^{182}Re ε decay (64.2 h) 1977Je02,1980Sp01,1972Ga15

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

Parent: ^{182}Re: E=0.0; J$^{\pi}$=7^{+}; T$_{1/2}$=64.2 h *5*; Q(ε)=2.80×10^{3} *10*; %ε+%β^{+} decay=100.0

^{182}Re-J$^{\pi}$,T$_{1/2}$: From ^{182}Re Adopted Levels.

^{182}Re-Q(ε): From 2012Wa38.

1980Sp01: measured γ(θ,temp), nuclear orientation at low temperature.

1977Je02: measured Eγ, Iγ, γγ.

1975We22: measured γ(ce)(θ) and γ(ce)(θ) for ΔJ=0, ΔPI=no transitions to investigate E0 admixtures.

1972Ga15 (also 1971Ga30): Measured Eγ, Iγ, γγ. The ce data were used from 1970Ag07 and 1961Ha23.

1971Ga37, 1970Ag07 (from the same group): measured conversion electrons using an iron-free $\pi\sqrt{2}$ β spectrometer.

1969Sa25: measured Eγ, Iγ, γγ. Deduced conversion coefficients using ce data from 1961Ha23.

1964Ba43: measured ce. Relative electron intensities measured for about 14 transitions from 734 to 1189 keV. No conversion coefficients given.

1961Ha23: measured ce.

1958Ga24: measured Eγ, ce.

Unless otherwise stated, experimental conversion coefficients are from 1972Ga15 who deduced these from their γ-ray intensities and ce data from 1961Ha23, 1964Ba43 and 1970Ag07. The ce data from 1971Ga37 (supplementary to those from their earlier publication 1970Ag07) were probably not available to 1972Ga15.

2008Ya10: measured intensities of L-subshell x rays from ^{182}Re decay and photoionization.

^{182}W Levels

E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†
0.0	0^{+}	1373.81 *5*	3^{-}	1756.77 *6*	6^{+}	1971.09 *8*	(7)$^{+}$
100.11 *4*	2^{+}	1442.81 *5*	4^{+}	1768.95 *5*	(6)$^{-}$	1978.37 *6*	(7)$^{-}$
329.44 *5*	4^{+}	1487.50 *5*	4^{-}	1809.66 *7*	5^{-}	2114.43 *7*	(8)$^{-}$
680.50 *10*	6^{+}	1510.21 *7*	4^{+}	1810.89 *6*	(6)$^{-}$	2120.53? *8*	(8^{-})
1221.37 *5*	2^{+}	1553.22 *5*	4^{-}	1829.53 *5*	6^{-}	2204.56 *8*	(8)$^{-}$
1257.52 *5*	2^{+}	1621.27 *5*	5^{-}	1916.94 *11*	(7)$^{-}$		
1289.15 *5*	2^{-}	1623.54 *6*	(5)$^{+}$	1960.33 *6*	(7)$^{-}$		
1331.13 *6*	3^{+}	1660.37 *5*	5^{-}	1960.79 *8*	6^{-}		

† From Adopted Levels.

ε,β^{+} radiations

E(decay)	E(level)	Iε†	Log *ft*	I(ε+β^{+})†	Comments
(6.0×10^{2} *10*)	2204.56	4.5 *3*	7.5 *2*	4.5 *3*	εK=0.795 *8*; εL=0.155 *6*; εM+=0.0492 *22*
(6.8×10^{2}‡ *10*)	2120.53?	0.47 *8*	8.6 *2*	0.47 *8*	εK=0.800 *6*; εL=0.152 *4*; εM+=0.0480 *16*
(6.9×10^{2} *10*)	2114.43	1.03 *19*	8.2 *2*	1.03 *19*	εK=0.800 *6*; εL=0.152 *4*; εM+=0.0479 *15*
(8.2×10^{2} *10*)	1978.37	24 *5*	7.0 *2*	24 *5*	εK=0.805 *4*; εL=0.148 *3*; εM+=0.0465 *10*
(8.3×10^{2} *10*)	1971.09	1.70 *13*	8.2 *1*	1.70 *13*	εK=0.806 *4*; εL=0.148 *3*; εM+=0.0465 *10*
(8.4×10^{2} *10*)	1960.79	2.8 *6*	8.0 *2*	2.8 *6*	εK=0.806 *4*; εL=0.1477 *25*; εM+=0.0464 *10*
(8.4×10^{2} *10*)	1960.33	23 *5*	7.1 *2*	23 *5*	εK=0.806 *4*; εL=0.1477 *25*; εM+=0.0464 *10*
(8.8×10^{2} *10*)	1916.94	0.46 *9*	8.8 *2*	0.46 *9*	εK=0.807 *3*; εL=0.1468 *22*; εM+=0.0461 *8*
(9.7×10^{2} *10*)	1829.53	14 *4*	7.4 *2*	14 *4*	εK=0.8092 *24*; εL=0.1453 *18*; εM+=0.0455 *7*
(9.9×10^{2} *10*)	1810.89	0.7 *5*	8.7 *4*	0.7 *5*	εK=0.8096 *23*; εL=0.1450 *17*; εM+=0.0454 *7*
(9.9×10^{2} *10*)	1809.66	7.1 *23*	8.3^{1u} *3*	7.1 *23*	εK=0.786 *6*; εL=0.162 *5*; εM+=0.0521 *17*
(1.03×10^{3}‡ *10*)	1768.95	<0.18	>9.4	<0.18	εK=0.8104 *21*; εL=0.1444 *16*; εM+=0.0452 *6*
(1.04×10^{3} *10*)	1756.77	16.4 *8*	7.4 *1*	16.4 *8*	εK=0.8106 *21*; εL=0.1442 *15*; εM+=0.0451 *6*

Continued on next page (footnotes at end of table)

^{182}Re ε decay (64.2 h) 1977Je02,1980Sp01,1972Ga15 (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(1.14×10^{3}‡ *10*)	1660.37		<0.6	>9.6^{1u}	<0.6	εK=0.792 *5*; εL=0.158 *3*; εM+=0.0502 *12*
(1.18×10^{3}‡ *10*)	1623.54		<0.31	>9.3	<0.31	εK=0.8128 *16*; εL=0.1427 *12*; εM+=0.0445 *5*
(1.18×10^{3} *10*)	1621.27		1.9 *12*	9.2^{1u} *4*	1.9 *12*	εK=0.794 *4*; εL=0.157 *3*; εM+=0.0498 *11*
(2.12×10^{3}‡ *10*)	680.50	<0.02	<0.7	>9.4	<0.7	av Eβ=506 *44*; εK=0.801 *6*; εL=0.1343 *14*; εM+=0.0416 *5*

† Absolute intensity per 100 decays.

‡ Existence of this branch is questionable.

γ(^{182}W)

Iγ normalization: normalized assuming I(γ+ce)=100 to the ground state.

A$_2$ values and W(0°)−1 anisotropies are from low-temperature nuclear orientation study of 1980Sp01.

L x-ray intensity ratios (2008Ya10)

L-subshell ratio	^{182}Re decay	Photoionization
L$_\alpha$/L$_\beta$	0.625 *14*	0.65 *7*
L$_\alpha$/L$_\gamma$	3.08 *5*	3.21 *7*
L$_\alpha$/L$_l$	21.14 *5*	21.27 *18*
L$_\beta$/L$_\gamma$	4.68 *11*	4.865 *13*
L$_l$/L$_\gamma$	0.127 *11*	0.156 *4*

E$_\gamma$[†]	I$_\gamma$[†a]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	δ[‡]	α[&]	Comments
18.05 *10*	0.48 *12*	1978.37	(7)$^-$	1960.33	(7)$^-$	M1+E2	0.016 *5*	128 *4*	α(L)=99 *3*; α(M)=22.7 *7* α(N)=5.45 *16*; α(O)=0.883 *24*; α(P)=0.0612 *14*
19.85 *10*	0.14 *5*	1829.53	6$^-$	1809.66	5$^-$	M1+E2	0.07 *2*	1.3×10^2 *3*	α(L)=102 *20*; α(M)=24 *5* α(N)=5.7 *12*; α(O)=0.88 *15*; α(P)=0.0461 *10*
31.7 *1*	1.0 *2*	1289.15	2$^-$	1257.52	2$^+$	E1		1.63 *3*	α(L)=1.263 *21*; α(M)=0.294 *5* α(N)=0.0677 *12*; α(O)=0.00913 *15*; α(P)=0.000306 *5*
39.1 *1*	1.0 *2*	1660.37	5$^-$	1621.27	5$^-$	M1+E2	0.061 *7*	13.6 *4*	α(L)=10.53 *25*; α(M)=2.42 *6* α(N)=0.581 *15*; α(O)=0.0933 *21*; α(P)=0.00618 *10* L1/L2>8.7 (1971Ga37).
42.0		1810.89	(6)$^-$	1768.95	(6)$^-$				
42.7 *1*	1.8 *4*	1373.81	3$^-$	1331.13	3$^+$	E1		0.721 *12*	α(L)=0.558 *9*; α(M)=0.1287 *20* α(N)=0.0299 *5*; α(O)=0.00420 *7*; α(P)=0.0001588 *24*
60.65 *10*	0.4 *1*	1829.53	6$^-$	1768.95	(6)$^-$	[M1]		3.48	α(L)=2.69 *4*; α(M)=0.613 *9* α(N)=0.1476 *22*; α(O)=0.0240 *4*; α(P)=0.00171 *3*
65.8 *1*	11.2 *22*	1553.22	4$^-$	1487.50	4$^-$	M1+E2	0.093 *6*	2.90 *5*	α(L)=2.24 *4*; α(M)=0.515 *9* α(N)=0.1237 *21*; α(O)=0.0199 *4*; α(P)=0.001335 *20* L1/L2=7.9 *7*, L1/L3≈16, L2/L3≈2, M1/M2≈8 (1971Ga37).
67.85 *10*	86 *9*	1289.15	2$^-$	1221.37	2$^+$	E1		0.201	α(L)=0.1556 *23*; α(M)=0.0357 *6* α(N)=0.00837 *13*; α(O)=0.001229 *18*; α(P)=5.49×10^{-5} *8* L1/L2=2.8 *4*, L1/L3=2.1 *4*, L2/L3=0.76 *14* (1971Ga37).
84.68 *5*	10.7 *6*	1373.81	3$^-$	1289.15	2$^-$	M1+E2	+0.326 *11*	7.66	α(K)=5.84 *9*; α(L)=1.40 *3*; α(M)=0.331 *8* α(N)=0.0790 *19*; α(O)=0.0121 *3*; α(P)=0.000593 *9* δ: Other: +0.30 *2* (1980Sp01). α(K)exp≈6.0 (1971Ga37), α(L1)exp=1.15 *35*; α(L2)exp=0.46 *14*; α(L3)exp=0.34 *10*. L1/L2=2.40 *14*, L1/L3=3.2 *3*, L2/L3=1.36 *12*, M1/M2=2.3 *4*, M1/M3=2.5 *5* M2/M3=1.1 *3* (1971Ga37).
100.10 *5*	63.8 *17*	100.11	2$^+$	0.0	0$^+$	E2		3.89	α(K)=0.878 *13*; α(L)=2.28 *4*; α(M)=0.577 *9*

γ(^{182}W) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[‡]	α[&]	Comments
									α(N)=0.1358 20; α(O)=0.0186 3; α(P)=7.08×10^{-5} 10 ΔIγ(absolute)=0.4 per 100 decays. I_γ: calculated from the intensity balance at the 100 level. Measured value is Iγ=58 4. W(0°)−1=−0.057 25. α(L1)exp=0.11, 0.091 19; α(L2)exp=1.17 35, 1.08 13; α(L3)exp=1.05 32, 1.04 13. L1/L2=0.078 8, L1/L3=0.083 9, L2/L3=1.07 6 (1970Ag07). Additional information 1.
107.13 5	5.5 4	1660.37	5⁻	1553.22	4⁻	M1+E2	−0.8 2	3.54 13	A_2=+3.4 5 α(K)=2.3 4; α(L)=0.96 15; α(M)=0.24 4 α(N)=0.056 9; α(O)=0.0081 12; α(P)=0.00022 4 W(0°)−1=+0.54 8. α(K)exp=2.3 7 for 107.1γ+108.6γ (1971Ga37). L1/L2=0.74 8, L1/L3=1.09 16, L2/L3=1.6 3 (1971Ga37). δ: −0.56 to −1.3 (1980Sp01).
108.58 5	3.1 2	1768.95	(6)⁻	1660.37	5⁻	M1+E2	−0.6 2	3.50 13	A_2=+3.6 10 α(K)=2.5 3; α(L)=0.78 14; α(M)=0.19 4 α(N)=0.045 9; α(O)=0.0066 11; α(P)=0.00025 4 W(0°)−1=+0.55 15. α(K)exp=2.3 7 for 107.1γ+108.6γ, M1/M2=2.1 9 (1971Ga37). δ: −0.41 to −1.7 (1980Sp01).
110.38 5	0.4 4	1553.22	4⁻	1442.81	4⁺	[E1]		0.290	α(K)=0.238 4; α(L)=0.0409 6; α(M)=0.00932 13 α(N)=0.00220 3; α(O)=0.000335 5; α(P)=1.717×10^{-5} 25
111.07 5	0.81 6	1621.27	5⁻	1510.21	4⁺	[E1]		0.286	α(K)=0.234 4; α(L)=0.0402 6; α(M)=0.00916 13 α(N)=0.00217 3; α(O)=0.000329 5; α(P)=1.692×10^{-5} 24
113.68 5	18.9 12	1487.50	4⁻	1373.81	3⁻	M1+E2	+0.36 1	3.18	A_2=−0.88 13 α(K)=2.49 4; α(L)=0.529 9; α(M)=0.1242 22 α(N)=0.0297 6; α(O)=0.00462 8; α(P)=0.000250 4 δ: +0.36 3 (1980Sp01). W(0°)−1=−0.122 15. α(K)exp=2.7 8 (1971Ga37), α(L1)exp=0.32 5; α(L2)exp=0.078 25; α(L3)exp=0.075 19. L1/L2=4.0 6, L1/L3=9.9 13, L2/L3=2.1 17, M1/M2=3.2 5, M1/M3=5.4 10 M2/M3=1.8 6 (1971Ga37). Additional information 5.
116.23 5	2.0 2	1373.81	3⁻	1257.52	2⁺	E1		0.254	α(K)=0.208 3; α(L)=0.0355 5; α(M)=0.00809 12 α(N)=0.00191 3; α(O)=0.000292 4; α(P)=1.516×10^{-5} 22
130.81 5	29.0 20	1960.33	(7)⁻	1829.53	6⁻	M1+E2	−0.51 +6−8	2.03 6	A_2=+2.87 14 α(K)=1.55 8; α(L)=0.369 21; α(M)=0.087 6 α(N)=0.0208 13; α(O)=0.00319 16; α(P)=0.000154 8 Additional information 21. W(0°)−1=+0.410 9. α(K)exp=1.4 4.

γ(^{182}W) (continued)

E_γ†	I_γ†a	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡	α&	Comments
133.80 *5*	9.3 *6*	1621.27	5^-	1487.50	4^-	M1+E2	+0.39 *+4−3*	1.96 *4*	A_2=−1.08 *13* α(K)=1.55 *4*; α(L)=0.316 *10*; α(M)=0.0739 *24* α(N)=0.0177 *6*; α(O)=0.00277 *8*; α(P)=0.000155 *4* Additional information 9. W(0°)−1=−0.153 *17*. α(K)exp=1.27 *18*, K/L3=67 *19* (1971Ga37).
145.43 *5*	2.6 *2*	1768.95	$(6)^-$	1623.54	$(5)^+$	(E1)		0.1420	A_2=+0.4 *6* α(K)=0.1171 *17*; α(L)=0.0193 *3*; α(M)=0.00440 *7* α(N)=0.001043 *15*; α(O)=0.0001608 *23*; α(P)=8.80×10^{-6} *13* δ: +0.08 *11* (1980Sp01). W(0°)−1=+0.06 *9*. α(K)exp=0.11 *4* (1971Ga37).
147.69 *5*	3.5 *3*	1768.95	$(6)^-$	1621.27	5^-	M1+E2	+0.8 *2*	1.30 *9*	A_2=−2.1 *5* α(K)=0.94 *12*; α(L)=0.277 *24*; α(M)=0.067 *7* α(N)=0.0159 *15*; α(O)=0.00237 *18*; α(P)=9.1×10^{-5} *13* δ: +0.56 to +2.6 (1980Sp01). W(0°)−1=−0.31 *6*. α(K)exp=0.96 *30* for 147.6γ+148.8γ+149.4γ, L1/L2=1.6 *4*, L1/L3=2.8 *19*, L2/L3=1.8 *8* (1971Ga37).
148.86 *5*	6.8 *5*	1978.37	$(7)^-$	1829.53	6^-	M1+E2	+0.28 *+8−6*	1.48 *4*	A_2=−0.7 *3* α(K)=1.20 *5*; α(L)=0.214 *8*; α(M)=0.0493 *22* α(N)=0.0118 *5*; α(O)=0.00189 *6*; α(P)=0.000121 *5* Additional information 27. W(0°)−1=−0.12 *6*. α(K)exp=0.96 *30* for 147.6γ+148.8γ+149.4γ (1971Ga37).
149.45 *5*	3.5 *3*	1960.33	$(7)^-$	1810.89	$(6)^-$	M1+E2	−0.15 *+15−18*	1.50 *6*	A_2=+1.6 *8* α(K)=1.23 *7*; α(L)=0.202 *14*; α(M)=0.046 *4* α(N)=0.0111 *9*; α(O)=0.00180 *10*; α(P)=0.000124 *8* W(0°)−1=+0.23 *11*. Additional information 22. α(K)exp=0.96 *30* for 147.6γ+148.8γ+149.4γ, K/L2=37 *25* (1971Ga37).
150.25c *5*	2.0 *2*	1660.37	5^-	1510.21	4^+	(E1)		0.1305	A_2=+0.6 *11* α(K)=0.1077 *16*; α(L)=0.01770 *25*; α(M)=0.00403 *6* α(N)=0.000956 *14*; α(O)=0.0001476 *21*; α(P)=8.13×10^{-6} *12* Additional information 11. W(0°)−1=+0.10 *17*.
151.15 *5*	1.7 *2*	1960.79	6^-	1809.66	5^-	M1+E2	0.8 *3*	1.21 *13*	α(K)=0.88 *17*; α(L)=0.25 *3*; α(M)=0.061 *9* α(N)=0.0146 *20*; α(O)=0.00218 *23*; α(P)=8.5×10^{-5} *19* EKC≈0.32. α(K)exp=0.17 *5* for 151.1γ+152.4γ+153.9γ, L1/L2=2.1 *6*, L1/L3>9.8, L2/L3>5.0 (1971Ga37).
152.43 *5*	33.0 *20*	1373.81	3^-	1221.37	2^+	E1		0.1258	A_2=+1.07 *25*

γ(^{182}W) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[&]	Comments
									α(K)=0.1038 *15*; α(L)=0.01703 *24*; α(M)=0.00387 *6* α(N)=0.000919 *13*; α(O)=0.0001421 *20*; α(P)=7.85×10^{-6} *11* α(K)exp=0.116 *35*. W(0°)−1=−0.14 *3*. L1/L2≈4.3, K/L2≈28 (1971Ga37). Additional information 4. δ: +0.035 *53* from γ(θ) data consistent with RUL(M2)=1 which suggests δ near zero.
154.10 *5*	0.9 *3*	2114.43	(8)$^-$	1960.33	(7)$^-$	M1+E2	0.6 *3*	1.22 *12*	α(K)=0.93 *15*; α(L)=0.22 *3*; α(M)=0.052 *8* α(N)=0.0124 *17*; α(O)=0.00190 *19*; α(P)=9.2×10^{-5} *17* α(K)exp=0.17 *5* for 151.1γ+152.4γ+154.0γ (1971Ga37). L1/L2=2.9 *8*, L1/L3=3.3 *10*, L2/L3=1.2 *5* (1971Ga37).
156.39 *5*	28.0 *20*	1487.50	4$^-$	1331.13	3$^+$	E1		0.1177	A_2=+0.84 *8* α(K)=0.0972 *14*; α(L)=0.01590 *23*; α(M)=0.00362 *5* α(N)=0.000858 *12*; α(O)=0.0001328 *19*; α(P)=7.38×10^{-6} *11* Additional information 6. W(0°)−1=+0.119 *6*. α(L1)exp=0.0096 *36*.
160.20[bc] *5*	0.93[b] *6*	1916.94	(7)$^-$	1756.77	6$^+$				
160.20[bc] *5*	0.93[b] *6*	2120.53?	(8$^-$)	1960.33	(7)$^-$	(M1)		1.241	α(K)=1.030 *15*; α(L)=0.1631 *23*; α(M)=0.0371 *6* α(N)=0.00894 *13*; α(O)=0.001459 *21*; α(P)=0.0001038 *15* α(K)exp≈0.92 (1971Ga37).
169.15 *5*	44 *3*	1829.53	6$^-$	1660.37	5$^-$	M1+E2	+0.094 *6*	1.060	A_2=+0.31 *3* α(K)=0.879 *13*; α(L)=0.1405 *20*; α(M)=0.0320 *5* α(N)=0.00771 *11*; α(O)=0.001256 *18*; α(P)=8.85×10^{-5} *13* Additional information 19. W(0°)−1=+0.051 *5*. α(K)exp=0.87 *21*; α(L1)exp=0.140 *17*. L1/L2=10 *4*, L1/L3>27, L2/L3>2.5, M1/M2=9.9 *18*, M1/M3=38 *21*, M2/M3=4.4 *24* (1971Ga37).
172.87 *5*	13.9 *9*	1660.37	5$^-$	1487.50	4$^-$	M1+E2	+0.26 *1*	0.971	A_2=−0.51 *6* α(K)=0.795 *12*; α(L)=0.1356 *20*; α(M)=0.0312 *5* α(N)=0.00749 *11*; α(O)=0.001205 *17*; α(P)=7.97×10^{-5} *12* Additional information 12. W(0°)−1=−0.079 *9*. α(K)exp=0.67 *11* (1970Ag07). L1/L2=7.1 *8*, L1/L3=17 *3*, L2/L3=2.4 *6*, M1/M2=4.9 *14* (1971Ga37).
178.47 *5*	8.8 *5*	1621.27	5$^-$	1442.81	4$^+$	E1		0.0838	A_2=+0.77 *15* α(K)=0.0693 *10*; α(L)=0.01118 *16*; α(M)=0.00254 *4* α(N)=0.000604 *9*; α(O)=9.39×10^{-5} *14*; α(P)=5.36×10^{-6} *8* Additional information 10. W(0°)−1=+0.102 *20*. α(K)exp=0.010 *4* (1971Ga37).
179.40 *5*	11.7 *7*	1553.22	4$^-$	1373.81	3$^-$	M1+E2	+1.2 *3*	0.63 *7*	A_2=−2.23 *15*

γ(^{182}W) (continued)

E$_\gamma$[†]	I$_\gamma$[†a]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[‡]	δ[‡]	α[&]	Comments
									α(K)=0.44 *8*; α(L)=0.147 *8*; α(M)=0.0358 *22* α(N)=0.0085 *5*; α(O)=0.00125 *5*; α(P)=4.1×10^{-5} *9* δ: +0.84 to +1.8 (1980Sp01). W(0°)−1=−0.299 *12*. L1/L2=1.99 *19*, L1/L3=3.0 *3*, L2/L3=1.50 *19* (1971Ga37).
187.34 *5*	1.25 *12*	1810.89	(6)$^-$	1623.54	(5)$^+$	E1+M2	+0.25 *+27−20*	0.33 *66*	A$_2$=−0.5 *10* α(K)=0.25 *50*; α(L)=0.06 *13*; α(M)=0.014 *30* α(N)=0.0033 *73*; α(O)=5.E−4 *12*; α(P)=3.3×10^{-5} *74* Additional information 17. W(0°)−1=−0.07 *14*.
188.54[c] *5*	0.51 *5*	1809.66	5$^-$	1621.27	5$^-$				
189.65 *5*	1.5 *7*	1810.89	(6)$^-$	1621.27	5$^-$	M1+E2	+0.31 *+15−12*	0.74 *4*	A$_2$=−0.8 *6* α(K)=0.60 *4*; α(L)=0.104 *3*; α(M)=0.0239 *10* α(N)=0.00575 *22*; α(O)=0.000923 *21*; α(P)=6.0×10^{-5} *5* Additional information 18. W(0°)−1=−0.10 *8*. α(K)exp=0.077 *19* (1971Ga37).
191.39 *5*	26.0 *20*	1960.33	(7)$^-$	1768.95	(6)$^-$	M1+E2	−0.23 *+6−8*	0.734 *18*	A$_2$=+0.90 *9* α(K)=0.604 *19*; α(L)=0.1002 *18*; α(M)=0.0230 *5* α(N)=0.00552 *11*; α(O)=0.000892 *14*; α(P)=6.05×10^{-5} *20* δ: −0.017 *17* (1980Sp01). W(0°)−1=+0.129 *9*. α(K)exp=0.66 *15*; α(L1)exp=0.098 *30*, 0.077 *8*; α(L2)exp=0.0081 *7*; EL3C≈0.002. Additional information 23.
198.34 *5*	15.7 *13*	1487.50	4$^-$	1289.15	2$^-$	E2		0.317	α(K)=0.1726 *25*; α(L)=0.1098 *16*; α(M)=0.0273 *4* α(N)=0.00646 *9*; α(O)=0.000910 *13*; α(P)=1.364×10^{-5} *20* W(0°)−1=−0.182 *12*. α(K)exp=0.20 *4*. L1/L3=0.66 *34* (1970Ag07). Additional information 7. δ: +0.067 *10* from γ(θ) data, but RUL(M3)=10 suggests δ near zero.
203.55 *5*	1.9 *2*	1960.33	(7)$^-$	1756.77	6$^+$	(E1)		0.0599	A$_2$=+0.5 *5* α(K)=0.0497 *7*; α(L)=0.00790 *11*; α(M)=0.00179 *3* α(N)=0.000427 *6*; α(O)=6.68×10^{-5} *10*; α(P)=3.91×10^{-6} *6* W(0°)−1=+0.07 *6*. δ: from γ(θ), 1980Sp01 give δ(Q/D)=−17 *+10−24* or +0.06 *+9−4*; favoring the former value from δ based on ce data of 1971Ga37. But 1971Ga37 (also 1972Ga15) assigned tentative E2 from α(K)exp=0.15 *3* (1971Ga37) and questioned the placement and mult assignment. δ(M2/E1)=−17 *+10−24* is inconsistent with RUL(M2)=1 for T$_{1/2}$(1960.33 level)<1 ns or so. The evaluators assign tentative E1.

γ(^{182}W) (continued)

E_γ†	I_γ†a	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡	α&	Comments
206.00 *5*	2.0 *2*	1829.53	6^-	1623.54	$(5)^+$	E1		0.0581	A_2=+0.9 *4* α(K)=0.0482 *7*; α(L)=0.00766 *11*; α(M)=0.001739 *25* α(N)=0.000414 *6*; α(O)=6.48×10^{-5} *9*; α(P)=3.80×10^{-6} *6* δ: −0.02 *7* (1980Sp01). W(0°)−1=+0.14 *6*. α(K)exp≈0.047 (1971Ga37).
208.26 *5*	2.4 *2*	1829.53	6^-	1621.27	5^-	M1+E2	−1.0 *5*	0.43 *10*	A_2=+3.2 *4* α(K)=0.32 *11*; α(L)=0.084 *4*; α(M)=0.0200 *14* α(N)=0.0048 *3*; α(O)=0.000721 *18*; α(P)=3.1×10^{-5} *12* Additional information 20. W(0°)−1=+0.52 *6*. α(L2)exp≈0.024 (1970Ag07); α(K)exp=0.31 *4*.
209.40 *5*	1.9 *2*	1978.37	$(7)^-$	1768.95	$(6)^-$	M1+E2	−0.28 *+23−15*	0.56 *3*	A_2=+2.2 *7* α(K)=0.46 *3*; α(L)=0.0776 *15*; α(M)=0.0178 *5* α(N)=0.00428 *10*; α(O)=0.000690 *11*; α(P)=4.6×10^{-5} *4* Additional information 28. W(0°)−1=+0.39 *10*. α(K)exp=0.53 *15*, 0.35 *11*; α(L1)exp=0.074 *14*. L1/L3>3 (1970Ag07).
214.32 *5*	4.3 *3*	1971.09	$(7)^+$	1756.77	6^+	M1+E2	+0.25 *+8−7*	0.532 *15*	A_2=−0.5 *4* α(K)=0.439 *14*; α(L)=0.0725 *11*; α(M)=0.0166 *3* α(N)=0.00399 *7*; α(O)=0.000645 *9*; α(P)=4.39×10^{-5} *15* Additional information 26. W(0°)−1=−0.07 *5*. α(K)exp=0.44 *13*, 0.42 *8*; α(L1)exp=0.065 *19*, 0.064 *9*. L1/L2=8.7 *19* (1971Ga37).
215.73 *5*	3.0 *2*	1768.95	$(6)^-$	1553.22	4^-	(E2)		0.240	α(K)=0.1376 *20*; α(L)=0.0776 *11*; α(M)=0.0192 *3* α(N)=0.00455 *7*; α(O)=0.000645 *9*; α(P)=1.106×10^{-5} *16* W(0°)−1=−0.17 *7*. α(L1)exp=0.026 *10* (1970Ag07).
217.55 *5*	12.7 *8*	1660.37	5^-	1442.81	4^+	(E1)		0.0506	A_2=+0.76 *13* α(K)=0.0420 *6*; α(L)=0.00664 *10*; α(M)=0.001508 *22* α(N)=0.000359 *5*; α(O)=5.63×10^{-5} *8*; α(P)=3.33×10^{-6} *5* δ: +0.014 *25* (1980Sp01). W(0°)−1=+0.117 *20*. α(L2)exp=0.0038 *15* (1971Ga37). Additional information 13.
221.61 *5*	25.0 *20*	1978.37	$(7)^-$	1756.77	6^+	E1		0.0483	A_2=+0.72 *13* α(K)=0.0401 *6*; α(L)=0.00633 *9*; α(M)=0.001438 *21* α(N)=0.000342 *5*; α(O)=5.37×10^{-5} *8*; α(P)=3.19×10^{-6} *5* δ: +0.016 *24* (1980Sp01). W(0°)−1=+0.122 *3* for 221.6+222.1. EKC≈0.04, 0.060 *20*; α(L1)exp=0.0068 *8*. α(K)exp=0.050 *10* for 221.6γ+222.1γ, L1/L2>4 (1970Ag07).

γ(^{182}W) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[‡]	α[&]	Comments
222.07 *5*	33 *3*	1553.22	4^-	1331.13	3^+	E1		0.0480	α(K)=0.0399 *6*; α(L)=0.00630 *9*; α(M)=0.001430 *20* α(N)=0.000341 *5*; α(O)=5.34$\times10^{-5}$ *8*; α(P)=3.17$\times10^{-6}$ *5* W(0°)−1=+0.122 *3* for 221.6+222.1. α(K)exp=0.050 *10* for 221.6γ+222.1γ (1970Ag07). L1/L2>4 (1970Ag07).
226.19 *5*	11.9 *8*	2204.56	$(8)^-$	1978.37	$(7)^-$	M1+E2	+0.15 *2*	0.468	A_2=−0.02 *9* α(K)=0.388 *6*; α(L)=0.0620 *9*; α(M)=0.01414 *20* α(N)=0.00341 *5*; α(O)=0.000554 *8*; α(P)=3.89$\times10^{-5}$ *6* Additional information 29. W(0°)−1=−0.004 *15*. α(K)exp=0.50 *15*, 0.41 *6*; α(L1)exp=0.059 *18*, 0.058 *5*. L1/L2=7.8 *8*, L1/L3>24, L2/L3>3 (1971Ga37).
229.32 *5*	100.0	329.44	4^+	100.11	2^+	E2		0.196	α(K)=0.1167 *17*; α(L)=0.0605 *9*; α(M)=0.01497 *21* α(N)=0.00354 *5*; α(O)=0.000505 *7*; α(P)=9.50$\times10^{-6}$ *14* α(K)exp=0.117 *30*, 0.124 *16*. W(0°)−1=−0.154 *3*. L1/L2=0.55 *13*, L1/L3=0.080 *20*, L2/L3=1.5 *3* (1970Ag07). Additional information 2.
247.46 *5*	19.6 *13*	1621.27	5^-	1373.81	3^-	E2		0.1538	α(K)=0.0951 *14*; α(L)=0.0447 *7*; α(M)=0.01101 *16* α(N)=0.00261 *4*; α(O)=0.000374 *6*; α(P)=7.86$\times10^{-6}$ *11* W(0°)−1=−0.183 *4*. α(K)exp=0.088 *22*, L1/L2=0.66 *13*, L1/L3=1.04 *23*, L2/L3=1.6 *3* (1970Ag07).
256.45 *5*	37 *3*	1809.66	5^-	1553.22	4^-	M1+E2	+0.037 *+6−7*	0.336	A_2=+0.64 *3* α(K)=0.279 *4*; α(L)=0.0438 *7*; α(M)=0.00996 *14* α(N)=0.00240 *4*; α(O)=0.000392 *6*; α(P)=2.79$\times10^{-5}$ *4* Additional information 16. W(0°)−1=+0.099 *3*. α(L1)exp=0.040 *7*, L1/L2>7.7, L1/L3>38 (1970Ag07).
264.07 *5*	13.9 *9*	1553.22	4^-	1289.15	2^-	E2		0.1254	α(K)=0.0799 *12*; α(L)=0.0347 *5*; α(M)=0.00852 *12* α(N)=0.00202 *3*; α(O)=0.000291 *4*; α(P)=6.69$\times10^{-6}$ *10* W(0°)−1=−0.182 *7*. α(K)exp=0.076 *16* (1970Ag07). L1/L2=0.50 *11*, M1/M2=0.8 *4*, M1/M3=1.1 *7*, M2/M3=1.5 *8* (1971Ga37).
276.31 *5*	34.0 *20*	1829.53	6^-	1553.22	4^-	E2		0.1090	α(K)=0.0708 *10*; α(L)=0.0291 *4*; α(M)=0.00714 *10* α(N)=0.001693 *24*; α(O)=0.000245 *4*; α(P)=5.98$\times10^{-6}$ *9* W(0°)−1=−0.194 *4*. α(K)exp=0.078 *24*, 0.073 *6*; α(L1)exp=0.0105 *11*; α(L2)exp=0.0127 *11*; α(L3)exp=0.0080 *10*. L1/L2=0.74 *6*, L1/L3=1.10 *10*, L2/L3=1.49 *13* (1970Ag07).
281.45 *5*	22.1 *15*	1768.95	$(6)^-$	1487.50	4^-	E2		0.1031	α(K)=0.0674 *10*; α(L)=0.0272 *4*; α(M)=0.00665 *10* α(N)=0.001577 *23*; α(O)=0.000228 *4*; α(P)=5.71$\times10^{-6}$ *8*

γ(^{182}W) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[&]	Comments
									W(0°)−1=−0.188 *5*. α(K)exp=0.064 *13*, L2/L3=1.9 *3* (1971Ga37,1970Ag07).
286.56 *5*	27.4 *18*	1660.37	5^-	1373.81	3^-	E2		0.0976	α(K)=0.0643 *9*; α(L)=0.0254 *4*; α(M)=0.00621 *9* α(N)=0.001472 *21*; α(O)=0.000213 *3*; α(P)=5.47×10^{-6} *8* W(0°)−1=−0.193 *4*. α(K)exp=0.069 *19* (1970Ag07). L1/L2=0.77 *15*, L1/L3=1.23 *23*, L2/L3=1.6 *3* (1971Ga37).
295.67 *10*	0.8 *3*	1916.94	$(7)^-$	1621.27	5^-	(E2)		0.0888	α(K)=0.0592 *9*; α(L)=0.0226 *4*; α(M)=0.00551 *8* α(N)=0.001307 *19*; α(O)=0.000190 *3*; α(P)=5.06×10^{-6} *7*
299.90 *10*	4.9 *10*	1960.33	$(7)^-$	1660.37	5^-	E2		0.0851	α(K)=0.0570 *8*; α(L)=0.0214 *3*; α(M)=0.00522 *8* α(N)=0.001239 *18*; α(O)=0.000180 *3*; α(P)=4.89×10^{-6} *7* W(0°)−1=−0.064 *8* for 299.9+300.4. L1/L3=1.35 *6* (1970Ag07).
300.36 *10*	6.6 *15*	1960.79	6^-	1660.37	5^-	M1+E2	+0.048 *26*	0.218	A_2=+0.56 *14* α(K)=0.181 *3*; α(L)=0.0284 *4*; α(M)=0.00646 *9* α(N)=0.001555 *22*; α(O)=0.000254 *4*; α(P)=1.81×10^{-5} *3* Additional information 24. W(0°)−1=−0.064 *8* for 300.4+299.9. α(K)exp=0.23 *6*.
313.98 *10*	3.1 *2*	1756.77	6^+	1442.81	4^+	E2		0.0743	α(K)=0.0506 *7*; α(L)=0.0181 *3*; α(M)=0.00440 *7* α(N)=0.001044 *15*; α(O)=0.0001524 *22*; α(P)=4.37×10^{-6} *7* W(0°)−1=−0.18 *3*. α(L2)exp=0.0090 *25*, L1/L2=0.83 *20*, L1/L3=2.2 *8*, L2/L3=2.7 *10* (1971Ga37).
323.40 *10*	6.8 *5*	1810.89	$(6)^-$	1487.50	4^-	E2		0.0681	α(K)=0.0469 *7*; α(L)=0.01621 *23*; α(M)=0.00394 *6* α(N)=0.000936 *14*; α(O)=0.0001371 *20*; α(P)=4.07×10^{-6} *6* W(0°)−1=−0.165 *14*. α(K)exp=0.059 *10*; α(L1)exp=0.0067 *10*; α(L3)exp=0.0058 *10*. α(L1)exp=0.007 *2*, L1/L2=0.97 *18*, L1/L3=1.6 *5*, L2/L3=1.7 *5* (1970Ag07).
339.06 *10*	21.6 *14*	1960.33	$(7)^-$	1621.27	5^-	E2		0.0594	α(K)=0.0415 *6*; α(L)=0.01368 *20*; α(M)=0.00332 *5* α(N)=0.000788 *11*; α(O)=0.0001159 *17*; α(P)=3.63×10^{-6} *5* W(0°)−1=−0.173 *5*. α(K)exp=0.058 *20*, 0.038 *8*; α(L1)exp=0.0052 *8*; α(L2)exp=0.0069 *10*; α(L3)exp=0.0036 *13*, 0.0033 *6*. L1/L2=0.82 *15*, L1/L3=1.6 *3*, L2/L3=2.0 *4* (1970Ag07).
342.03 *10*	4.1 *3*	1829.53	6^-	1487.50	4^-	E2		0.0579	α(K)=0.0406 *6*; α(L)=0.01326 *19*; α(M)=0.00321 *5* α(N)=0.000764 *11*; α(O)=0.0001124 *16*; α(P)=3.55×10^{-6} *5* W(0°)−1=−0.20 *4*. α(K)exp=0.038 *5*.
345.46 *10*	1.9 *2*	2114.43	$(8)^-$	1768.95	$(6)^-$	E2		0.0563	α(K)=0.0395 *6*; α(L)=0.01280 *18*; α(M)=0.00310 *5* α(N)=0.000737 *11*; α(O)=0.0001085 *16*; α(P)=3.47×10^{-6} *5* W(0°)−1=−0.28 *18*. α(K)exp=0.053 *19* (1971Ga37).

γ(^{182}W) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[‡]	α[&]	Comments
351.07 *10*	40 *3*	680.50	6^+	329.44	4^+	E2		0.0538	α(K)=0.0379 *6*; α(L)=0.01210 *17*; α(M)=0.00293 *5* α(N)=0.000696 *10*; α(O)=0.0001026 *15*; α(P)=3.34×10^{-6} *5* α(K)exp=0.038 *12*, 0.045 *7*; α(L1)exp=0.0050 *5*; α(L2)exp=0.0057 *7*; α(L3)exp=0.0028 *7*, 0.0032 *5*. L1/L2=0.99 *11*, L1/L3=1.82 *25*, L2/L3=1.85 *25* (1970Ag07). W(0°)−1=−0.154 *4*. Additional information 3.
357.04 *10*	2.1 *2*	1978.37	$(7)^-$	1621.27	5^-	E2		0.0513	α(K)=0.0364 *5*; α(L)=0.01140 *16*; α(M)=0.00276 *4* α(N)=0.000656 *10*; α(O)=9.68×10^{-5} *14*; α(P)=3.20×10^{-6} *5* W(0°)−1=−0.22 *3*. α(K)exp=0.032 *13* (1970Ag07).
891.9 *1*	0.13 *2*	1221.37	2^+	329.44	4^+	E2		0.00569	α(K)=0.00464 *7*; α(L)=0.000810 *12*; α(M)=0.000187 *3* α(N)=4.47×10^{-5} *7*; α(O)=7.09×10^{-6} *10*; α(P)=4.31×10^{-7} *6*
928.0 *1*	1.44 *15*	1257.52	2^+	329.44	4^+	E2		0.00524	α(K)=0.00429 *6*; α(L)=0.000738 *11*; α(M)=0.0001698 *24* α(N)=4.07×10^{-5} *6*; α(O)=6.47×10^{-6} *9*; α(P)=3.98×10^{-7} *6* α(K)exp=0.0036 *10*, 0.0047 *13*, 0.011 *5*.
943.2 *3*	0.88 *14*	1623.54	$(5)^+$	680.50	6^+	E2		0.00507	α(K)=0.00415 *6*; α(L)=0.000711 *10*; α(M)=0.0001634 *23* α(N)=3.92×10^{-5} *6*; α(O)=6.23×10^{-6} *9*; α(P)=3.86×10^{-7} *6* α(K)exp=0.0044 *15*.
959.7 *1*	0.78 *15*	1289.15	2^-	329.44	4^+	M2+E3	−5.5 *+19−10*	0.0116 *7*	α(K)=0.0090 *6*; α(L)=0.00196 *8*; α(M)=0.000463 *17* α(N)=0.000111 *4*; α(O)=1.73×10^{-5} *7*; α(P)=9.3×10^{-7} *6* α(K)exp=0.0060 *24*, 0.012 *3*, ≈0.012.
1001.7 *1*	9.6 *3*	1331.13	3^+	329.44	4^+	E2+M1	−8.9 *+21−18*	0.00455 *8*	A_2=+0.84 *14* α(K)=0.00374 *7*; α(L)=0.000627 *11*; α(M)=0.0001438 *24* α(N)=3.45×10^{-5} *6*; α(O)=5.51×10^{-6} *9*; α(P)=3.48×10^{-7} *7* δ: >+22 or <−35 (1980Sp01). α(K)exp=0.0046 *5*, 0.0046 *6*, 0.0047 *10*. W(0°)−1=+0.102 *9*.
1044.4 *1*	1.11 *4*	1373.81	3^-	329.44	4^+	E1+M2(+E3)	0.46 *9*	0.0051 *12*	α(K)=0.0042 *10*; α(L)=0.00067 *16*; α(M)=0.00015 *4* α(N)=3.7×10^{-5} *9*; α(O)=6.0×10^{-6} *14*; α(P)=4.2×10^{-7} *10* α(K)exp=0.0053 *10*, 0.0061 *12*, ≈0.0057.
1076.2 *2*	41.0 *12*	1756.77	6^+	680.50	6^+	E2+M1	+2.56 *+9−8*	0.00444	A_2=+0.11 *3* α(K)=0.00368 *6*; α(L)=0.000592 *10*; α(M)=0.0001351 *21* α(N)=3.24×10^{-5} *5*; α(O)=5.22×10^{-6} *8*; α(P)=3.46×10^{-7} *6* Additional information 15. W(0°)−1=−0.001 *3*. α(K)exp=0.0037 *4*, 0.0036 *4*, 0.0041 *8*. α(K)exp=0.00399 *13*, α(L)exp=0.00060 *3* (1975We22). L1/L2=7.8 *9*, L1/L3=23 *5*, L2/L3=3.1 *9* (1970Ag07). Mult.: no E0 admixture found in γ(ce)(θ) and ce work of 1975We22.
1088.5 *3*	0.77 *8*	1768.95	$(6)^-$	680.50	6^+	E1+M2	0.4 *2*	0.0040 *23*	α(K)=0.0033 *19*; α(L)=5.1×10^{-4} *31*; α(M)=1.17×10^{-4} *70*

γ(^{182}W) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[‡]	α[&]	Comments
									α(N)=2.8×10^{-5} *17*; α(O)=4.6×10^{-6} *28*; α(P)=3.3×10^{-7} *20* α(K)exp=0.0034 *6* (1971Ga37,1970Ag07).
1113.3 *1*	18.3 *4*	1442.81	4$^+$	329.44	4$^+$	E2+M1(+E0)	+5.6 *+13−10*	0.00376	A$_2$=+0.26 *6* α(K)=0.00311 *7*; α(L)=0.000504 *10*; α(M)=0.0001151 *22* α(N)=2.76×10^{-5} *6*; α(O)=4.43×10^{-6} *9*; α(P)=2.89×10^{-7} *7*; α(IPF)=3.52×10^{-7} *6* δ: +4.7 *+6−5* (1980Sp01). Mult.: E0 admixture is measured and discussed in 1975We22 from ce and γ(ce)(θ) data with q(E0/E2)=0.41 *9*. W(0°)−1=+0.029 *4*. α(K)exp=0.0035 *4*, 0.0036 *7*. α(K)exp=0.00359 *13* (1975We22). L1/L2=6.7 *15*, L1/L3>16, L2/L3>2.3 (1970Ag07).
1121.3 *1*	85.5 *25*	1221.37	2$^+$	100.11	2$^+$	E2+M1(+E0)	+30 *+6−4*	0.00360	A$_2$=+0.16 *12* α(K)=0.00297 *5*; α(L)=0.000483 *7*; α(M)=0.0001104 *16* α(N)=2.65×10^{-5} *4*; α(O)=4.25×10^{-6} *6*; α(P)=2.76×10^{-7} *4*; α(IPF)=4.74×10^{-7} *7* δ: +21 *+92−9* (1980Sp01). α(K)exp=0.00302 *14*, 0.0030 *3*, 0.0032 *5*. L1/L2=6.8 *6*, L1/L3=11.8 *12*, L2/L3=1.8 *2* (1970Ag07). Mult.: E0 admixture is measured and discussed in 1975We22 from ce and γ(ce)(θ) data with q(E0/E2)=0.16 *9*. W(0°)−1=+0.004 *6*.
1157.3[@] *1*	1.44[#] *15*	1257.52	2$^+$	100.11	2$^+$	E2+M1	−9 *+3−6*	0.00342 *7*	α(K)=0.00283 *6*; α(L)=0.000455 *9*; α(M)=0.0001040 *20* α(N)=2.49×10^{-5} *5*; α(O)=4.01×10^{-6} *8*; α(P)=2.63×10^{-7} *6*; α(IPF)=1.592×10^{-6} *25* α(K)exp=0.0061 *12*. W(0°)−1=−0.12 *3* for 1157.3+1158.1.
1158.1[@] *1*	3.43[#] *17*	1487.50	4$^-$	329.44	4$^+$	E1		1.38×10^{-3}	α(K)=0.001159 *17*; α(L)=0.0001632 *23*; α(M)=3.66×10^{-5} *6* α(N)=8.79×10^{-6} *13*; α(O)=1.432×10^{-6} *20*; α(P)=1.021×10^{-7} *15*; α(IPF)=7.59×10^{-6} *11* A$_2$=−1.35 *24*. Contribution from another component was considered. W(0°)−1=−0.12 *3* for 1158.1+1157.3.

γ(^{182}W) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[&]	Comments
									δ: −0.047 to +1.1 (1980Sp01).
1180.8 *3*	2.15 *10*	1510.21	4^+	329.44	4^+	E2+M1	−2.8 *10*	0.0036 *4*	α(K)exp=0.0021 *7*. A_2=+1.22 *16* α(K)=0.0030 *4*; α(L)=0.00047 *5*; α(M)=0.000108 *11* α(N)=2.59×10^{-5} *25*; α(O)=4.2×10^{-6} *5*; α(P)=2.8×10^{-7} *4*; α(IPF)=3.11×10^{-6} *16* Additional information 8.
1189.0 *1*	35.1 *10*	1289.15	2^-	100.11	2^+	E1+M2+E3		0.00146 *14*	W(0°)−1=+0.156 *18*. α(K)exp≈0.0018 (1970Ag07). δ(M2/E1)=+0.48 *3*; δ(E3/E1)=−0.67 *5* A_2=+2.13 *15* α(K)=0.00122 *12*; α(L)=0.000174 *19*; α(M)=3.9×10^{-5} *5* α(N)=9.4×10^{-6} *11*; α(O)=1.53×10^{-6} *17*; α(P)=1.09×10^{-7} *12*; α(IPF)=1.54×10^{-5} *3* Mult.,α: 59% *4* E1, 14% *1* M2 and 27% *3* E3. Conversion coefficient deduced for this admixture.
1221.4 *1*	67.7 *14*	1221.37	2^+	0.0	0^+	E2		0.00305	α(K)exp=0.0043 *5*, 0.0041 *8*, 0.0047 *9*. W(0°)−1=−0.243 *9*. L1/L2=6.1 *8*, L1/L3=32 *5*, L2/L3=5.3 *12* (1970Ag07). α(K)=0.00252 *4*; α(L)=0.000402 *6*; α(M)=9.15×10^{-5} *13* α(N)=2.20×10^{-5} *3*; α(O)=3.53×10^{-6} *5*; α(P)=2.34×10^{-7} *4*; α(IPF)=6.75×10^{-6} *10*
1223.9[@] *1*	1.02[#] *13*	1553.22	4^-	329.44	4^+	E1+M2(+E3)	−0.15 *+10−25*	0.0016 *15*	W(0°)−1=−0.103 *6*. L1/L2=6.7 *7*, L1/L3=20 *2*, L2/L3=3.1 *5* (1970Ag07). α(K)exp=0.00248 *25*, 0.0026 *5*. α(K)=0.0013 *13*; α(L)=1.9×10^{-4} *20*; α(M)=4.2×10^{-5} *46* α(N)=1.0×10^{-5} *11*; α(O)=1.6×10^{-6} *18*; α(P)=1.2×10^{-7} *13*; α(IPF)=2.7×10^{-5} *3*
1231.0 *1*	57.9 *11*	1331.13	3^+	100.11	2^+	E2+M1	−33 *+6−9*	0.00301	A_2=−0.25 *4* α(K)=0.00249 *4*; α(L)=0.000395 *6*; α(M)=9.01×10^{-5} *13* α(N)=2.16×10^{-5} *3*; α(O)=3.48×10^{-6} *5*; α(P)=2.31×10^{-7} *4*; α(IPF)=7.86×10^{-6} *11* δ: −72 *+28−120* (1980Sp01). α(K)exp=0.0025 *3* (1971Ga37).
1257.5 *1*	4.14 *12*	1257.52	2^+	0.0	0^+	E2		0.00289	W(0°)−1=−0.020 *4*. α(K)=0.00239 *4*; α(L)=0.000378 *6*; α(M)=8.60×10^{-5} *12* α(N)=2.06×10^{-5} *3*; α(O)=3.32×10^{-6} *5*; α(P)=2.21×10^{-7} *3*; α(IPF)=1.121×10^{-5} *16* α(K)exp≈0.0049.
1273.8 *1*	3.67 *17*	1373.81	3^-	100.11	2^+	E1+M2+E3		0.0029 *5*	W(0°)−1=−0.095 *19*. δ(M2/E1)=+0.36 *10*; δ(E3/E1)=−0.28 *12* Mult.,α: 81% *5* E1, 12% *4* M2 and 7% *2* E3. Conversion

γ(^{182}W) (continued)

E$_\gamma$[†]	I$_\gamma$[†a]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[‡]	δ[‡]	α[&]	Comments
									coefficient deduced for this admixture from BrIcc code. α(K)exp=0.0052 *24*.
1279.8[c] *3*	0.24 *3*	1960.79	6$^-$	680.50	6$^+$				
1289.2 *2*	2.94 *6*	1289.15	2$^-$	0.0	0$^+$	M2		0.01230	α(K)=0.01019 *15*; α(L)=0.001630 *23*; α(M)=0.000372 *6* α(N)=8.97×10^{-5} *13*; α(O)=1.466×10^{-5} *21*; α(P)=1.047×10^{-6} *15*; α(IPF)=5.97×10^{-6} *9* α(K)exp=0.0114 *18*, ≈0.012. W(0°)−1=−0.172 *18*.
1291.8 *4*	0.91 *9*	1621.27	5$^-$	329.44	4$^+$	E1+M2	0.4 *2*	0.0027 *14*	α(K)=0.0022 *12*; α(L)=3.4×10^{-4} *19*; α(M)=7.7×10^{-5} *44* α(N)=1.9×10^{-5} *11*; α(O)=3.0×10^{-6} *17*; α(P)=2.2×10^{-7} *13*; α(IPF)=5.0×10^{-5} *7* α(K)exp=0.00205 *19*.
1294.0 *3*	6.27 *12*	1623.54	(5)$^+$	329.44	4$^+$	E2(+M1)	>30	0.00274	A$_2$=−0.04 *13* α(K)=0.00226 *4*; α(L)=0.000356 *5*; α(M)=8.10×10^{-5} *12* α(N)=1.94×10^{-5} *3*; α(O)=3.13×10^{-6} *5*; α(P)=2.10×10^{-7} *3*; α(IPF)=1.654×10^{-5} *24* W(0°)−1=+0.038 *14*. α(K)exp=0.00210 *19*. δ: >+30 or <−60 (1980Sp01).
1330.9 *2*	1.46 *13*	1660.37	5$^-$	329.44	4$^+$	E1+M2	0.5 *2*	0.0032 *14*	α(K)=0.0026 *11*; α(L)=4.0×10^{-4} *18*; α(M)=9.1×10^{-5} *41* α(N)=2.19×10^{-5} *98*; α(O)=3.6×10^{-6} *16*; α(P)=2.6×10^{-7} *12*; α(IPF)=6.3×10^{-5} *9* α(K)exp≈0.0014 (1971Ga37).
1342.7 *1*	10.0 *25*	1442.81	4$^+$	100.11	2$^+$	E2		0.00256	α(K)=0.00211 *3*; α(L)=0.000329 *5*; α(M)=7.49×10^{-5} *11* α(N)=1.80×10^{-5} *3*; α(O)=2.90×10^{-6} *4*; α(P)=1.95×10^{-7} *3*; α(IPF)=2.56×10^{-5} *4* W(0°)−1=−0.190 *11*. α(K)exp=0.0024 *4*, 0.0021 *8*.
1373.8 *1*	1.15 *4*	1373.81	3$^-$	0.0	0$^+$	E3		0.00496	α(K)=0.00400 *6*; α(L)=0.000728 *11*; α(M)=0.0001685 *24* α(N)=4.05×10^{-5} *6*; α(O)=6.44×10^{-6} *9*; α(P)=3.97×10^{-7} *6*; α(IPF)=1.251×10^{-5} *18* α(K)exp=0.011 *5*.
1387.4 *1*	1.03 *10*	1487.50	4$^-$	100.11	2$^+$	E3+M2	2.6 *4*	0.00554 *24*	α(K)=0.00450 *21*; α(L)=0.00079 *3*; α(M)=0.000183 *7* α(N)=4.39×10^{-5} *16*; α(O)=7.0×10^{-6} *3*; α(P)=4.50×10^{-7} *21*; α(IPF)=1.426×10^{-5} *22* α(K)exp=0.0030 *11*.
1410.1 *1*	1.08 *7*	1510.21	4$^+$	100.11	2$^+$	E2		0.00235	α(K)=0.00193 *3*; α(L)=0.000298 *5*; α(M)=6.76×10^{-5} *10* α(N)=1.624×10^{-5} *23*; α(O)=2.62×10^{-6} *4*; α(P)=1.783×10^{-7} *25*; α(IPF)=4.20×10^{-5} *6* W(0°)−1=−0.18 *5*. α(K)exp=0.0019 *6*.
1427.3 *2*	38.1 *7*	1756.77	6$^+$	329.44	4$^+$	E2		0.00231	α(K)=0.00188 *3*; α(L)=0.000291 *4*; α(M)=6.60×10^{-5} *10*

From ENSDF

^{182}Re ε decay (64.2 h) 1977Je02,1980Sp01,1972Ga15 (continued)

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

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[&]	Comments
									α(N)=1.584×10^{-5} *23*; α(O)=2.56×10^{-6} *4*; α(P)=1.743×10^{-7} *25*; α(IPF)=4.68×10^{-5} *7* W(0°)−1=−0.203 *3*. α(K)exp=0.00169 *15*, 0.0018 *6*.
1439.3 *3*	0.62 *4*	1768.95	(6)$^-$	329.44	4$^+$	(M2)		0.00930	α(K)=0.00770 *11*; α(L)=0.001217 *17*; α(M)=0.000277 *4* α(N)=6.69×10^{-5} *10*; α(O)=1.093×10^{-5} *16*; α(P)=7.84×10^{-7} *11*; α(IPF)=2.33×10^{-5} *4* α(K)exp=0.0016 *4* (1971Ga37,1970Ag07). Mult.: α(K)exp gives E1+M2 or E2, but ΔJ^π requires M2.
1453.1 *1*	0.15 *3*	1553.22	4$^-$	100.11	2$^+$	E3(+M2)		0.0067 *24*	α(K)=0.0055 *20*; α(L)=9.1×10^{-4} *28*; α(M)=2.08×10^{-4} *62* α(N)=5.0×10^{-5} *15*; α(O)=8.1×10^{-6} *26*; α(P)=5.6×10^{-7} *21*; α(IPF)=2.41×10^{-5} *15* α(K)exp=0.0043 *13* (1971Ga37).
1521.3 *4*	0.37 *4*	1621.27	5$^-$	100.11	2$^+$	(E3)		0.00402	α(K)=0.00325 *5*; α(L)=0.000568 *8*; α(M)=0.0001309 *19* α(N)=3.15×10^{-5} *5*; α(O)=5.03×10^{-6} *7*; α(P)=3.20×10^{-7} *5*; α(IPF)=3.37×10^{-5} *5* α(K)exp=0.0032 *6*, 0.0050 *15*.
1560.4 *4*	0.28 *3*	1660.37	5$^-$	100.11	2$^+$	(E3)		0.00382	α(K)=0.00309 *5*; α(L)=0.000534 *8*; α(M)=0.0001231 *18* α(N)=2.96×10^{-5} *5*; α(O)=4.74×10^{-6} *7*; α(P)=3.03×10^{-7} *5*; α(IPF)=4.10×10^{-5} *6* α(K)exp=0.0055 *17*, ≈0.0028. Additional information 14.
1631.4[c] *5*	0.049 *9*	1960.79	6$^-$	329.44	4$^+$	M2+E3	≈2.5	≈0.00396	α(K)≈0.00321; α(L)≈0.000536; α(M)≈0.0001230 α(N)≈2.96×10^{-5}; α(O)≈4.77×10^{-6}; α(P)≈3.17×10^{-7}; α(IPF)≈5.70×10^{-5} α(K)exp=0.0054 *20*, ≈0.0016. Additional information 25.

[†] For Eγ<84, values are from ce data of 1961Ha23 normalized assuming using E2 for the 100.1γ, energy uncertainty of 0.1 keV is assumed by the evaluators. For Eγ=85-357 from 1977Je02, and for Eγ>357 from 1972Ga15. For ΔIγ(absolute) combine 5.5% in quadrature with ΔIγ(relative), except as noted.

[‡] From ^{182}Ta β^- decay; ce data in 1971Ga37, 1970Ag07 and 1961Ha23; and $\gamma(\theta$,temp) data of 1980Sp01. The conversion data were normalized to 100.1γ with E2 multipolarity.

[#] Calculated from adopted branching ratios.

[@] Not observed in this decay.

[&] Theoretical values from BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" approximation. If mixing ratio δ is not given, it was assumed as 1.0 for E2/M1 and E3/M2 and 0.10 for others.

[a] For absolute intensity per 100 decays, multiply by 0.258 *7*.

[b] Multiply placed with undivided intensity.

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

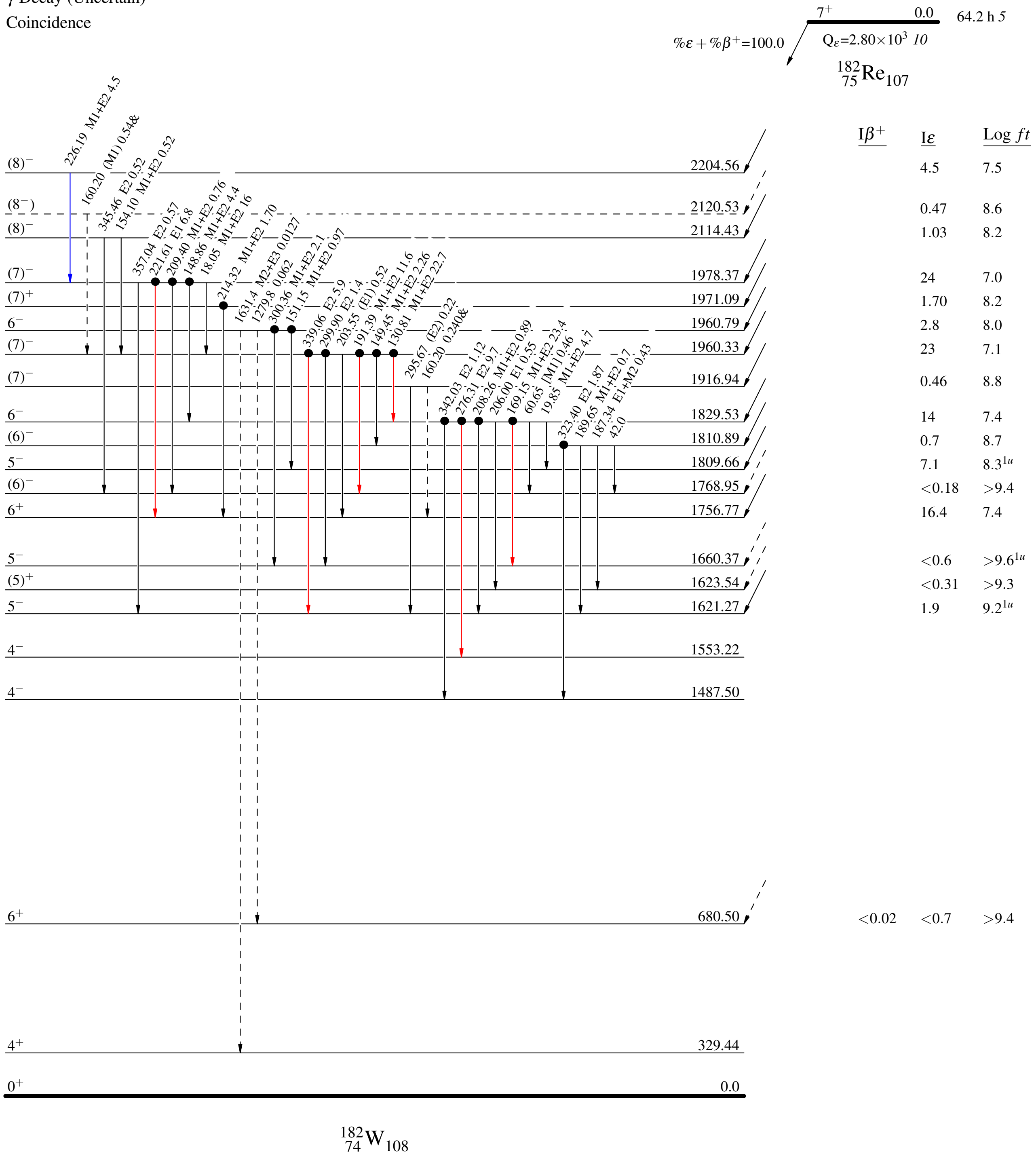
^{182}Re ε decay (64.2 h) 1977Je02,1980Sp01,1972Ga15

Decay Scheme

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

Legend

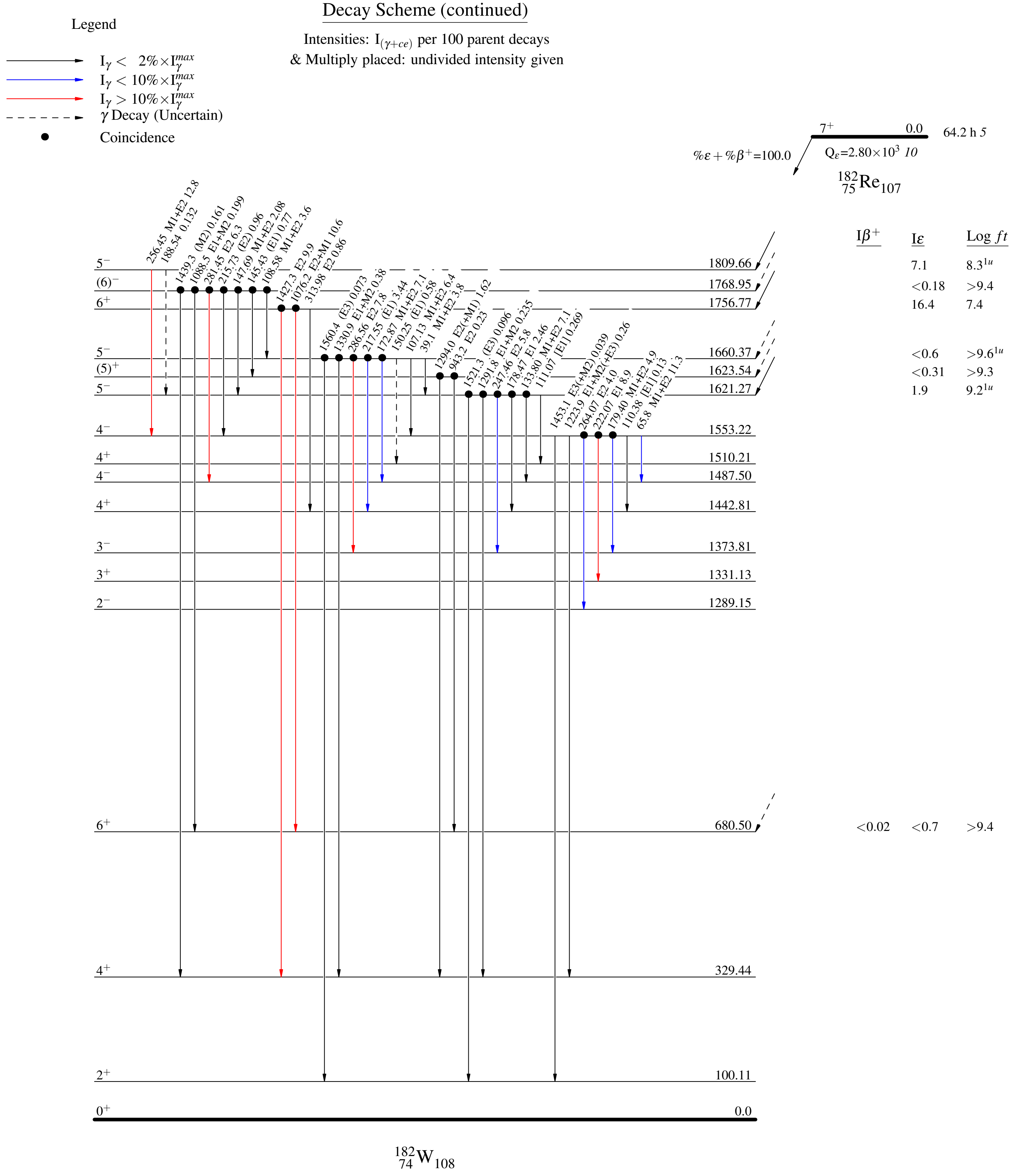
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- ● Coincidence



^{182}Re ε decay (64.2 h) 1977Je02,1980Sp01,1972Ga15

Decay Scheme (continued)

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



^{182}Re ε decay (64.2 h) 1977Je02,1980Sp01,1972Ga15

Decay Scheme (continued)

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