^{182}Au ε decay (15.5 s) 1999Da18,1976HuZS,1974Ca28

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 130, 21 (2015)	15-Jul-2015

Parent: ^{182}Au: E=0.0; J$^{\pi}$=(2^{+}); $T_{1/2}$=15.5 s *4*; Q(ε)=7867 *25*; %ε+%β^{+} decay=99.87 *5*
^{182}Au-$T_{1/2}$: From ^{182}Au Adopted Levels.
^{182}Au-Q(ε): from 2012Wa38.
^{182}Au-%ε+%β^{+} decay: %α=0.13 *5* (1995Bi01).
Additional information 1.
1999Da18: Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$, ce, ce(γ) coin using the CAESAR array with six Compton-suppressed HPGe detectors; conversion electrons measured using a superconducting electron spectrometer and a cooled Si(Li) detector.
1976HuZS (also 1972HuZL thesis), 1974Ca28: measured Eγ, Iγ, $\gamma\gamma$, γce coin, $\gamma\gamma$(ce) coin. About 42 γ rays were reported, detailed level scheme was given by 1976HuZS.
1975Ho03, 1970Du09: Measured β strength functions by total absorption γ-ray spectroscopy.
1972Fi12 (also 1971JoZK thesis): Measured Eγ, Iγ, isotopic half-life. Two γ rays reported at 154.9 and 263.8.
1992DeZO: measured g factors of ^{182}Au g.s.
All data are from 1999Da18, unless otherwise stated.

^{182}Pt Levels

E(level)†	J$^{\pi}$‡	Comments
0.0#	0^{+}	
154.88# *13*	2^{+}	
419.57# *14*	4^{+}	
499.63& *16*	0^{+}	J$^{\pi}$: from (344γ)(155γ)(θ) data, characteristic of a 0-2-0 cascade.
667.73@ *14*	2^{+}	
775.01# *19*	6^{+}	
856.21& *13*	2^{+}	
942.63@ *19*	(3^{+})	
1034.00@ *16*	(4)$^{+}$	
1151.98 *24*	(0^{+})	J$^{\pi}$: 1999Da18 suggest (0) from $\gamma\gamma(\theta)$, although other spins cannot be ruled out. Positive parity suggested by (E2) to 2^{+}.
1182.00 *16*	(2^{+})	J$^{\pi}$: 1999Da18 give (2). Positive parity suggested by (E0+M1+E2) to 2^{+}.
1239.92& *15*	4^{+}	
1305.94@ *21*	(5^{+})	
1311.63 *19*	2^{+}	
1419.55 *19*	(4^{+})	
1473.81 *19*		
1502.43 *24*		
1521.78 *25*		
1542.48 *19*		
1568.88 *25*		
1684.48 *25*		
1889.18 *25*		

† From least-squares fit to Eγ data.
‡ From Adopted Levels.
# Band(A): g.s. band.
@ Band(B): γ band.
& Band(C): β band.

^{182}Au ε decay (15.5 s) 1999Da18,1976HuZS,1974Ca28 (continued)

ε,β^+ radiations

E(decay)	E(level)	I($\varepsilon+\beta^+$)[†#]	E(decay)	E(level)	I($\varepsilon+\beta^+$)[†#]
(5.98×10^3 *3*)	1889.18	0.47 *14*	(6.69×10^3 *3*)	1182.00	4.8 *5*
(6.18×10^3 *3*)	1684.48	0.61 *14*	(6.72×10^3 *3*)	1151.98	1.31[‡] *10*
(6.30×10^3 *3*)	1568.88	0.38 *14*	(6.83×10^3 *3*)	1034.00	5.5[‡] *11*
(6.32×10^3 *3*)	1542.48	0.80 *20*	(6.92×10^3 *3*)	942.63	7.7 *9*
(6.35×10^3 *3*)	1521.78	0.75 *24*	(7.01×10^3 *3*)	856.21	8.1 *8*
(6.36×10^3 *3*)	1502.43	1.8 *4*	(7.09×10^3[@] *3*)	775.01	<0.6
(6.39×10^3 *3*)	1473.81	1.4 *4*	(7.20×10^3 *3*)	667.73	10 *2*
(6.45×10^3 *3*)	1419.55	1.2[‡] *3*	(7.37×10^3 *3*)	499.63	5.2[‡] *7*
(6.56×10^3 *3*)	1311.63	2.0 *3*	(7.45×10^3 *3*)	419.57	11 *1*
(6.56×10^3 *3*)	1305.94	0.75[‡] *24*	(7.71×10^3 *3*)	154.88	30 *2*
(6.63×10^3 *3*)	1239.92	5.5[‡] *4*			

[†] Apparent $\varepsilon+\beta^+$ feedings deduced (by evaluators) from intensity balance at each level. Calculations of log *ft* values are not deduced due to possible missing γ rays in the large energy gap of about 6 MeV between the highest populated level and Q(ε).
[‡] If J^π(^{182}Au g.s.)=2^+, then feeding to this level is not likely.
[#] For absolute intensity per 100 decays, multiply by 0.9987 *5*.
[@] Existence of this branch is questionable.

γ(^{182}Pt)

Iγ normalization: I(γ+ce)(gammas to g.s.)=100.
In γγ(θ) measurements, the second transition in all cases is 154.9γ from first 2$^+$ state.

Eγ[†]	Iγ[†c]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[b]	α[d]	Comments
^{x}132.2[@&] 2	<12.7[@]							
154.9 2	100.0 10	154.88	2$^+$	0.0	0$^+$	E2	0.888	α(K)=0.317 5; α(L)=0.429 7; α(M)=0.1104 17 α(N)=0.0269 4; α(O)=0.00424 7; α(P)=3.00×10^{-5} 5 Mult.: from 0−>2−>0 cascade assignment from (345γ)(155γ)(θ) and from intensity balance. Lifetime of the 155-keV level is not known but observation of 155γ in γγ coin suggests that it is short, consequently from RUL, the 155γ is expected to be E2 rather than M2. Additional information 2.
^{x}163.0[@&] 2	1.2[@] 2							
168[e]	<0.5	667.73	2$^+$	499.63	0$^+$			
178[e]	<0.5	1034.00	(4)$^+$	856.21	2$^+$			
188[e]	<0.2	856.21	2$^+$	667.73	2$^+$			
206[e]	<0.5	1239.92	4$^+$	1034.00	(4)$^+$			
248[e]	<0.5	667.73	2$^+$	419.57	4$^+$			
^{x}252.5[@] 2	1.6[@] 2							
259[e]	<0.5	1034.00	(4)$^+$	775.01	6$^+$			
264.7 2	44.3 10	419.57	4$^+$	154.88	2$^+$	E2	0.1441	α(K)exp=0.094 8 (1999Da18); α(K)exp=0.076 11 (1974Ca28) α(K)=0.0836 12; α(L)=0.0457 7; α(M)=0.01152 17 α(N)=0.00282 4; α(O)=0.000456 7; α(P)=8.28×10^{-6} 12 Additional information 3. (265γ)(155γ)(θ): A$_2$=+0.074 25, A$_4$=+0.01 3.
274.8[@e] 3	<2.1[@]	942.63	(3$^+$)	667.73	2$^+$	[M1,E2]	0.26 13	α(K)=0.20 13; α(L)=0.046 7; α(M)=0.0110 11 α(N)=0.0027 3; α(O)=0.00047 8; α(P)=2.2×10^{-5} 15
^{x}296.4[@&] 2	<1.5[@]							
326.0 2	2.6 5	1182.00	(2$^+$)	856.21	2$^+$	[M1,E2]	0.16 9	α(K)=0.13 8; α(L)=0.027 6; α(M)=0.0064 12 α(N)=0.0016 3; α(O)=0.00027 7; α(P)=1.4×10^{-5} 9
344.8 2	12.4 6	499.63	0$^+$	154.88	2$^+$	E2	0.0658	α(K)exp=0.057 13 (1999Da18); α(K)exp≈0.018 (1974Ca28) α(K)=0.0434 7; α(L)=0.01697 24; α(M)=0.00422 6 α(N)=0.001034 15; α(O)=0.0001701 24; α(P)=4.44×10^{-6} 7 I$_\gamma$: 6.0 10 (1974Ca28) is too low by a factor of 2 from that in 1999Da18. (345γ)(155γ)(θ): A$_2$=+0.29 6, A$_4$=+0.82 7. Additional information 4.
355.6[‡] 2	1.9[‡] 5	775.01	6$^+$	419.57	4$^+$	[E2]	0.0603	α(K)=0.0402 6; α(L)=0.01521 22; α(M)=0.00377 6 α(N)=0.000925 13; α(O)=0.0001525 22; α(P)=4.13×10^{-6} 6
356.5 2	2.6 7	856.21	2$^+$	499.63	0$^+$	[E2]	0.0599	α(K)=0.0400 6; α(L)=0.01507 22; α(M)=0.00374 6 α(N)=0.000917 13; α(O)=0.0001512 22; α(P)=4.11×10^{-6} 6

γ(^{182}Pt) (continued)

E_γ[†]	I_γ[†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[b]	α[d]	$I_{(\gamma+ce)}$[c]	Comments
363.1[‡e] 2	≈0.5[‡]	1305.94	(5$^+$)	942.63	(3$^+$)	[E2]	0.0569		α(K)=0.0383 6; α(L)=0.01413 20; α(M)=0.00350 5 α(N)=0.000859 13; α(O)=0.0001418 20; α(P)=3.94×10^{-6} 6
366.1 2	4.0 20	1034.00	(4)$^+$	667.73	2$^+$	[E2]	0.0556		α(K)=0.0375 6; α(L)=0.01373 20; α(M)=0.00340 5 α(N)=0.000834 12; α(O)=0.0001378 20; α(P)=3.87×10^{-6} 6 Additional information 11.
383.0[‡] 2	2.7[‡] 5	1239.92	4$^+$	856.21	2$^+$	[E2]	0.0492		α(K)=0.0337 5; α(L)=0.01174 17; α(M)=0.00290 4 α(N)=0.000712 10; α(O)=0.0001179 17; α(P)=3.49×10^{-6} 5 E_γ: level-energy difference=383.7.
386.0[‡e] 2	≈1.0[‡]	1419.55	(4$^+$)	1034.00	(4)$^+$	[M1,E2]	0.10 6		α(K)=0.08 5; α(L)=0.016 5; α(M)=0.0038 10 α(N)=0.00094 25; α(O)=0.00016 5; α(P)=9.E−6 6
^{x}420.4[@&] 3	<1.3[@]								α(K)exp<0.075 (1999Da18)
436.5 2	3.4 3	856.21	2$^+$	419.57	4$^+$	E2	0.0348		α(K)=0.0248 4; α(L)=0.00758 11; α(M)=0.00186 3 α(N)=0.000456 7; α(O)=7.63×10^{-5} 11; α(P)=2.60×10^{-6} 4
439.7[‡] 2	1.4[‡] 2	1473.81		1034.00	(4)$^+$				
455.6 4		1311.63	2$^+$	856.21	2$^+$	E0		1.0 2	α(K)exp>0.32 (1999Da18); α(K)exp>1.7 (1974Ca28) E_γ: from 1974Ca28, conversion electron data. I_γ: ≤0.5 (1974Ca28). $I_{(\gamma+ce)}$: deduced by the evaluators from Ice(K)=2.6 4 (1974Ca28); assuming 80% contribution from K-shell. Mult.: seen in ce data only; mult=E0+? Additional information 13.
465.0[‡] 2	1.0[‡] 3	1239.92	4$^+$	775.01	6$^+$	E2	0.0296		α(K)exp<0.045 (1999Da18) α(K)=0.0215 3; α(L)=0.00619 9; α(M)=0.001511 22 α(N)=0.000371 6; α(O)=6.24×10^{-5} 9; α(P)=2.26×10^{-6} 4
499.3 4		499.63	0$^+$	0.0	0$^+$	E0		3.8 8	E_γ: from 1974Ca28, conversion electron data. I_γ: ≤0.5 (1974Ca28). $I_{(\gamma+ce)}$: deduced by the evaluators from Ice(K)=10.0 20 (1974Ca28); assuming 80% contribution from K-shell. α(K)exp>1.0, α(L)exp>0.18 (1999Da18). 1974Ca28 give K/L=6.4 13 and α(K)exp≥6.6. Additional information 5. X(E0/E2)=0.014 3.
513.0 2	23.3 26	667.73	2$^+$	154.88	2$^+$	E0+E2(+M1)	0.074 16		α(K)exp=0.044 6 (1999Da18); α(M)exp=0.0038 12 (1999Da18) Total conversion coefficient from α(K)exp=0.062 13 (1974Ca28,1999Da18) multiplied by a factor of 1.2 to account for other shells. Additional information 6. α(K)exp=0.062 13 from Ice(K) of 1974Ca28 and Iγ from 1999Da18. α(L)exp: undetermined due to contamination from 510γ from ^{182}Re L-line and 500γ M-line from ^{182}Pt.

^{182}Au ε decay (15.5 s) 1999Da18,1976HuZS,1974Ca28 (continued)

γ(^{182}Pt) (continued)

E_γ[†]	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[b]	α[d]	Comments
523.1 *2*	2.5 *3*	942.63	(3$^+$)	419.57	4$^+$	[M1,E2]		0.046 *24*	α(K)=0.037 *21*; α(L)=0.0068 *25*; α(M)=0.0016 *6* α(N)=0.00039 *14*; α(O)=7.E−5 *3*; α(P)=4.1×10^{-6} *24*
531.0[‡] *2*	0.5[‡] *4*	1305.94	(5$^+$)	775.01	6$^+$				
572.5[‡] *2*	1.7[‡] *5*	1239.92	4$^+$	667.73	2$^+$				
614.5 *2*	8.0 *5*	1034.00	(4)$^+$	419.57	4$^+$	M1+E2	1.4 *5*	0.025 *7*	α(K)exp=0.021 *4* (1999Da18) α(K)=0.020 *6*; α(L)=0.0038 *8*; α(M)=0.00090 *16* α(N)=0.00022 *4*; α(O)=3.9×10^{-5} *8*; α(P)=2.2×10^{-6} *7* Mult.: deduced by the evaluators from α(K)exp. I_γ: 4.8 *5* (1974Ca28) is too low by a factor of ≈2 from that in 1999Da18.
617.7[#] *2*	1.5 *8*	1473.81		856.21	2$^+$				
^{x}624.5[@] *3*	1.8[@] *2*								
^{x}638.8[@&] *4*	<2.7[@]								
644.1[‡e] *2*	≈0.2[‡]	1419.55	(4$^+$)	775.01	6$^+$				
667.8 *2*	8.0 *10*	667.73	2$^+$	0.0	0$^+$	E2		0.01266	α(K)exp=0.0096 *23* (1999Da18); α(K)exp≈0.0080 (1974Ca28) α(K)=0.00984 *14*; α(L)=0.00216 *3*; α(M)=0.000514 *8* α(N)=0.0001266 *18*; α(O)=2.18×10^{-5} *3*; α(P)=1.042×10^{-6} *15* Additional information 7.
682.3 *2*	0.4 *1*	1182.00	(2$^+$)	499.63	0$^+$				
701.2 *2*	1.3 *3*	856.21	2$^+$	154.88	2$^+$	E0+M1+E2	0.7 *+10−3*	0.86 *25*	Total conversion coefficient from α(K)exp=0.72 *21* (1974Ca28) multiplied by a factor of 1.2 to account for other shells. (701γ)(155γ)(θ): A_2=−0.24 *19*, A_4=−0.14 *22*. α(K)exp>0.27, α(L)exp>0.027 (1999Da18). Additional information 8.
751.9 *2*	1.7 *5*	1419.55	(4$^+$)	667.73	2$^+$				Mult.: α(K)exp<0.04 (1999Da18) gives D,E2. 1999Da18 assign (E2).
762.3[‡] *2*	0.4[‡] *1*	1182.00	(2$^+$)	419.57	4$^+$				
787.7 *2*	13.7 *19*	942.63	(3$^+$)	154.88	2$^+$	(E2+M1)	>5	0.0092 *4*	α(K)exp=0.0056 *11* (1999Da18,1974Ca28) α(K)=0.0073 *3*; α(L)=0.00144 *4*; α(M)=0.000340 *9* α(N)=8.39×10^{-5} *23*; α(O)=1.46×10^{-5} *4*; α(P)=7.7×10^{-7} *3* (788γ)(155γ)(θ): A_2=−0.13 *6*, A_4=−0.02 *6*. Additional information 10.
812.1 *2*	2.5 *6*	1311.63	2$^+$	499.63	0$^+$				
820.5[‡] *2*	1.4[‡] *2*	1239.92	4$^+$	419.57	4$^+$	E0+E2(+M1)		0.20 *7*	α(K)exp=0.17 *6* (1999Da18) Total conversion coefficient from α(K)exp=0.17 *6* (1999Da18), multiplied by a factor of 1.2 to account for other shells.
834.7[#] *2*	3.8 *8*	1502.43		667.73	2$^+$				α(K)exp<0.017 (1999Da18) Mult.: α(K)exp gives dipole or E2.
856.2 *2*	15.0 *5*	856.21	2$^+$	0.0	0$^+$	E2		0.00748	α(K)exp=0.0080 *11* (1999Da18); α(K)exp=0.0062 *13* (1974Ca28)

$^{182}_{78}$Pt$_{104}$-5

γ(^{182}Pt) (continued)

E_γ[†]	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[b]	α[d]	Comments
									α(K)=0.00598 *9*; α(L)=0.001148 *16*; α(M)=0.000270 *4* α(N)=6.66×10^{-5} *10*; α(O)=1.164×10^{-5} *17*; α(P)=6.32×10^{-7} *9* Additional information 9.
[x]864.8[@] *4*	1.6[@] *2*								
879.1 *2*	0.8 *3*	1034.00	(4)$^+$	154.88	2$^+$				
886.3[‡] *2*	1.1[‡] *3*	1305.94	(5$^+$)	419.57	4$^+$				
[x]899.7[@a] *4*	2.6[@] *3*								
997.1[#] *2*	2.8 *2*	1151.98	(0$^+$)	154.88	2$^+$	(E2)		0.00551	α(K)exp<0.014 (1999Da18) α(K)=0.00446 *7*; α(L)=0.000804 *12*; α(M)=0.000188 *3* α(N)=4.64×10^{-5} *7*; α(O)=8.16×10^{-6} *12*; α(P)=4.70×10^{-7} *7* (997γ)(155γ)(θ): A_2=+0.21 *23*, A_4=+0.57 *26*.
999.9[‡] *2*	0.9[‡] *3*	1419.55	(4$^+$)	419.57	4$^+$				
1027.1 *2*	6.6 *7*	1182.00	(2$^+$)	154.88	2$^+$	(E0+M1+E2)	>2.7	0.0102 *19*	α(K)exp=0.0085 *16* (1999Da18); α(K)exp=0.015 *3* (1974Ca28) Total conversion coefficient from α(K)exp=0.0085 *16* (1999Da18), multiplied by a factor of 1.2 to account for other shells. (1027γ)(155γ)(θ): A_2=−0.14 *9*, A_4=+0.32 *10*. Additional information 12.
[x]1054.3[@a] *4*	1.1[@] *2*								
1085.2[#] *2*	4.1 *3*	1239.92	4$^+$	154.88	2$^+$	(E2)		0.00466	α(K)exp<0.0047 (1999Da18) α(K)=0.00380 *6*; α(L)=0.000665 *10*; α(M)=0.0001550 *22* α(N)=3.82×10^{-5} *6*; α(O)=6.75×10^{-6} *10*; α(P)=4.00×10^{-7} *6* (1085γ)(155γ)(θ): A_2=+0.12 *15*, A_4=+0.15 *17*.
1102.2[‡] *2*	1.6[‡] *5*	1521.78		419.57	4$^+$				
1122.9[‡] *2*	0.8[‡] *3*	1542.48		419.57	4$^+$				
1149.3[‡] *2*	0.8[‡] *3*	1568.88		419.57	4$^+$				
1156.6[‡] *2*	1.3[‡] *2*	1311.63	2$^+$	154.88	2$^+$				(1157γ)(155γ)(θ): A_2=+0.02 *32*, A_4=−0.33 *36*.
[x]1203.6[@] *4*	1.2[@] *2*								
1264.9[#] *2*	1.3 *3*	1684.48		419.57	4$^+$				
[x]1293.6[@] *4*	1.4[@] *2*								
1310.8[@e] *4*	1.2[@] *2*	1311.63	2$^+$	0.0	0$^+$				
1387.6[‡] *2*	0.9[‡] *3*	1542.48		154.88	2$^+$				
[x]1396.4[@] *5*	1.2[@] *2*								
1469.6[‡] *2*	1.0[‡] *3*	1889.18		419.57	4$^+$				

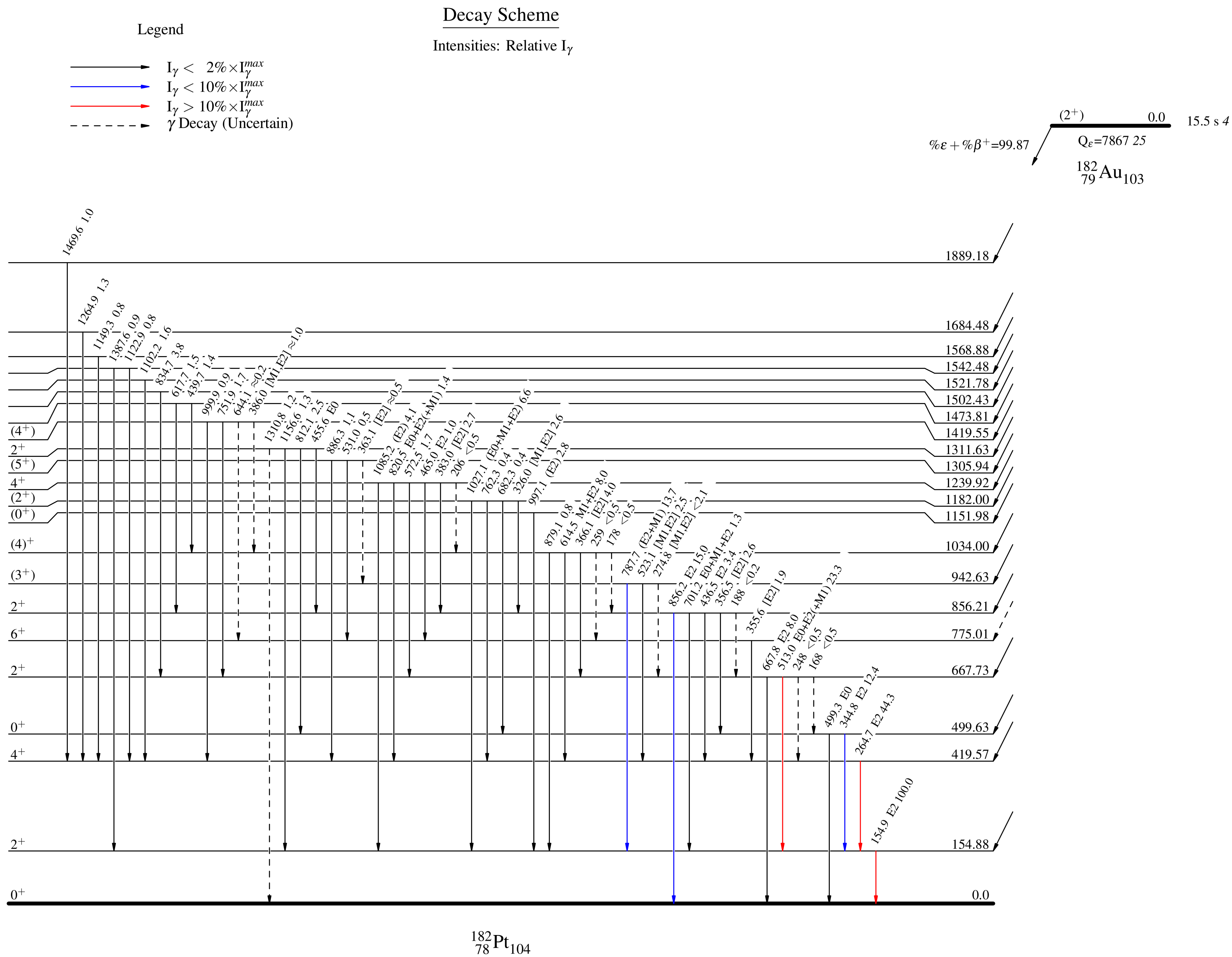
† From 1999Da18, unless otherwise stated. The Δ(Eγ) assigned as 0.2 keV based on e-mail reply from one of the authors (T. Kibedi) on June 10, 2003.
‡ Reported by 1999Da18 only.

From ENSDF

$\gamma(^{182}Pt)$ (continued)

[#] γ reported by 1974Ca28 as an unplaced transition.
[@] From 1974Ca28 only.
[&] Assignment uncertain since the line could be contaminated by γ ray of a similar energy in the decays of ^{182}Pt and ^{182}Hg.
[a] 899.3γ and 1054.3γ may define a level at 1054 keV.
[b] Primarily from ce data, also from $\gamma\gamma(\theta)$ for seven $\gamma\gamma$ cascades, the ce data were normalized to conversion electron intensity and theoretical K-conversion coefficient of 155γ, E2.
[c] For absolute intensity per 100 decays, multiply by ≈0.46.
[d] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[e] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{182}Au ε decay (15.5 s) 1999Da18,1976HuZS,1974Ca28



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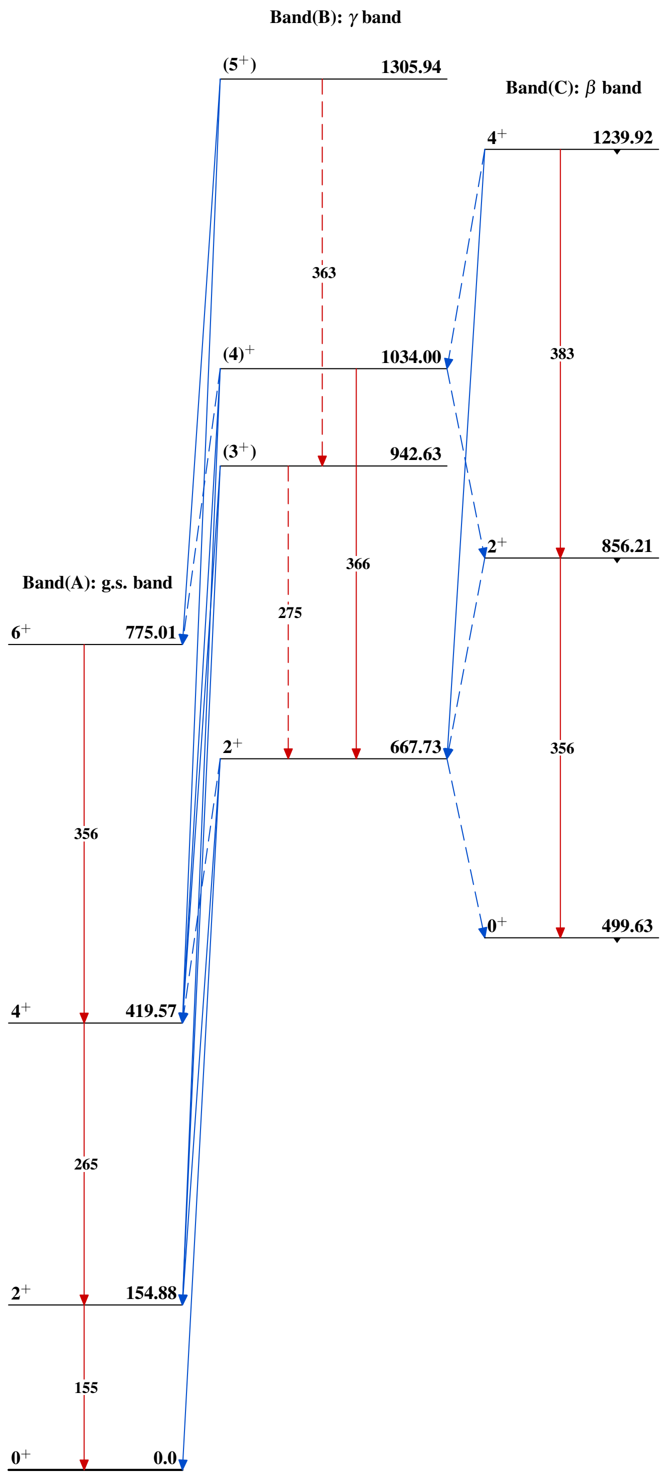

$^{182}_{78}Pt_{104}$