^{183}Os ε decay (13.0 h) 1983Br24

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 134, 149 (2016)	15-Apr-2015

Parent: ^{183}Os: E=0.0; J$^{\pi}$=9/2^{+}; T$_{1/2}$=13.0 h *5*; Q(ε)=2150 *50*; %ε+%β^{+} decay=100.0

Other references: 1960Ne03, 1968Ha39, 1970Ak01, 1970PlZZ.

1983Br24:high-purity ^{183}Os sources from ^{182}W(α,3n) using enriched targets and followed by chemical separation; additional sources from W(α,xn) using natural W foils and chemical separation; low-energy photon spectrometer (FWHM≈0.55 keV At 122 keV) and large-volume Ge(Li) spectrometers (FWHM≈1.9 keV At 1332 keV); measured Eγ, Iγ, $\gamma\gamma$ coin, γ(t).

The decay scheme is primarily from 1983Br24. the total energy release for this decay scheme is 2259 *56* cf.QxBR=2150 *50*.

^{183}Re Levels

E(level)†	J$^{\pi}$‡	T$_{1/2}$	Comments
0.0	5/2^{+}	70.0 d *14*	T$_{1/2}$: from Adopted Levels.
114.50 *3*	7/2^{+}		
259.89 *3*	9/2^{+}		
435.27 *4*	11/2^{+}		
496.26 *3*	9/2^{-}	7.7 ns *5*	T$_{1/2}$: from 1960Ne03. No ε+β^{+} feeding observed; LOGFT1UT>8.5 implies %ε+%β^{+}<5.
598.62 *11*	(5/2)$^{-}$		
619.04 *12*	(9/2)$^{-}$		
639.09 *8*	13/2^{+}		
664.09 *3*	11/2^{-}		
851.54 *3*	(7/2)$^{+}$		
861.18 *4*	13/2^{-}		
878.97 *21*	1/2^{+}		
892.05 *7*	(7/2^{-})		
999.59# *20*	(5/2)$^{+}$		
1002.51 *4*	(9/2)$^{+}$		
1183.50 *10*	(11/2)$^{+}$		
1304.20 *5*	(11/2)$^{-}$		
1525.24 *5*	(9/2)$^{-}$		
1554.09 *4*	(9/2)$^{-}$		
1659.11 *5*	(7/2,9/2)$^{-}$		
1663.80 *5*	(11/2)		
1711.72 *6*	(9/2^{-})		
1746.46 *7*	(9/2^{-},11/2^{-})		
1781.38 *6*	(9/2,11/2)$^{-}$		
1798.21 *12*	(5/2^{+},7/2,9/2^{+})		
1864.37 *8*	(7/2,9/2^{+})		
1897.85 *7*	(7/2^{-},9/2,11/2^{+})		
1948.91 *10*			
1991.01 *8*	(9/2,11/2^{+})		
2016.89 *13*	(7/2^{-},9/2,11/2^{+})		
2030.07 *5*	(9/2^{+},11/2^{+})		

† From least-squares fit to measured Eγ. note that the 1915γ, 1771γ and 567γ fit their placements poorly. The normalized chisq of the fit is 2.58 cf. a critical value of 1.46.

‡ From Adopted Levels.

No transition feeding the 1000 level was placed; however, the apparent log *ft*=8.8 is too low for a second-forbidden decay. The evaluator adopts J$^{\pi}$≤5/2^{+} from (^{3}He,t) and assumes that an as yet unidentified Γ-ray(s) feeds this level.

^{183}Os ε decay (13.0 h) 1983Br24 (continued)

ε,β$^+$ radiations

E(decay)	E(level)	Iβ$^+$ †	Iε†	Log *ft*	I(ε+β$^+$)†	Comments
(1.2×10^2 *5*)	2030.07		0.320 *11*	6.1 *9*	0.320 *11*	εK=0.5 *5*; εL=0.4 *4*; εM+=0.14 *16*
(1.3×10^2 *5*)	2016.89		0.029 *5*	7.3 *8*	0.029 *5*	εK=0.5 *5*; εL=0.3 *3*; εM+=0.12 *14*
(1.6×10^2 *5*)	1991.01		0.0172 *22*	7.8 *6*	0.0172 *22*	εK=0.62 *22*; εL=0.28 *16*; εM+=0.10 *7*
(2.0×10^2 *5*)	1948.91		0.074 *6*	7.4 *4*	0.074 *6*	εK=0.69 *9*; εL=0.23 *6*; εM+=0.080 *25*
(2.5×10^2 *5*)	1897.85		0.068 *5*	7.7 *3*	0.068 *5*	εK=0.73 *4*; εL=0.21 *3*; εM+=0.069 *11*
(2.9×10^2 *5*)	1864.37		0.0111 *22*	8.65 *24*	0.0111 *22*	εK=0.74 *3*; εL=0.194 *19*; εM+=0.064 *8*
(3.5×10^2 *5*)	1798.21		0.0078 *20*	9.03 *20*	0.0078 *20*	εK=0.762 *15*; εL=0.179 *11*; εM+=0.059 *4*
(3.7×10^2 *5*)	1781.38		0.593 *13*	7.20 *16*	0.593 *13*	εK=0.766 *13*; εL=0.177 *9*; εM+=0.058 *4*
(4.0×10^2 *5*)	1746.46		0.151 *6*	7.88 *14*	0.151 *6*	εK=0.772 *10*; εL=0.172 *7*; εM+=0.056 *3*
(4.4×10^2 *5*)	1711.72		0.128 *8*	8.04 *13*	0.128 *8*	εK=0.777 *8*; εL=0.168 *6*; εM+=0.0544 *22*
(4.9×10^2 *5*)	1663.80		0.299 *17*	7.77 *12*	0.299 *17*	εK=0.783 *6*; εL=0.164 *5*; εM+=0.0529 *17*
(4.9×10^2 *5*)	1659.11		1.301 *23*	7.15 *11*	1.301 *23*	εK=0.784 *6*; εL=0.164 *5*; εM+=0.0527 *17*
(6.0×10^2 *5*)	1554.09		2.45 *4*	7.06 *9*	2.45 *4*	εK=0.792 *4*; εL=0.157 *3*; εM+=0.0503 *10*
(6.2×10^2 *5*)	1525.24		0.511 *13*	7.79 *9*	0.511 *13*	εK=0.794 *4*; εL=0.1562 *24*; εM+=0.0499 *9*
(8.5×10^2 *5*)	1304.20		0.369 *19*	8.21 *7*	0.369 *19*	εK=0.8033 *16*; εL=0.1494 *12*; εM+=0.0473 *5*
(9.7×10^2 *5*)	1183.50		0.14 *3*	8.76 *11*	0.14 *3*	εK=0.8064 *12*; εL=0.1471 *9*; εM+=0.0464 *4*
(1.15×10^3 *5*)	1002.51		1.27 *6*	7.96 *5*	1.27 *6*	εK=0.8098 *9*; εL=0.1447 *6*; εM+=0.04553 *23*
(1.15×10^3 *5*)	999.59		0.20 *5*	8.77 *12*	0.20 *5*	εK=0.8099 *8*; εL=0.1446 *6*; εM+=0.04552 *22*
(1.26×10^3 *5*)	892.05		0.24 *3*	8.77 *7*	0.24 *3*	εK=0.8113 *7*; εL=0.1435 *5*; εM+=0.04511 *19*
(1.29×10^3 *5*)	861.18		0.05 *3*	10.2^{1u} *3*	0.05 *3*	εK=0.7939 *16*; εL=0.1561 *12*; εM+=0.0499 *5*
(1.30×10^3 *5*)	851.54		5.20 *9*	7.46 *4*	5.20 *9*	εK=0.8118 *6*; εL=0.1432 *5*; εM+=0.04497 *17*
(1.49×10^3 *5*)	664.09	0.015 *8*	17.7 *4*	7.05 *4*	17.8 *4*	av Eβ=228 *23*; εK=0.8131 *2*; εL=0.1416 *4*; εM+=0.04441 *14*
(1.65×10^3 *5*)	496.26	0.21 *7*	73.8 *14*	6.53 *4*	74.0 *14*	av Eβ=302 *23*; εK=0.8128 *5*; εL=0.1404 *4*; εM+=0.04395 *14*
(1.71×10^3 *5*)	435.27	0.0002 *2*	0.05 *4*	9.7 *4*	0.05 *4*	av Eβ=329 *23*; εK=0.8122 *7*; εL=0.1399 *4*; εM+=0.04379 *15*

† Absolute intensity per 100 decays.

γ(^{183}Re)

Iγ normalization, I(γ+ce) normalization: normalization assumes Σ (I(γ+ce) to g.s.)=100. Negligible ε feeding to the g.s. is expected (ΔJ=2, Δπ=no).

E_γ[‡]	I_γ[‡d]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[@]	α[†]	$I_{(\gamma+ce)}$[d]	Comments
(20.41 *13*)	0.12[a] *4*	619.04	(9/2)$^-$	598.62	(5/2)$^-$	[E2]		7.6×10^3 *3*	>0.26[b]	ce(L)/(γ+ce)=0.759 *19*; ce(M)/(γ+ce)=0.190 *9* ce(N)/(γ+ce)=0.0448 *22*; ce(O)/(γ+ce)=0.0063 *4*; ce(P)/(γ+ce)=4.71×10^{-6} *24* α(L)=5.75×10^3 *21*; α(M)=1.44×10^3 *5*; α(N)=339 *12*; α(O)=47.7 *17*; α(P)=0.0357 *13* E_γ: from level-energy difference.
^{x}60.44 *5*	9.3 *4*									
^{x}61.66 *5*	9.7 *4*									
^{x}62.21 *5*	2.39 *20*									
^{x}77.740 *25*	1.27 *25*									
^{x}88.86 *6*	0.36 *15*									
114.43 *5*	230.3 *9*	114.50	7/2$^+$	0.0	5/2$^+$	M1+E2	0.24 *4*	3.45 *6*		α(K)=2.79 *6*; α(L)=0.514 *18*; α(M)=0.119 *5* α(N)=0.0289 *11*; α(O)=0.00474 *15*; α(P)=0.000304 *7* Mult.: α(K)exp=2.5, K:L1:L2:L3=5.6:1:0.17:0.065 (1970Ak01). L1:L2:L3:M1:N1:O1=6.5:1.0:0.36:1.5:0.44:0.13 (1960Ne03). K:L1:L2:L3:M=6320:1135:190:74: 370 (1968Ha39).
120.62 *5*	0.68 *15*	999.59	(5/2)$^+$	878.97	1/2$^+$	[E2]		1.97		α(K)=0.591 *9*; α(L)=1.045 *15*; α(M)=0.265 *4* α(N)=0.0631 *9*; α(O)=0.00903 *13*; α(P)=4.98×10^{-5} *7*
145.39 *2*	17.12 *15*	259.89	9/2$^+$	114.50	7/2$^+$	M1+E2	0.37 *13*	1.68 *7*		α(K)=1.34 *9*; α(L)=0.262 *18*; α(M)=0.061 *5* α(N)=0.0148 *12*; α(O)=0.00240 *14*; α(P)=0.000145 *11* Mult.: α(K)exp=1.42 (1970Ak01). K:L1:L2:L3:M1=1.6:0.32:0.055:0.02:0.10 (1960Ne03). K:L1:L2:L3:M=360:62:9.5:3.5:22 (1968Ha39).
150.96 *3*	1.95 *15*	1002.51	(9/2)$^+$	851.54	(7/2)$^+$	E2+M1	0.6 *2*	1.40 *10*		α(K)=1.07 *13*; α(L)=0.257 *22*; α(M)=0.061 *7* α(N)=0.0147 *15*; α(O)=0.00233 *18*; α(P)=0.000114 *15* Mult.: α(K)exp=2.0 (1970Ak01). K:L1=0.19:0.05 (1960Ne03). K:L1:L2:L3:M=40:8.2:3:≈1.5:3.4 (1968Ha39).
^{x}153.86 *10*	0.24 *10*									
^{x}155.29 *10*	0.30 *15*									
167.85 *2*	98.3 *9*	664.09	11/2$^-$	496.26	9/2$^-$	M1+E2	0.14 *7*	1.173 *22*		α(K)=0.968 *22*; α(L)=0.158 *3*; α(M)=0.0363 *8*

From ENSDF

γ(^{183}Re) (continued)

E_γ‡	I_γ‡d	E_i(level)	J^π_i	E_f	J^π_f	Mult.#	δ@	α†	Comments
									α(N)=0.00880 18; α(O)=0.00147 3; α(P)=0.0001052 25 Mult.: α(K)exp=0.89, K:L1:L2=5:1:0.13 (1970Ak01). K:L1:L2:M1:N1=5.9:1.3:0.17:1.00:0.47 (1960Ne03). K:L1:L2:=1000:215:≈25:<106 (1968Ha39).
175.370 25	2.33 15	435.27	11/2$^+$	259.89	9/2$^+$	M1+E2	0.48 19	0.95 7	α(K)=0.75 8; α(L)=0.150 8; α(M)=0.0351 23 α(N)=0.0085 6; α(O)=0.00137 6; α(P)=8.1×10^{-5} 10 K:L1=≈25:7, L2 weak (1968Ha39).
180.78 25	0.66 15	1183.50	(11/2)$^+$	1002.51	(9/2)$^+$	[M1+E2]		0.7 3	α(K)=0.5 3; α(L)=0.151 24; α(M)=0.036 8 α(N)=0.0088 18; α(O)=0.00135 17; α(P)=5.E−5 4
197.10 4	1.46 15	861.18	13/2$^-$	664.09	11/2$^-$	M1+E2	0.14 3	0.747 12	α(K)=0.618 10; α(L)=0.1002 15; α(M)=0.0230 4 α(N)=0.00556 8; α(O)=0.000932 14; α(P)=6.70×10^{-5} 11 Mult.: α(K)exp=0.94 (1970Ak01). K:L1:M=16.5:5:2, L3 weak (1968Ha39).
203.84 10	0.49 15	639.09	13/2$^+$	435.27	11/2$^+$	M1+E2	0.14 7	0.681 13	α(K)=0.563 13; α(L)=0.0911 14; α(M)=0.0209 4 α(N)=0.00506 8; α(O)=0.000848 12; α(P)=6.10×10^{-5} 14 Mult.: from Adopted Gammas.
228.02 10	1.1 2	892.05	(7/2$^-$)	664.09	11/2$^-$	[E2]		0.207	α(K)=0.1195 17; α(L)=0.0666 10; α(M)=0.01658 24 α(N)=0.00396 6; α(O)=0.000584 9; α(P)=1.060×10^{-5} 15
236.41 5	38.1 6	496.26	9/2$^-$	259.89	9/2$^+$	E1		0.0424	α(K)=0.0351 5; α(L)=0.00558 8; α(M)=0.001272 18 α(N)=0.000305 5; α(O)=4.95×10^{-5} 7; α(P)=3.03×10^{-6} 5 Mult.: α(L1)exp=0.0051 (1970Ak01). K:L1:L2:L3:M=<106:7.7:1.7:1.5:3.3 (1968Ha39).
259.92 5	2.15 10	259.89	9/2$^+$	0.0	5/2$^+$	E2		0.1365	α(K)=0.0845 12; α(L)=0.0396 6; α(M)=0.00979 14 α(N)=0.00234 4; α(O)=0.000348 5; α(P)=7.68×10^{-6} 11 Mult.: α(K)exp=0.12 (1970Ak01). K:L12:L3=0.020:0.006:0.006 (1960Ne03). K:L2:L3:M=4.8:≈2:1.3:1.3 (1968Ha39).
273.01 10	0.26 6	892.05	(7/2$^-$)	619.04	(9/2)$^-$	[M1]		0.308	α(K)=0.255 4; α(L)=0.0404 6; α(M)=0.00923 13 α(N)=0.00224 4; α(O)=0.000376 6; α(P)=2.76×10^{-5} 4
293.30 10	0.50 15	892.05	(7/2$^-$)	598.62	(5/2)$^-$	[M1]		0.253	α(K)=0.210 3; α(L)=0.0332 5; α(M)=0.00758 11 α(N)=0.00184 3; α(O)=0.000309 5; α(P)=2.27×10^{-5} 4
320.80 8	0.65 10	435.27	11/2$^+$	114.50	7/2$^+$	(E2)		0.0723	α(K)=0.0488 7; α(L)=0.0179 3; α(M)=0.00438 7 α(N)=0.001048 15; α(O)=0.0001586 23; α(P)=4.60×10^{-6} 7 Mult.: from Adopted Gammas.
332.15 15	0.10 3	1183.50	(11/2)$^+$	851.54	(7/2)$^+$				
338.53 5	0.95 10	1002.51	(9/2)$^+$	664.09	11/2$^-$				
355.35 5	7.26 15	851.54	(7/2)$^+$	496.26	9/2$^-$	(E1)		0.01585	α(K)=0.01323 19; α(L)=0.00203 3; α(M)=0.000462 7 α(N)=0.0001110 16; α(O)=1.82×10^{-5} 3; α(P)=1.187×10^{-6} 17 Mult.: α(K)exp=0.040 (1970Ak01). K:L1=4.8:0.7 (1968Ha39).
364.925 23	0.11 2	861.18	13/2$^-$	496.26	9/2$^-$	(E2)		0.0501	α(K)=0.0352 5; α(L)=0.01130 16; α(M)=0.00275 4 α(N)=0.000658 10; α(O)=0.0001007 15; α(P)=3.38×10^{-6} 5 Mult.: From Adopted Gammas.
^{x}377.40 20	3.7^c 10								

$^{183}_{75}$Re$_{108}$-4

$\gamma(^{183}Re)$ (continued)

E_γ[‡]	I_γ[‡d]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
^{x}379.18[e] *20*	12[e&c] *4*							
379.18[e] *20*	0.17[e&] *5*	639.09	13/2$^+$	259.89	9/2$^+$			
381.74 *5*	1000 *10*	496.26	9/2$^-$	114.50	7/2$^+$	E1	0.01344	α(K)=0.01123 *16*; α(L)=0.001714 *24*; α(M)=0.000389 *6* α(N)=9.37×10^{-5} *14*; α(O)=1.540×10^{-5} *22*; α(P)=1.013×10^{-6} *15* Mult.: K:L1=7:1 (1970Ak01). K:L1:L2:L3:M1:N1=1.00:0.12:0.02:0.018:0.032:0.014 (1960Ne03). K:L1:L2:L3:M=240:40:≈7:5.8:12 (1968Ha39).
404.28 *8*	0.40 *7*	664.09	11/2$^-$	259.89	9/2$^+$			
^{x}472.57 *25*	0.05[c] *3*							
477.24 *5*	3.36 *8*	1781.38	(9/2,11/2)$^-$	1304.20	(11/2)$^-$	M1	0.0691	α(K)=0.0575 *8*; α(L)=0.00897 *13*; α(M)=0.00204 *3* α(N)=0.000495 *7*; α(O)=8.34×10^{-5} *12*; α(P)=6.16×10^{-6} *9* Mult.: α(K)exp=0.058 (1970Ak01). K:L1:L3:M=6.1:1.2:≈0.2:0.9 (1968Ha39).
(484.13 *11*)	>0.9	598.62	(5/2)$^-$	114.50	7/2$^+$	E1	0.00791	α(K)=0.00663 *10*; α(L)=0.000994 *14*; α(M)=0.000225 *4* α(N)=5.43×10^{-5} *8*; α(O)=8.97×10^{-6} *13*; α(P)=6.08×10^{-7} *9* E_γ: from level-energy difference.
496.37 *5*	7.13 *8*	496.26	9/2$^-$	0.0	5/2$^+$	M2	0.191	α(K)=0.1536 *22*; α(L)=0.0291 *4*; α(M)=0.00680 *10* α(N)=0.001655 *24*; α(O)=0.000276 *4*; α(P)=1.93×10^{-5} *3* Mult.: α(K)exp=0.12 (1970Ak01). K:L1:M1=0.085:0.017:0.005 (1960Ne03). K:L1:L3=26.5:6.8:0.8 (1968Ha39).
^{x}548.31 *20*	0.20[c] *6*							
566.56 *20*	0.10[c] *4*	1002.51	(9/2)$^+$	435.27	11/2$^+$			
591.54 *10*	0.30 *8*	851.54	(7/2)$^+$	259.89	9/2$^+$	(M1)	0.0396	α(K)=0.0330 *5*; α(L)=0.00510 *8*; α(M)=0.001161 *17* α(N)=0.000282 *4*; α(O)=4.74×10^{-5} *7*; α(P)=3.51×10^{-6} *5* Mult.: α(K)exp=0.062 (1968Ha39).
640.24 *8*	0.69 *9*	1304.20	(11/2)$^-$	664.09	11/2$^-$	[M1]	0.0323	α(K)=0.0269 *4*; α(L)=0.00415 *6*; α(M)=0.000945 *14* α(N)=0.000229 *4*; α(O)=3.86×10^{-5} *6*; α(P)=2.86×10^{-6} *4*
^{x}653.90 *20*	0.20[c] *6*							
664.22 *15*	0.19[c] *4*	1525.24	(9/2)$^-$	861.18	13/2$^-$			
687.10 *20*	0.15 *4*	1183.50	(11/2)$^+$	496.26	9/2$^-$			
693.05 *8*	0.73 *7*	1554.09	(9/2)$^-$	861.18	13/2$^-$			
737.15 *8*	3.10 *15*	851.54	(7/2)$^+$	114.50	7/2$^+$	(M1)	0.0225	α(K)=0.0188 *3*; α(L)=0.00288 *4*; α(M)=0.000656 *10* α(N)=0.0001591 *23*; α(O)=2.68×10^{-5} *4*; α(P)=1.99×10^{-6} *3* Mult.: α(K)exp=0.028 (1970Ak01).
742.73 *10*	0.49[c] *7*	1002.51	(9/2)$^+$	259.89	9/2$^+$	[M1]	0.0221	α(K)=0.0184 *3*; α(L)=0.00283 *4*; α(M)=0.000644 *9* α(N)=0.0001560 *22*; α(O)=2.63×10^{-5} *4*; α(P)=1.95×10^{-6} *3*
^{x}762.58 *10*	0.45 *7*							
802.40 *10*	1.20[c] *15*	1663.80	(11/2)	861.18	13/2$^-$			
807.94 *5*	6.79 *15*	1304.20	(11/2)$^-$	496.26	9/2$^-$	M1	0.01783	α(K)=0.01489 *21*; α(L)=0.00228 *4*; α(M)=0.000518 *8* α(N)=0.0001257 *18*; α(O)=2.12×10^{-5} *3*; α(P)=1.576×10^{-6} *22* Mult.: α(K)exp=0.013 (1970Ak01).
851.46 *5*	50.84 *35*	851.54	(7/2)$^+$	0.0	5/2$^+$	M1	0.01562	α(K)=0.01304 *19*; α(L)=0.00199 *3*; α(M)=0.000453 *7*

γ(^{183}Re) (continued)

E_γ [‡]	I_γ [‡d]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	α [†]	$I_{(\gamma+ce)}$ [d]	Comments
									α(N)=0.0001099 *16*; α(O)=1.85×10^{-5} *3*; α(P)=1.379×10^{-6} *20* Mult.: α(K)exp=0.012 (1970Ak01). K:L1:M1=1.6:0.049:0.008:0.0025 (1960Ne03).
861.16 *8*	1.04 *7*	1525.24	(9/2)$^-$	664.09	11/2$^-$				
878.91	2.8 *6*	878.97	1/2$^+$	0.0	5/2$^+$	E2	0.00615		α(K)=0.00499 *7*; α(L)=0.000892 *13*; α(M)=0.000207 *3* α(N)=4.99×10^{-5} *7*; α(O)=8.15×10^{-6} *12*; α(P)=5.01×10^{-7} *7* E_γ: from fig. 2 of 1983Br24.
887.94 *5*	8.35 *12*	1002.51	(9/2)$^+$	114.50	7/2$^+$	(M1)	0.01405		α(K)=0.01174 *17*; α(L)=0.00179 *3*; α(M)=0.000407 *6* α(N)=9.87×10^{-5} *14*; α(O)=1.665×10^{-5} *24*; α(P)=1.240×10^{-6} *18* Mult.: α(K)exp<0.018 (1970Ak01). K:L1=3.3:<1.3 (1968Ha39).
889.96 *5*	10.60 *12*	1554.09	(9/2)$^-$	664.09	11/2$^-$	(M1)	0.01397		α(K)=0.01167 *17*; α(L)=0.001781 *25*; α(M)=0.000405 *6* α(N)=9.82×10^{-5} *14*; α(O)=1.655×10^{-5} *24*; α(P)=1.233×10^{-6} *18* Mult.: α(K)exp<0.014 (1970Ak01).
892.10 *8*	0.31 *8*	892.05	(7/2$^-$)	0.0	5/2$^+$	[E1]	0.00230		α(K)=0.00194 *3*; α(L)=0.000280 *4*; α(M)=6.31×10^{-5} *9* α(N)=1.524×10^{-5} *22*; α(O)=2.55×10^{-6} *4*; α(P)=1.83×10^{-7} *3* α(K)exp<0.47 (1970Ak01).
923.56 *20*	0.15 *7*	1183.50	(11/2)$^+$	259.89	9/2$^+$				
946.20 *20*	0.20 *4*	1948.91		1002.51	(9/2)$^+$				
999.59 *20*	0.17 *4*	999.59	(5/2)$^+$	0.0	5/2$^+$				
1002.46 *8*	0.49 *4*	1002.51	(9/2)$^+$	0.0	5/2$^+$				
1024.66 *15*	0.49[c] *4*	1663.80	(11/2)	639.09	13/2$^+$				
1028.57 *20*	0.11[c] *3*	1525.24	(9/2)$^-$	496.26	9/2$^-$				
1047.82 *15*	0.19 *5*	1711.72	(9/2$^-$)	664.09	11/2$^-$				
1057.79 *5*	5.85 *15*	1554.09	(9/2)$^-$	496.26	9/2$^-$	M1+E2	0.0066 *25*		α(K)=0.0055 *21*; α(L)=0.0009 *3*; α(M)=0.00020 *7* α(N)=4.8×10^{-5} *16*; α(O)=8.E−6 *3*; α(P)=5.7×10^{-7} *23* Mult.: α(K)exp=0.0055 (1970Ak01).
[x]1072.67 *15*	0.19 *4*								
1082.31 *8*	1.35 *5*	1746.46	(9/2$^-$,11/2$^-$)	664.09	11/2$^-$	(M1)		0.00856	ce(K)/(γ+ce)=0.00710 *10*; ce(L)/(γ+ce)=0.001076 *15*; ce(M)/(γ+ce)=0.000244 *4* ce(N)/(γ+ce)=5.93×10^{-5} *9*; ce(O)/(γ+ce)=1.000×10^{-5} *14*; ce(P)/(γ+ce)=7.47×10^{-7} *11* α(K)=0.00716 *10*; α(L)=0.001086 *16*; α(M)=0.000247 *4*; α(N)=5.98×10^{-5} *9*; α(O)=1.008×10^{-5} *15*
1089.98 *8*	1.18 *5*	1525.24	(9/2)$^-$	435.27	11/2$^+$				
1097.42 *10*	0.61 *5*	1948.91		851.54	(7/2)$^+$				
1113.62 *20*	0.10 *3*	1711.72	(9/2$^-$)	598.62	(5/2)$^-$				

γ(^{183}Re) (continued)

E$_γ$[‡]	I$_γ$[‡d]	E$_i$(level)	$J^π_i$	E$_f$	$J^π_f$	Mult.[#]	α[†]	Comments
1117.33 *10*	0.82 *6*	1781.38	(9/2,11/2)$^-$	664.09	11/2$^-$			
1118.91 *10*	1.71 *6*	1554.09	(9/2)$^-$	435.27	11/2$^+$	[E1]	1.52×10^{-3}	α(K)=0.001286 *18*; α(L)=0.000183 *3*; α(M)=4.12×10^{-5} *6* α(N)=9.95×10^{-6} *14*; α(O)=1.668×10^{-6} *24*; α(P)=1.219×10^{-7} *17*; α(IPF)=2.18×10^{-6} *4*
^{x}1128.74 *15*	0.30 *5*							
^{x}1157.55 *20*	0.08 *4*							
1162.81 *5*	13.72 *15*	1659.11	(7/2,9/2)$^-$	496.26	9/2$^-$	M1	0.00716	α(K)=0.00599 *9*; α(L)=0.000906 *13*; α(M)=0.000206 *3* α(N)=4.99×10^{-5} *7*; α(O)=8.42×10^{-6} *12*; α(P)=6.30×10^{-7} *9*; α(IPF)=2.63×10^{-6} *4* Mult.: α(K)exp=0.0071 (1970Ak01).
1165.49 *15*	0.22 *4*	2016.89	(7/2$^-$,9/2,11/2$^+$)	851.54	(7/2)$^+$			
1167.78 *10*	0.51 *5*	1663.80	(11/2)	496.26	9/2$^-$			
1178.64 *20*	0.09 *3*	2030.07	(9/2$^+$,11/2$^+$)	851.54	(7/2)$^+$			
1215.31 *10*	0.20 *4*	1711.72	(9/2$^-$)	496.26	9/2$^-$			
1228.73 *8*	0.51 *3*	1663.80	(11/2)	435.27	11/2$^+$			
1233.81 *8*	0.55 *3*	1897.85	(7/2$^-$,9/2,11/2$^+$)	664.09	11/2$^-$			
1250.32 *10*	0.25 *3*	1746.46	(9/2$^-$,11/2$^-$)	496.26	9/2$^-$			
1265.32 *8*	1.24 *5*	1525.24	(9/2)$^-$	259.89	9/2$^+$	E1	1.27×10^{-3}	α(K)=0.001035 *15*; α(L)=0.0001464 *21*; α(M)=3.29×10^{-5} *5* α(N)=7.96×10^{-6} *12*; α(O)=1.336×10^{-6} *19*; α(P)=9.83×10^{-8} *14*; α(IPF)=4.42×10^{-5} *7* Mult.: α(K)exp=0.0008 (1970Ak01).
^{x}1273.67 *10*	0.36 *6*							
1276.01 *15*	0.15 *3*	1711.72	(9/2$^-$)	435.27	11/2$^+$			
1284.95 *8*	2.05 *4*	1781.38	(9/2,11/2)$^-$	496.26	9/2$^-$	(M1)	0.00561	α(K)=0.00468 *7*; α(L)=0.000706 *10*; α(M)=0.0001602 *23* α(N)=3.88×10^{-5} *6*; α(O)=6.55×10^{-6} *10*; α(P)=4.91×10^{-7} *7*; α(IPF)=2.14×10^{-5} *3*
1294.11 *8*	1.02 *3*	1554.09	(9/2)$^-$	259.89	9/2$^+$			
^{x}1303.05 *10*	0.20 *3*							
1327.23 *15*	0.03[c] *1*	1991.01	(9/2,11/2$^+$)	664.09	11/2$^-$			
^{x}1342.82 *10*	0.06 *3*							
^{x}1348.61 *8*	0.69 *3*							
1352.56 *20*	0.10[c] *3*	2016.89	(7/2$^-$,9/2,11/2$^+$)	664.09	11/2$^-$			
1365.97 *10*	0.67 *5*	2030.07	(9/2$^+$,11/2$^+$)	664.09	11/2$^-$	E1	1.17×10^{-3}	α(K)=0.000906 *13*; α(L)=0.0001278 *18*; α(M)=2.87×10^{-5} *4* α(N)=6.94×10^{-6} *10*; α(O)=1.167×10^{-6} *17*; α(P)=8.62×10^{-8} *12*; α(IPF)=9.56×10^{-5} *14* Mult.: α(K)exp=0.00073 (1970Ak01).
1368.19 *20*	0.05 *2*	1864.37	(7/2,9/2$^+$)	496.26	9/2$^-$			
^{x}1388.12 *10*	0.24 *4*							
1391.12 *20*	0.05	2030.07	(9/2$^+$,11/2$^+$)	639.09	13/2$^+$			
1399.52 *10*	0.21 *2*	1659.11	(7/2,9/2)$^-$	259.89	9/2$^+$			
1401.51 *20*	0.09[c] *3*	1897.85	(7/2$^-$,9/2,11/2$^+$)	496.26	9/2$^-$			
1403.71 *8*	0.55 *4*	1663.80	(11/2)	259.89	9/2$^+$			

$^{183}_{75}$Re$_{108}$-7

γ(^{183}Re) (continued)

E_γ[‡]	I_γ[‡d]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
1410.77 *8*	1.82 *3*	1525.24	(9/2)$^-$	114.50	7/2$^+$	[E1]	1.14×10^{-3}	α(K)=0.000858 *12*; α(L)=0.0001207 *17*; α(M)=2.71×10^{-5} *4* α(N)=6.56×10^{-6} *10*; α(O)=1.103×10^{-6} *16*; α(P)=8.16×10^{-8} *12*; α(IPF)=0.0001240 *18*
^{x}1419.8 *3*	0.030 *15*							
^{x}1434.52 *15*	0.09 *3*							
1439.63 *5*	6.68 *7*	1554.09	(9/2)$^-$	114.50	7/2$^+$	E1	1.12×10^{-3}	α(K)=0.000829 *12*; α(L)=0.0001165 *17*; α(M)=2.62×10^{-5} *4* α(N)=6.33×10^{-6} *9*; α(O)=1.065×10^{-6} *15*; α(P)=7.89×10^{-8} *11*; α(IPF)=0.0001428 *20* Mult.: α(K)exp=0.00058 (1970Ak01).
^{x}1442.40 *15*	0.09 *3*							
^{x}1444.92 *20*	0.030 *15*							
1451.91 *8*	0.76 *3*	1711.72	(9/2$^-$)	259.89	9/2$^+$			
1486.52 *15*	0.05 *2*	1746.46	(9/2$^-$,11/2$^-$)	259.89	9/2$^+$			
1494.85 *20*	0.011[c] *6*	1991.01	(9/2,11/2$^+$)	496.26	9/2$^-$			
1533.73 *8*	2.56 *9*	2030.07	(9/2$^+$,11/2$^+$)	496.26	9/2$^-$	E1	1.09×10^{-3}	α(K)=0.000745 *11*; α(L)=0.0001045 *15*; α(M)=2.35×10^{-5} *4* α(N)=5.68×10^{-6} *8*; α(O)=9.55×10^{-7} *14*; α(P)=7.10×10^{-8} *10*; α(IPF)=0.000207 *3* Mult.: α(K)exp=0.0005 (1970Ak01).
1537.86 *20*	0.04 *2*	1798.21	(5/2$^+$,7/2,9/2$^+$)	259.89	9/2$^+$			
1544.44 *10*	0.18 *2*	1659.11	(7/2,9/2)$^-$	114.50	7/2$^+$			
1555.59 *10*	0.11 *2*	1991.01	(9/2,11/2$^+$)	435.27	11/2$^+$			
^{x}1567.29 *10*	0.035[c] *10*							
1594.75 *10*	0.06 *2*	2030.07	(9/2$^+$,11/2$^+$)	435.27	11/2$^+$			
1604.55 *10*	0.04 *1*	1864.37	(7/2,9/2$^+$)	259.89	9/2$^+$			
^{x}1610.96 *13*	0.035 *10*							
1637.80 *15*	0.045 *10*	1897.85	(7/2$^-$,9/2,11/2$^+$)	259.89	9/2$^+$			
^{x}1668.9 *5*	0.011 *4*							
1684.00 *20*	0.014 *4*	1798.21	(5/2$^+$,7/2,9/2$^+$)	114.50	7/2$^+$			
^{x}1712.84 *20*	0.013 *4*							
^{x}1725.47 *10*	0.08 *1*							
^{x}1730.18 *20*	0.016 *5*							
1749.73 *20*	0.010[c] *4*	1864.37	(7/2,9/2$^+$)	114.50	7/2$^+$			
1770.51 *10*	0.04 *1*	2030.07	(9/2$^+$,11/2$^+$)	259.89	9/2$^+$			
1783.38 *15*	0.06 *2*	1897.85	(7/2$^-$,9/2,11/2$^+$)	114.50	7/2$^+$			
1798.37 *20*	0.031 *5*	1798.21	(5/2$^+$,7/2,9/2$^+$)	0.0	5/2$^+$			
^{x}1855.26 *15*	0.011 *4*							
1864.21 *15*	0.021 *4*	1864.37	(7/2,9/2$^+$)	0.0	5/2$^+$			
1876.47 *15*	0.037 *6*	1991.01	(9/2,11/2$^+$)	114.50	7/2$^+$			
1915.09 *15*	0.025 *4*	2030.07	(9/2$^+$,11/2$^+$)	114.50	7/2$^+$			E_γ: fits placement poorly. $E\gamma$=1915.62 *5* from least-squares fit.

† Additional information 1.

$^{183}_{75}$Re$_{108}$-8

γ(^{183}Re) (continued)

[‡] From 1983Br24, except As noted.

[#] From conversion electron data (1960Ne03, 1968Ha39, 1970Ak01) and Iγ adopted here, except As noted. γ and ce intensity scales were normalized assuming α(K)exp(382γ)=α(K)(E1 theory)=0.01123.

[@] From Adopted Gammas.

[&] The Eγ=379.18 *20*, Iγ=12 *4* transition placed by 1983Br24 from the 639-keV level appears to be highly contaminated. If all its Iγ is so placed, significant second-forbidden β^-decay feeding to the 639 level would be implied and feeding into the 260 level would be excessive. based on I(204γ) and adopted I(204γ):I(379γ)=100.0 *25*:35 *3*, only Iγ=0.17 *5* deexcites the 639 level, leaving Iγ=12 *4* unplaced; presumably, the observed line is highly contaminated.

[a] Iγ=0.12 *4* (1983Br24) is inconsistent with a reasonable I(γ+ce) balance through the 599 and 619 levels. The measured value would imply nearly 9% β feeding to the 619 level which is inconsistent with the intensity balance through the 114 level.

[b] Limit determined from intensity balance through the 599 and 619 levels. No substantial β decay is expected to these levels because they deexcite through the 114 level, whose outgoing intensity is already balanced by other incoming transitions. A reasonable limit for the ε population of these levels is 2% which would, nevertheless, have a profound affect on the intensity balance.

[c] Intensity may include contribution from ^{183}Os(9.9 h) ε decay.

[d] For absolute intensity per 100 decays, multiply by 0.0916 *12*.

[e] Multiply placed with intensity suitably divided.

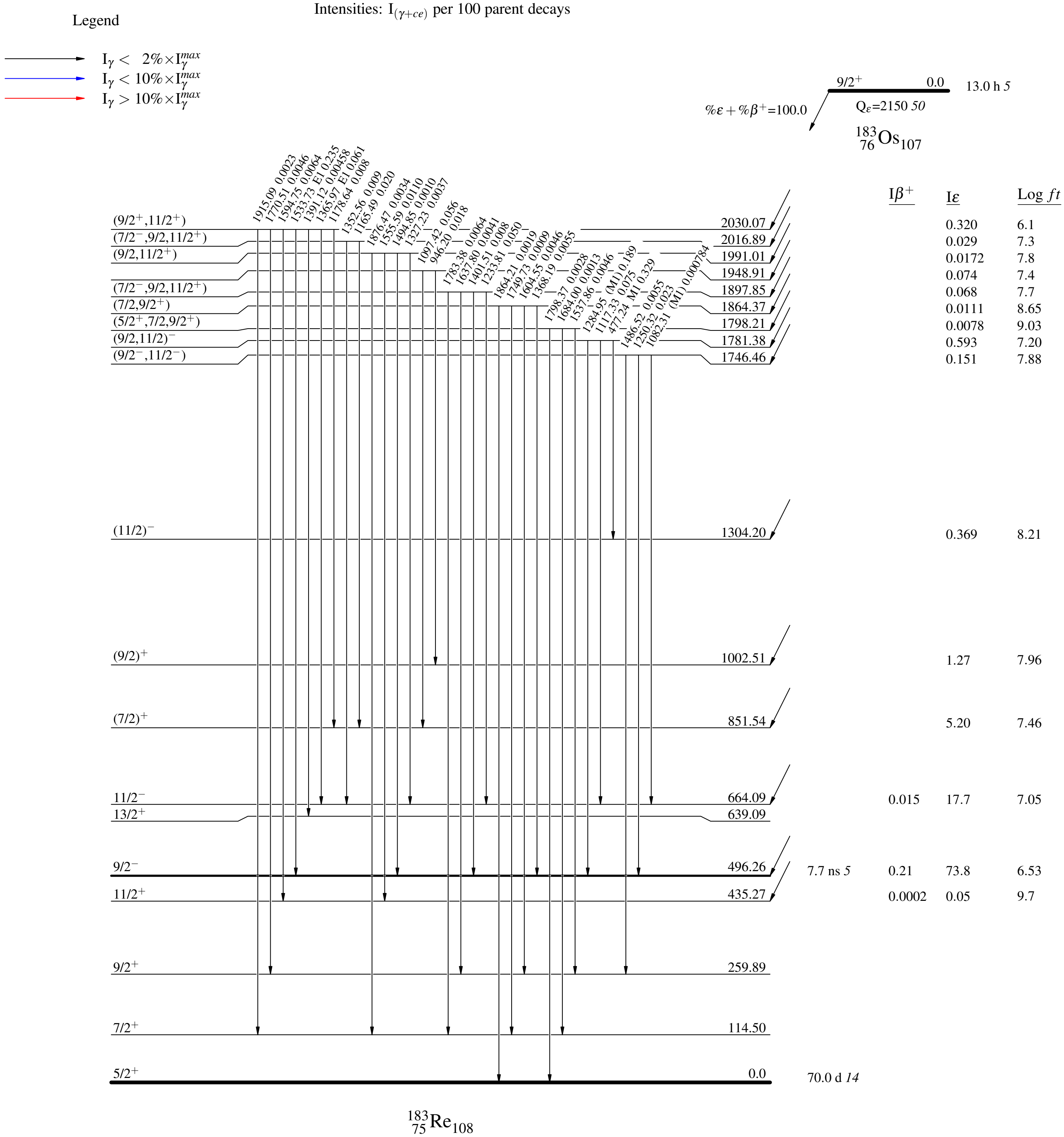
[x] γ ray not placed in level scheme.

$^{183}_{75}Re_{108}$-9

^{183}Os ε decay (13.0 h) 1983Br24

Decay Scheme

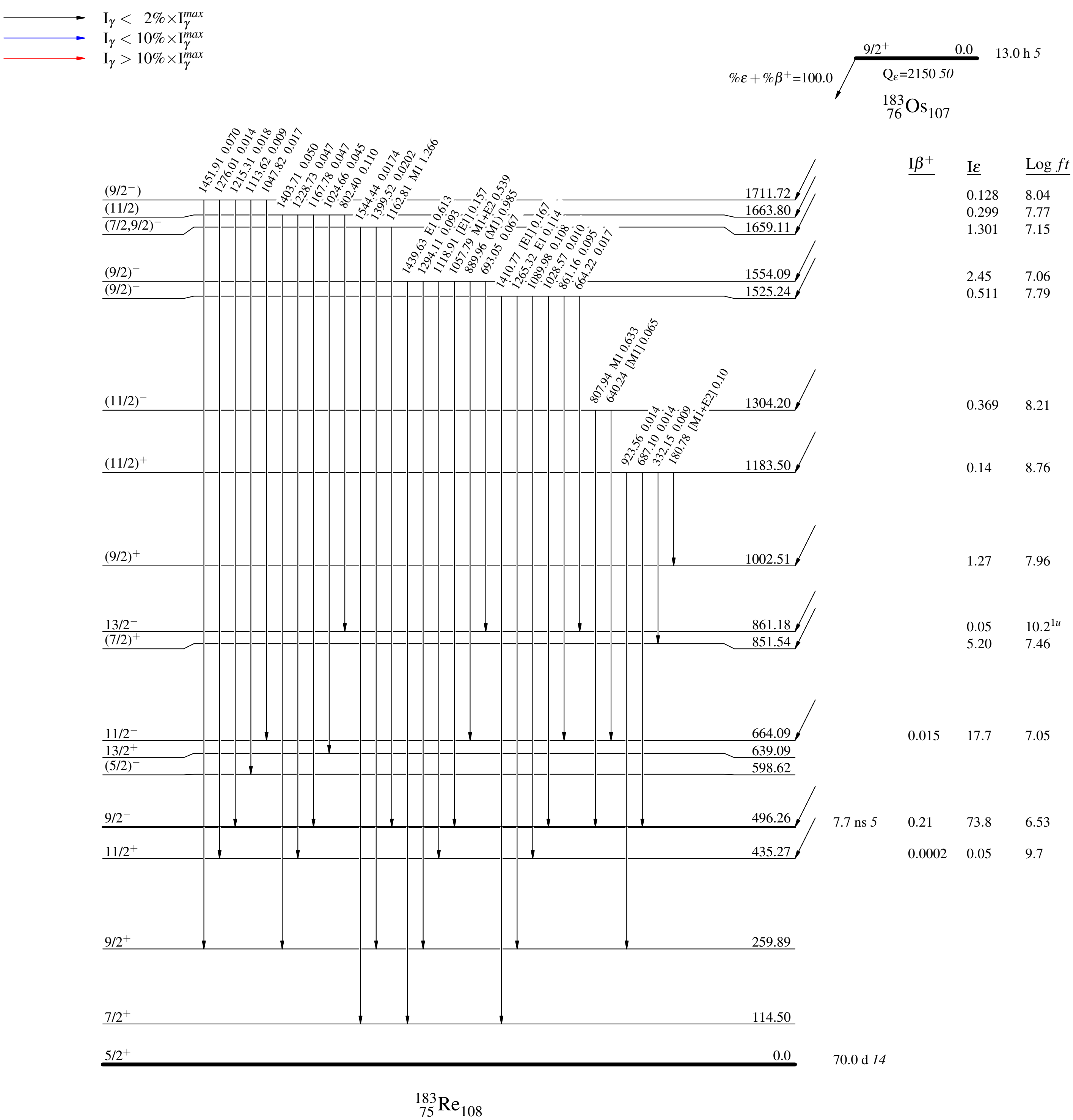
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{183}Os ε decay (13.0 h) 1983Br24

Decay Scheme (continued)

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



^{183}Os ε decay (13.0 h) 1983Br24

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided