=4.29×10⁻⁵ *6*; α(P)=2.93×10⁻⁶ *5* Mult.: α(K)exp=0.061 *3* and α(L)exp=0.011 *2* (1972HuZL) indicate E0 admixtures. α: 0.076 5 deduced from α(K)exp + α(L)exp×(1 + M/L + N/L).
ˣ713.5[#] *5*	0.12[#] *2*					(M1)	0.0309		α(K)=0.0257 *4*; α(L)=0.00408 *6*; α(M)=0.000939 *14* α(N)=0.000232 *4*; α(O)=4.19×10⁻⁵ *6*; α(P)=2.86×10⁻⁶ *4* Mult.: from α(K)exp≈0.04 (1972HuZL).
ˣ726.3[#] *5*	0.13[#] *2*								
736.4 *6*	0.43 *19*	3260.66		2524.65?					
ˣ749.5 *3*	0.47 *12*					(E0+M1+E2)	0.0273		α(K)=0.0226 *4*; α(L)=0.00359 *5*; α(M)=0.000826 *12* α(N)=0.000204 *3*; α(O)=3.68×10⁻⁵ *6*; α(P)=2.52×10⁻⁶ *4* I_γ: Other:<0.05 (1972Fi12). Mult.: α(K)exp≥0.60 (1972HuZL) suggests E0 admixtures.
ˣ772.5 *9*						E0			E_γ: E(ce) from 1971Hu02. Mult.: α(K)exp>3 (1971Hu02).
799.2 *5*		798.75	0⁺	0.0	0⁺	E0		≤0.10	Mult.: α(K)exp≥1.3 (1972HuZL); α(K)exp≥2 (1971Hu02).
ˣ814.1[#] *5*	0.08[#] *2*								
819.4 *4*	0.34 *12*	1085.38	4⁺	265.61	2⁺	[E2]	0.00819		α(K)=0.00652 *10*; α(L)=0.001277 *18*; α(M)=0.000301 *5* α(N)=7.42×10⁻⁵ *11*; α(O)=1.295×10⁻⁵ *19*; α(P)=6.90×10⁻⁷ *10*
ˣ821.8[#] *5*	0.08[#] *3*								
ˣ840.7[#] *5*	≤0.05[#]					(E0+M1+E2)	0.0203		α(K)=0.01687 *24*; α(L)=0.00267 *4*; α(M)=0.000614 *9* α(N)=0.0001518 *22*; α(O)=2.74×10⁻⁵ *4*; α(P)=1.87×10⁻⁶ *3* Mult.: α(K)exp≥0.20 (1972HuZL) suggests E0 admixtures.
849.3 *6*	0.71 *25*	1115.22	2⁺	265.61	2⁺	E0+M1+E2	0.27 *1*		α(K)=0.01644 *24*; α(L)=0.00260 *4*; α(M)=0.000598 *9*

From ENSDF

γ(^{188}Pt) (continued)

E_γ†	I_γ†	E_i(level)	J^π_i	E_f	J^π_f	Mult.@	α&	Comments
								α(N)=0.0001479 *21*; α(O)=2.67×10^{-5} *4*; α(P)=1.83×10^{-6} *3* Mult.: from α(K)exp=0.22 *1*, α(L)exp=0.038 *2*, and α(M)exp=0.0098 *20* (1972HuZL). α: 0.27 *1* from α(K)exp + α(L)exp + α(M)exp.
857.0‡ *5*	0.11 *2*	1528.04	2$^+$	670.96	4$^+$	[E2]	0.00746	α(K)=0.00597 *9*; α(L)=0.001145 *17*; α(M)=0.000270 *4* α(N)=6.64×10^{-5} *10*; α(O)=1.161×10^{-5} *17*; α(P)=6.31×10^{-7} *9*
874.66 *24*	0.59 *14*	1810.57	(2)$^+$	936.41	3$^+$	[M1]	0.0184	α(K)=0.01526 *22*; α(L)=0.00241 *4*; α(M)=0.000554 *8* α(N)=0.0001371 *20*; α(O)=2.47×10^{-5} *4*; α(P)=1.694×10^{-6} *24*
^{x}884.1 *4*	0.38 *14*							I_γ: Other: 0.16 *3* (1972Fi12).
922.23 *18*	0.87 *13*	1528.04	2$^+$	605.69	2$^+$	E0+M1+E2	0.029 *3*	α(K)=0.01334 *19*; α(L)=0.00210 *3*; α(M)=0.000484 *7* α(N)=0.0001196 *17*; α(O)=2.16×10^{-5} *3*; α(P)=1.480×10^{-6} *21* Mult.: from α(K)exp=0.024 *2* (1972HuZL). α: 0.029 *3* from K/T and α(K)exp.
^{x}933.9 *4*	0.40 *13*							I_γ: Other: 0.16 *3* (1972Fi12).
949.09 *8*	2.44 *17*	1214.69	(2)$^+$	265.61	2$^+$	E2(+M1)	0.01494	α(K)=0.01240 *18*; α(L)=0.00195 *3*; α(M)=0.000449 *7* α(N)=0.0001111 *16*; α(O)=2.00×10^{-5} *3*; α(P)=1.375×10^{-6} *20* I_γ: Other: 1.97 *6* (1972Fi12). Mult.: from α(K)exp=0.0046 *5* (1972HuZL).
^{x}968.7 *12*						E0		E_γ: E(ce) from 1971Hu02. Mult.: α(K)exp>1 (1971Hu02).
977.27 *10*	2.06 *17*	1776.08	(1$^-$)	798.75	0$^+$	(E1)	0.00221	α(K)=0.00186 *3*; α(L)=0.000273 *4*; α(M)=6.22×10^{-5} *9* α(N)=1.532×10^{-5} *22*; α(O)=2.74×10^{-6} *4*; α(P)=1.82×10^{-7} *3* I_γ: Other: 1.97 *6* (1972Fi12). Mult.: α(K)exp=0.0032 *9* (1972HuZL).
^{x}1004.4# *5*	0.12# *2*							
^{x}1007.2# *5*	0.20# *2*							
^{x}1013.6 *3*	0.72 *17*					M1,E2	0.01265	α(K)=0.01051 *15*; α(L)=0.001652 *24*; α(M)=0.000380 *6* α(N)=9.39×10^{-5} *14*; α(O)=1.694×10^{-5} *24*; α(P)=1.163×10^{-6} *17* I_γ: Other: 0.31 *3* (1972Fi12). Mult.: from α(K)exp=0.0091 *36* (1972HuZL).
1017.91 *18*	1.70 *23*	1954.26	(1$^+$,2)	936.41	3$^+$			I_γ: Other: 1.11 *4* (1972Fi12). Mult.: α(K)exp=0.022 *2* (1972HuZL), possible E0 admixtures.
1020.1 *4*	0.77 *22*	1625.71	1$^+$	605.69	2$^+$	[M1]	0.01245	α(K)=0.01034 *15*; α(L)=0.001625 *23*; α(M)=0.000373 *6* α(N)=9.24×10^{-5} *13*; α(O)=1.666×10^{-5} *24*; α(P)=1.145×10^{-6} *16*
1046.99 *11*	1.93 *19*	1312.73	2$^+$	265.61	2$^+$	E0+M1+E2	0.076 *3*	α(K)=0.00968 *14*; α(L)=0.001521 *22*; α(M)=0.000349 *5* α(N)=8.64×10^{-5} *13*; α(O)=1.559×10^{-5} *22*; α(P)=1.072×10^{-6} *15* Mult.: α(K)exp=0.065 *2*, α(L)exp=0.0075 *8* (1972HuZL) indicate E0 admixtures. α: 0.076 3 deduced from α(K)exp + α(L)exp×(1 + M/L + N/L).
^{x}1068.3# *5*	0.20# *3*							
1079.7 *5*	0.36 *15*	1685.6	(0$^+$,1,2)	605.69	2$^+$			
1084.33# *5*	6.6# *3*	1349.99	3$^-$	265.61	2$^+$	E1	0.00183	α(K)=0.001539 *22*; α(L)=0.000225 *4*; α(M)=5.12×10^{-5} *8*

From ENSDF

γ(^{188}Pt) (continued)

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[@]	α[&]	Comments
								α(N)=1.262×10^{-5} *18*; α(O)=2.26×10^{-6} *4*; α(P)=1.514×10^{-7} *22* Mult.: from α(K)exp≤0.0015 (1972HuZL).
1115.25 *5*	4.98 *19*	1115.22	2$^+$	0.0	0$^+$	(E2)	0.00442	α(K)=0.00361 *5*; α(L)=0.000627 *9*; α(M)=0.0001458 *21* α(N)=3.60×10^{-5} *5*; α(O)=6.36×10^{-6} *9*; α(P)=3.79×10^{-7} *6*; α(IPF)=3.24×10^{-7} *5* I$_\gamma$: Other: 2.5 *15* (1971Hu02) and 4.05 *10* (1972Fi12). Mult.: α(K)exp≈0.002 (1972HuZL).
1139.7[‡] *4*	0.36 *12*	1810.57	(2)$^+$	670.96	4$^+$	[E2]	0.00424	α(K)=0.00346 *5*; α(L)=0.000598 *9*; α(M)=0.0001390 *20* α(N)=3.43×10^{-5} *5*; α(O)=6.06×10^{-6} *9*; α(P)=3.64×10^{-7} *6*; α(IPF)=8.06×10^{-7} *16*
1170.49 *9*	2.63 *19*	1776.08	(1$^-$)	605.69	2$^+$	(E1)	1.61×10^{-3}	α(K)=0.001344 *19*; α(L)=0.000196 *3*; α(M)=4.45×10^{-5} *7* α(N)=1.098×10^{-5} *16*; α(O)=1.97×10^{-6} *3*; α(P)=1.325×10^{-7} *19*; α(IPF)=9.10×10^{-6} *13* I$_\gamma$: Other: 2.42 *6* (1972Fi12). Mult.: α(K)exp=0.0023 *4* (1972HuZL).
1204.60 *13*	1.63 *17*	1810.57	(2)$^+$	605.69	2$^+$	[E2+M1]	0.00820	α(K)=0.00681 *10*; α(L)=0.001065 *15*; α(M)=0.000244 *4* α(N)=6.05×10^{-5} *9*; α(O)=1.091×10^{-5} *16*; α(P)=7.52×10^{-7} *11*; α(IPF)=7.29×10^{-6} *11*
1214.2[#a] *5*	0.48[#] *3*	1214.69	(2)$^+$	0.0	0$^+$	[E2]	0.00376	α(K)=0.00308 *5*; α(L)=0.000521 *8*; α(M)=0.0001210 *17* α(N)=2.98×10^{-5} *5*; α(O)=5.29×10^{-6} *8*; α(P)=3.23×10^{-7} *5*; α(IPF)=5.53×10^{-6} *10* Mult.: α(K)exp≈0.085 (1972HuZL) indicates E0 mixture, implying a probable doublet in the ce data.
^{x}1244.1 *9*	0.34 *7*							I$_\gamma$: Other: 0.35 *3* (1972Fi12).
1262.46 *19*	1.26 *18*	1528.04	2$^+$	265.61	2$^+$	E0+M1+E2	0.037 *4*	α(K)=0.00605 *9*; α(L)=0.000945 *14*; α(M)=0.000217 *3* α(N)=5.37×10^{-5} *8*; α(O)=9.69×10^{-6} *14*; α(P)=6.68×10^{-7} *10*; α(IPF)=1.746×10^{-5} *25* Mult.: from α(K)exp=0.031 *3* (1972HuZL). α: 0.037 *4* from K/T and α(K)exp.
^{x}1284.5[#] *5*	0.26[#] *2*							
1306.4 *3*	0.81 *17*	3260.66		1954.26	(1$^+$,2)			
1312.62 *9*	2.96 *21*	1312.73	2$^+$	0.0	0$^+$	E2	0.00326	α(K)=0.00266 *4*; α(L)=0.000442 *7*; α(M)=0.0001024 *15* α(N)=2.53×10^{-5} *4*; α(O)=4.49×10^{-6} *7*; α(P)=2.79×10^{-7} *4*; α(IPF)=1.87×10^{-5} *3* I$_\gamma$: Other: 2.06 *7* (1972Fi12). Mult.: α(K)exp=0.0029 *4* (1972HuZL).
^{x}1332.9 *5*	0.40 *16*							
^{x}1341.2 *10*	0.10 *10*							
1348.50 *19*	1.17 *17*	1954.26	(1$^+$,2)	605.69	2$^+$			
^{x}1352.4 *3*	0.82 *17*							
1360.10[‡] *7*	4.13 *22*	1625.71	1$^+$	265.61	2$^+$	[M1]	0.00608	α(K)=0.00502 *7*; α(L)=0.000783 *11*; α(M)=0.000180 *3*

$^{188}_{78}$Pt$_{110}$-8

γ(^{188}Pt) (continued)

Eγ†	Iγ†	Ei(level)	Jπi	Ef	Jπf	Mult.@	α&	Comments
								α(N)=4.44×10⁻⁵ 7; α(O)=8.02×10⁻⁶ 12; α(P)=5.54×10⁻⁷ 8; α(IPF)=4.35×10⁻⁵ 6
x1365.2 5	0.39 18							
x1377.6 3	0.61 14							Iγ: Other: 0.16 3 (1972Fi12).
x1405.4# 5	0.23# 3							
1408.92 21	0.96 15	1674.53	(0⁺,1,2)	265.61	2⁺			Iγ: Other: 0.60 3 (1972Fi12).
x1451.5 4	0.61 16							Iγ: Other: 0.22 2 (1972Fi12).
x1476.7 6	0.32 15							
1484.55 23	0.88 16	3260.66		1776.08	(1⁻)			Iγ: Other: 0.45 4 (1972Fi12).
x1497.1# 5	0.20# 2							
1510.38 9	2.74 18	1776.08	(1⁻)	265.61	2⁺	(E1)	1.21×10⁻³	α(K)=0.000867 13; α(L)=0.0001248 18; α(M)=2.83×10⁻⁵ 4 α(N)=6.99×10⁻⁶ 10; α(O)=1.256×10⁻⁶ 18; α(P)=8.58×10⁻⁸ 12; α(IPF)=0.000185 3 Iγ: Other: 2.15 6 (1972Fi12). Mult.: from α(K)exp≤0.00077 (1972HuZL).
1528.3‡ 3	0.72 15	1528.04	2⁺	0.0	0⁺	[E2]	0.00251	α(K)=0.00202 3; α(L)=0.000324 5; α(M)=7.46×10⁻⁵ 11 α(N)=1.84×10⁻⁵ 3; α(O)=3.29×10⁻⁶ 5; α(P)=2.11×10⁻⁷ 3; α(IPF)=7.53×10⁻⁵ 11
1545.00 10	2.32 18	1810.57	(2)⁺	265.61	2⁺	[E2+M1]	0.00452	α(K)=0.00366 6; α(L)=0.000568 8; α(M)=0.0001304 19 α(N)=3.22×10⁻⁵ 5; α(O)=5.82×10⁻⁶ 9; α(P)=4.03×10⁻⁷ 6; α(IPF)=0.0001238 18 Iγ: Other: 1.85 10 (1972Fi12).
x1555.4 2	1.13 16							Iγ: Other: 0.71 3 (1972Fi12).
1565.6 5	0.41 15	2171.4	(0⁺,1,2)	605.69	2⁺			
1596.9 3	0.68 15	2909.6?	(2⁺)	1312.73	2⁺	(E0+M1+E2)	0.0200 25	α(K)=0.00337 5; α(L)=0.000523 8; α(M)=0.0001200 17 α(N)=2.97×10⁻⁵ 5; α(O)=5.36×10⁻⁶ 8; α(P)=3.71×10⁻⁷ 6; α(IPF)=0.0001516 22 Mult.: from α(K)exp=0.016 2 (1972HuZL) suggests E0 admixtures. α: 0.0200 25 deduced from K/T and α(K)exp.
x1603.6# 5	0.22# 5							
1626.2‡ 8	0.9 6	1625.71	1⁺	0.0	0⁺	M1	0.00404	α(K)=0.00322 5; α(L)=0.000500 7; α(M)=0.0001146 17 α(N)=2.84×10⁻⁵ 4; α(O)=5.12×10⁻⁶ 8; α(P)=3.54×10⁻⁷ 5; α(IPF)=0.0001678 24 Iγ: Other: 0.63 4 (1972Fi12). Mult.: from α(K)exp=0.0054 18 (1972HuZL).
1669.6 5	0.46 16	2468.4?	(1,2⁺)	798.75	0⁺			
x1691.4 7	0.30 14							Iγ: Other: 0.15 4 (1972Fi12).
1697.2 4	0.56 15	3046.73		1349.99	3⁻			Iγ: Other: 0.45 4 (1972Fi12).
x1703.4# 5	0.27# 3							
x1723.8# 5	≤0.16#					E0(+M1+E2)	0.00357	α(K)=0.00279 4; α(L)=0.000432 6; α(M)=9.90×10⁻⁵ 14

γ(^{188}Pt) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J^π_i	E_f	J^π_f	Comments
						α(N)=2.45×10^{-5} *4*; α(O)=4.42×10^{-6} *7*; α(P)=3.06×10^{-7} *5*; α(IPF)=0.000224 *4* Mult.: α(K)exp≥0.09 (1972HuZL) suggests a dominant E0 contribution.
[x]1760.5 *3*	1.14 *20*					I_γ: Other: 0.82 *5* (1972Fi12).
[x]1782.5 *3*	1.09 *24*					I_γ: Other: 0.0.73 *4* (1972Fi12).
[x]1810.9 *4*	0.53 *15*					
[x]1847.3 *3*	0.83 *15*					I_γ: Other: 0.28 *5* (1972Fi12).
1882.45 *18*	1.48 *19*	3232.50		1349.99	3$^-$	I_γ: Other: 1.21 *5* (1972Fi12).
1905.9 *4*	0.65 *17*	2171.4	(0$^+$,1,2)	265.61	2$^+$	
1917.6 *3*	0.90 *17*	2588.6?		670.96	4$^+$	
1944.6 *3*	0.85 *19*	2210.2?		265.61	2$^+$	I_γ: Other: 0.44 *3* (1972Fi12).
[x]1994.0 *3*	0.85 *16*					
[x]2010.3 *4*	0.61 *17*					
2030.02 *12*	2.54 *23*	2295.61	(1,2$^+$)	265.61	2$^+$	
[x]2053.2 *8*	0.26 *14*					
[x]2161.5 *6*	0.51 *18*					
[x]2180.1 *3*	0.92 *19*					
2231.88 *12*	2.62 *22*	2497.50		265.61	2$^+$	
2259.07 *19*	0.20 *13*	2524.65?		265.61	2$^+$	
2295.48 *23*	1.28 *19*	2295.61	(1,2$^+$)	0.0	0$^+$	
[x]2392.9 *4*	0.66 *18*					
[x]2428.9 *5*	0.62 *17*					
2441.3 *3*	1.08 *20*	3046.73		605.69	2$^+$	
2446.87 *22*	1.38 *20*	2446.89	(1,2$^+$)	0.0	0$^+$	
[x]2509.3 *3*	0.89 *18*					
2532.5 *5*	0.75 *21*	2798.1?		265.61	2$^+$	
2626.9 *3*	1.8 *4*	3232.50		605.69	2$^+$	
2780.97 *15*	2.23 *21*	3046.73		265.61	2$^+$	
2994.9 *4*	0.80 *16*	3260.66		265.61	2$^+$	
[x]3129.2 *7*	1.2 *7*					

[†] From 1978CoYZ, unless otherwise stated. The uncertainties quoted by 1978CoYZ on some of the γ-ray energies are very precise, < 0.05 keV. These have been increased to 0.05 keV by the evaluators.

[‡] Assignment in the level scheme is made by the evaluators on the basis of level energy differences.

[#] Reported only by 1972Fi12,1972HuZL,1970Fi16.

[@] From ce data in 1972Fi12,1972HuZL using α(K)exp(266γ; mult=E2)=0.083 for normalization, unless otherwise stated. Ice(L3) values are given for selected transitions in 1972Fi12. From the sample spectrum shown in 1972Fi12, evaluators note that L1, L2, and L3 lines are not resolved. In a similar table given by 1972HuZL, these L3 intensities were incorrectly labeled as total L-shell intensities.

[&] Additional information 1.

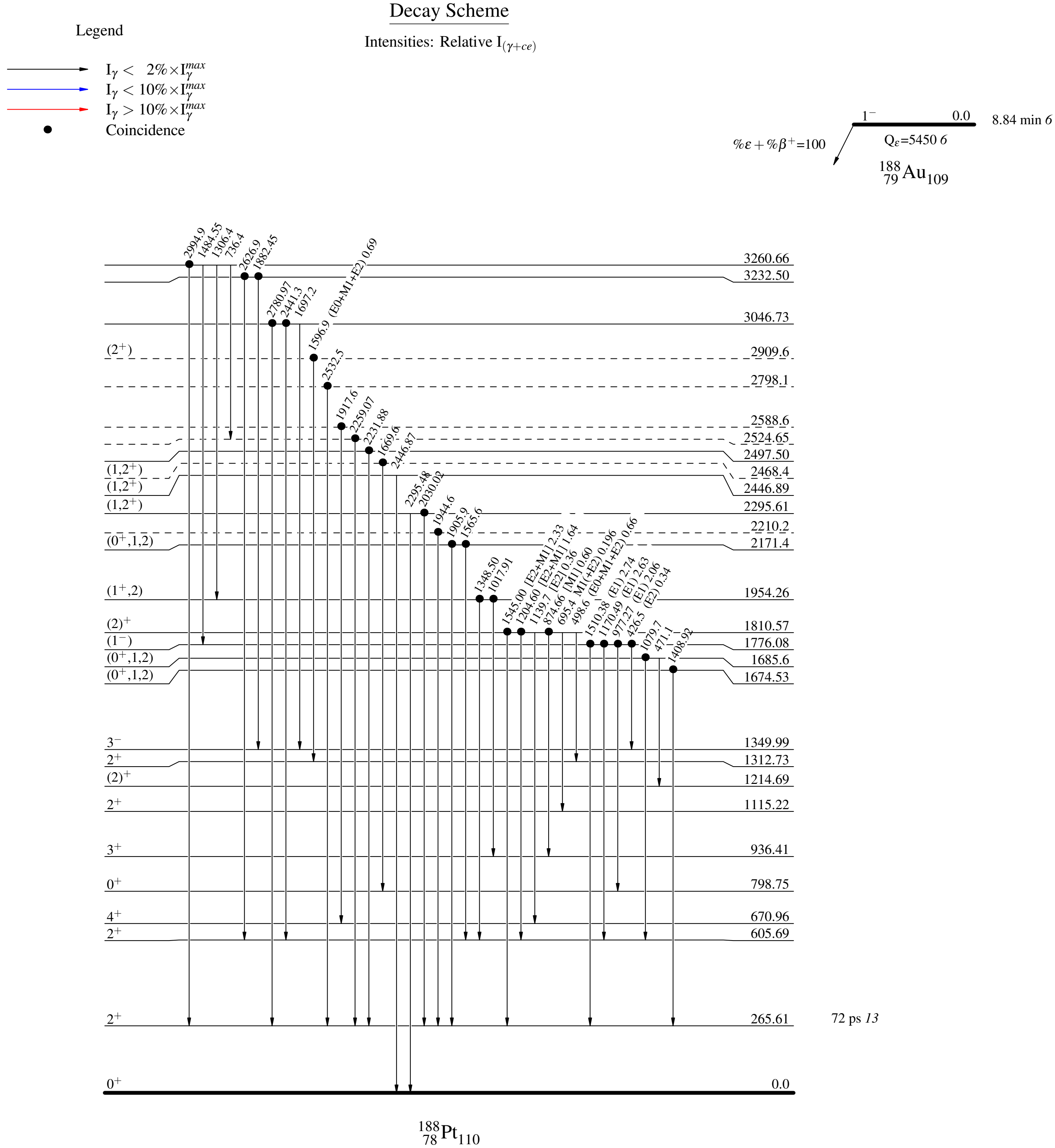
[a] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

^{188}Au ε decay (8.84 min) 1978CoYZ,1972Fi12

Decay Scheme

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



^{188}Au ε decay (8.84 min) 1978CoYZ,1972Fi12

Decay Scheme (continued)

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