^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. C. Batchelder and A. M. Hurst, M. S. Basunia	NDS 183, 1 (2022)	1-Mar-2022

Parent: ^{186}Ir: E=0.0; J$^{\pi}$=5^{+}; $T_{1/2}$=16.64 h *3*; Q(ε)=3828 *17*; %ε+%β^{+} decay=100.0

Others: 2002LaZY, 1982Al11, 1981Sp06, 1974Ya03, 1969Su05, 1964Ha06, 1963Em02, 1970Be18.

The evaluators retain the decay scheme constructed by 1978Sp05, but have added to it several γ placements proposed only in earlier studies. These are detailed in the comments. Note that a proposed (7^{+}) state at 1752.3 by 1969Su05 (also in 1973Ho38) with a comparable depopulating 885.0 keV *10* γ-ray appears to be the same 1750.8 level depopulating with 882 keV *1* γ-ray in the adopted dataset − so evaluators keep this level as a member of the K$^{\pi}$=2^{+} γ band.

^{186}Os Levels

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0[#]	0^{+}	2.0×10^{15} y *11*	
137.15[#] *3*	2^{+}	868 ps *12*	$T_{1/2}$: From Adopted Levels. Other: 0.91 ns *3* − weighted average of 0.84 ns *5* (1970Be18) and 0.923 ns *18* (1971Bb09).
434.085[#] *23*	4^{+}	26.4 ps *12*	$T_{1/2}$: From Adopted Levels. Other: 35 ps *20* (1959Of13).
767.480[@] *22*	2^{+}		
868.93[#] *4*	6^{+}		
910.478[@] *23*	3^{+}		Since ε feeding to this level would be second-forbidden, essentially none is expected. The intensity imbalance of 3.5% 7 at this level must presumably be balanced by unidentified transition(s) from higher energy levels.
1070.48[@] *3*	4^{+}		
1208.28[&] *25*	2^{+}		
1275.61[@] *3*	5^{+}		
1351.99[a] *12*	4^{+}		
1420.94?[#] *6*	8^{+}		
1452.5? *3*	(3^{+})		
1460.72[&] *21*	4^{+}		
1480.4 *3*	(3)$^{-}$		
1491.28[@] *4*	6^{+}		
1560.1[a] *4*	(5)$^{+}$		
1622.0? *4*			
1628.57 *16*	5^{-}		J$^{\pi}$: 5 from $\gamma(\theta)$ for oriented nuclei (1978Sp05).
1704.6 *6*	(4^{+})		
1750.93 *15*	7^{+}		J$^{\pi}$: From Adopted Levels. B.
1774.7?	(7^{-})		
1776.4 *6*	4^{+},5^{+}		J$^{\pi}$: not 6, based on 706$\gamma(\theta)$ for oriented nuclei (1978Sp05,1982Al11).
1812.45[&] *22*	(6)$^{+}$		
1916.1 *6*	4^{+},5,6^{+}		
1976.0?			
2031.3 *4*	4^{+}		
2056.63 *23*	5^{+},6^{+}		J$^{\pi}$: anisotropies of 565γ and 1188γ rule out J=4; that of 1622γ favors J=6, but J=5 cannot be ruled out (1978Sp05).
2081.59 *21*	4^{+}		
2119.9?			
2135.1? *7*	3^{+},4^{+},5^{+}		
2223.1? *20*	4^{+}		
2234? *3*			
2302.9?			
2377.1 *6*	5^{+},6^{+}		J$^{\pi}$: anisotropy of 1508γ favors J=6 (1978Sp05).
2559.7?			

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^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22 (continued)

^{186}Os Levels (continued)

E(level)†	J$^{\pi}$‡	Comments
2599.2 *5*	4$^{(+)}$,5,6$^{(+)}$	
2606.3? *5*	(5^{+},6^{+})	
2620.0 *5*	5^{+},6^{+}	J$^{\pi}$: 1751γ and 2186γ anisotropies rule out J=4 and favor J=6 (1978Sp05).
2666.6 *9*	(6)$^{+}$	J$^{\pi}$: anisotropy of 1107γ to (5)$^{+}$ 1560 excludes J=4 and 5 (1978Sp05).
2773.8? *5*	(4^{+})	
2958.4? *18*	+	
2978.4? *5*		
3110.1?		
3185.1?		
3214.5? *5*		
3226.3? *5*		
3252.7? *5*	(6^{+})	
3268.9? *3*		
3414.3? *4*	(4^{+})	Existence of level very doubtful; not adopted by 1978Sp05.

† From a least-squares fit to γ-ray energies, assuming ΔEγ=1.0 for Eγ with no uncertainty.
‡ From Adopted Levels.
# Band(A): K$^{\pi}$=0^{+} g.s. band (1978Sp05).
@ Band(B): K$^{\pi}$=2^{+} γ band (1978Sp05).
& Band(C): Possible K$^{\pi}$=0^{+} β band (1978Sp05).
a Band(D): Possible K$^{\pi}$=4^{+} $\gamma\gamma$ band (1978Sp05).

ε,β^{+} radiations

E(decay)	E(level)	Iβ^{+} †‡	Iε‡	Log *ft*	I(ε+β^{+})‡	Comments
(414# *17*)	3414.3?		0.31 *5*	7.73 *9*	0.31 *5*	εK=0.770 *3*; εL=0.1735 *22*; εM+=0.0567 *9*
(559# *17*)	3268.9?		1.22 *10*	7.44 *5*	1.22 *10*	εK=0.7864 *14*; εL=0.1615 *11*; εM+=0.0521 *4*
(575# *17*)	3252.7?		0.37 *4*	7.98 *6*	0.37 *4*	εK=0.7877 *14*; εL=0.1606 *10*; εM+=0.0517 *4*
(602# *17*)	3226.3?		0.28 *5*	8.15 *9*	0.28 *5*	εK=0.7895 *12*; εL=0.1592 *9*; εM+=0.0512 *4*
(614 *17*)	3214.5?		0.32 *5*	8.11 *8*	0.32 *5*	εK=0.7903 *12*; εL=0.1587 *9*; εM+=0.0510 *4*
(850# *17*)	2978.4?		0.26 *6*	8.51 *11*	0.26 *6*	εK=0.8009 *6*; εL=0.1510 *4*; εM+=0.04810 *15*
(870# *17*)	2958.4?		0.51 *12*	8.24 *11*	0.51 *12*	εK=0.8015 *6*; εL=0.1506 *4*; εM+=0.04794 *15*
(1054# *17*)	2773.8?		0.38 *5*	8.54 *6*	0.38 *5*	εK=0.8059 *4*; εL=0.14738 *25*; εM+=0.04673 *10*
(1161 *17*)	2666.6		1.52 *25*	8.03 *8*	1.52 *25*	εK=0.8078 *3*; εL=0.14602 *20*; εM+=0.04622 *8*
(1208 *17*)	2620.0		1.47 *9*	8.08 *3*	1.47 *9*	εK=0.8085 *3*; εL=0.14551 *19*; εM+=0.04603 *7*
(1222# *17*)	2606.3?		0.98 *8*	8.27 *4*	0.98 *8*	εK=0.8086 *3*; εL=0.14537 *18*; εM+=0.04597 *7*
(1229# *17*)	2599.2		0.60 *10*	8.49 *8*	0.60 *10*	εK=0.8087 *3*; εL=0.14530 *18*; εM+=0.04594 *7*
(1268# *17*)	2559.7?		0.28 *5*	8.85 *8*	0.28 *5*	εK=0.8092 *3*; εL=0.14491 *17*; εM+=0.04580 *7*
(1451 *17*)	2377.1		1.56 *21*	8.22 *6*	1.56 *21*	εK=0.8109 *1*; εL=0.1433 *2*; εM+=0.04521 *5*
(1605# *17*)	2223.1?	0.0010 *3*	0.49 *16*	8.82 *15*	0.49 *16*	av Eβ=281.2 *76*; εK=0.8111; εL=0.1422 *2*; εM+=0.04478 *5*
(1693# *17*)	2135.1?	0.0071 *8*	2.10 *8*	8.234 *19*	2.11 *8*	av Eβ=320.4 *78*; εK=0.8106 *2*; εL=0.1415 *2*; εM+=0.04454 *5*
(1746 *17*)	2081.59	0.048 *5*	10.6 *7*	7.56 *3*	10.6 *7*	av Eβ=343.6 *75*; εK=0.8100 *3*; εL=0.1410 *2*; εM+=0.04439 *5*
(1771 *17*)	2056.63	0.016 *5*	3.2 *10*	8.09 *14*	3.2 *10*	av Eβ=354.8 *77*; εK=0.8097 *3*; εL=0.14084 *15*; εM+=0.04432 *5*
(1797 *17*)	2031.3	0.0148 *16*	2.54 *18*	8.21 *4*	2.55 *18*	av Eβ=365.9 *75*; εK=0.8093 *3*; εL=0.14063 *15*;

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^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22 (continued)

ϵ,$β^+$ radiations (continued)

E(decay)	E(level)	Iβ$^+$ †‡	Iε‡	Log *ft*	I(ε+$β^+$)‡	Comments
						εM+=0.04424 *5*
(1852# *17*)	1976.0?	0.0017 *9*	0.23 *12*	9.28 *23*	0.23 *12*	av Eβ=390.2 *75*; εK=0.8083 *4*; εL=0.14015 *16*; εM+=0.04408 *6*
(1912 *17*)	1916.1	0.0080 *16*	0.82 *16*	8.75 *9*	0.83 *16*	av Eβ=416.5 *75*; εK=0.8069 *5*; εL=0.13961 *17*; εM+=0.04389 *6*
(2016 *17*)	1812.45	0.038 *6*	2.7 *4*	8.29 *7*	2.7 *4*	av Eβ=461.9 *75*; εK=0.8036 *7*; εL=0.13857 *19*; εM+=0.04354 *6*
(2052 *17*)	1776.4	0.023 *7*	1.4 *4*	8.59 *13*	1.4 *4*	av Eβ=477.7 *75*; εK=0.8023 *7*; εL=0.13819 *19*; εM+=0.04341 *7*
(2123 *17*)	1704.6	0.01 *1*	0.7 *3*	8.92 *19*	0.7 *3*	av Eβ=509.2 *75*; εK=0.7992 *9*; εL=0.13736 *21*; εM+=0.04314 *7*
(2199 *17*)	1628.57	0.074 *7*	2.83 *23*	8.34 *4*	2.90 *24*	av Eβ=542.6 *75*; εK=0.7953 *10*; εL=0.13642 *23*; εM+=0.04283 *8*
(2206# *17*)	1622.0?	0.04 *3*	1.6 *10*	8.6 *3*	1.6 *10*	av Eβ=545.4 *75*; εK=0.7949 *10*; εL=0.13633 *23*; εM+=0.04280 *8*
(2268 *17*)	1560.1	0.081 *8*	2.56 *23*	8.41 *4*	2.64 *24*	av Eβ=572.6 *75*; εK=0.7913 *11*; εL=0.13549 *24*; εM+=0.04253 *8*
(2337 *17*)	1491.28	0.31 *2*	8.1 *4*	7.937 *22*	8.4 *4*	av Eβ=602.8 *75*; εK=0.7868 *12*; εL=0.1345 *3*; εM+=0.04220 *9*
(2348 *17*)	1480.4	0.014 *3*	1.4 *3*	10.01[1u] *10*	1.4 *3*	av Eβ=616.1 *73*; εK=0.7998 *3*; εL=0.14469 *17*; εM+=0.04583 *6*
(2367 *17*)	1460.72	0.071 *20*	1.7 *5*	8.62 *12*	1.8 *5*	av Eβ=616.3 *75*; εK=0.7846 *13*; εL=0.1340 *3*; εM+=0.04205 *9*
(2476 *17*)	1351.99	0.17 *3*	3.2 *6*	8.39 *8*	3.4 *6*	av Eβ=664.0 *76*; εK=0.7760 *15*; εL=0.1322 *3*; εM+=0.04148 *10*
(2552 *17*)	1275.61	0.22 *2*	3.5 *4*	8.38 *5*	3.7 *4*	av Eβ=697.8 *75*; εK=0.7692 *16*; εL=0.1309 *4*; εM+=0.04104 *11*
(2758 *17*)	1070.48	0.44 *5*	4.7 *5*	8.32 *6*	5.1 *6*	av Eβ=788.3 *76*; εK=0.7477 *20*; εL=0.1268 *4*; εM+=0.03973 *12*
(2959 *17*)	868.93	2.62 *15*	19.7 *10*	7.762 *23*	22.3 *11*	av Eβ=877.6 *76*; εK=0.7224 *23*; εL=0.1221 *5*; εM+=0.03824 *14* E(decay): 1940 *20* (1963Em02). 1963Em02 also report $β^+$ endpoint energies of 1370 *50* and ≈1000; presumably each of these represents feeding to a cluster levels.
(3394# *17*)	434.085	≤1.0	≤4	≥8.6	≤5	av Eβ=1071.6 *77*; εK=0.656 *3*; εL=0.1103 *5*; εM+=0.03453 *16*

† Σ I(β+)=3% *1* based on γ-$γ^±$ coin (1963Em02). 1963Em02 also measured Iβ/I(297 ce(K))=0.46 *12* and 0.12 *3* for the 1940 and 1370 branches, respectively, implying %I(β+)=1.9 *5* and 0.50 *13* (based on adopted I(297K)=4.2%).

‡ Absolute intensity per 100 decays.

Existence of this branch is questionable.

$\gamma(^{186}Os)$

Iγ normalization: Normalized assuming I(γ+ce)(137+767)=100 and ΔIγ(137γ)=0, i.e. assuming 137Iγ uncertainty propagated to ΔIγ of other Iγ in 1973Ho38.
α(K)exp data: calculated by evaluators from indicated Iγ combined with I(ce(K)) from 1963Em02, unless indicated otherwise. Data are normalized as indicated in 1973Ho38, to give best overall agreement with α(K) for several pure E2 transitions. Uncertainties in I(ce) are seldom given by 1963Em02 and never by 1964Ha06; see 1969Su05 for those authors′ estimates of plausible uncertainties in α(K)exp based on the number of significant figures quoted for the relevant Ice data. The Ice scale of 1964Ha06 was normalized to that of 1963Em02 at L3(137). α(K)exp determined by 1978Sp05 (method of normalization not reported) are enumerated for selected transitions only; see fig. 3 of 1978Sp05 for plot of data for additional transitions.

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
[x]70.88 *20*									L1/L2=2.5 *13*, L1/L3=1.4 *5*, I_{tot} = 1.8 (1963Em02).
[x]87.19 *20*	<0.034[a]								%Iγ<0.07 α(L2)exp>0.76 I_{tot} = 0.082, L2/L3<2.3 (1963Em02).
[x]102.12 *20*	≤0.068[a]								%Iγ≤0.26 α(L2)exp≥0.35 L2/L3=1.2 *3*, I_{tot} = 0.082 (1963Em02).
[x]119.36 *20*	0.052[a] *6*					M1+E2	0.92	2.82 *5*	%Iγ=0.203 *24* α(K)=1.7 *11*; α(L)=0.82 *37*; α(M)=0.20 *10* α(N)=0.049 *24*; α(O)=0.0076 *32*; α(P)=1.9×10^{-4} *14* α(K)exp=1.17 K:L1:L2:L3:M=20:7.5:0.8:≈0.6:3.3, 0.091 < I_{tot} < 0.22 (1964Ha06).
137.15 *5*	10.7	137.15	2$^+$	0.0	0$^+$	E2		1.271	%Iγ=41.7 *4* α(K)=0.434 *6*; α(L)=0.632 *9*; α(M)=0.1610 *23* α(N)=0.0386 *6*; α(O)=0.00575 *8*; α(P)=3.96×10^{-5} *6* α(K)exp=0.43 *4* K:L2:L3:M:N=4.6 *4*:3.6 *2*:2.7 *1*:1.30 *5*:0.30 *3*, I_{tot} = 23 (1963Em02). E_γ: from adopted gammas.
143.18[#] *5*	0.080[#] *6*	910.478	3$^+$	767.480	2$^+$	M1+E2	0.70	≈1.771	%Iγ=0.312 *24* α(K)≈1.331; α(L)≈0.337; α(M)≈0.0807 α(N)≈0.0196; α(O)≈0.00318; α(P)≈0.0001525 α(K)exp=1.25 *15* E_γ: other: 143.00 *20* (1963Em02). I_γ: 0.070 *8* (1973Ho38). Mult.: K:L1:L2:L3=40:7.5:2:≈1.8 (1964Ha06). Other: K:L2:M=1.0 *1*:0.30 *3*:0.7 *3*, I_{tot} = 0.34 (1963Em02). Placement from 1969Su05.
146.2[h]		1774.7?	(7$^-$)	1628.57	5$^-$	(E2)		1.003	α(K)=0.374 *6*; α(L)=0.475 *7*; α(M)=0.1209 *17* α(N)=0.0290 *4*; α(O)=0.00433 *6*; α(P)=3.40×10^{-5} *5* E_γ: from 1973Ho38.
[x]≈149									Multiplet (1973Ho38).

γ(^{186}Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[b]	α[d]	Comments
160.11[#] *10*	0.0154[#] *14*	1070.48	4$^+$	910.478	3$^+$	[M1,E2]	1.10 *38*	%Iγ=0.060 *6* α(K)=0.76 *46*; α(L)=0.26 *6*; α(M)=0.063 *18* α(N)=0.0152 *42*; α(O)=0.0024 *5*; α(P)=8.4×10^{-5} *58* α(K)exp=1.36 Placement from 1969Su05.
[x]163.3 *6*	0.15[a] *5*							%Iγ=0.58 *20* E_γ,I_γ: for doublet (1969Su05); α(K)exp≈0.11. Eγ=163.4, 163.6 for components (1964Ha06).
[x]167.05 *20*	0.059[a] *18*							%Iγ=0.23 *7* α(K)exp=0.22
[x]198.9 *6*	0.041[a] *8*							%Iγ=0.16 *4* E_γ: from 1969Su05.
208.0 *6*	0.141 *17*	1560.1	(5)$^+$	1351.99	4$^+$	E2	0.291 *5*	%Iγ=0.55 *7* α(K)=0.1532 *25*; α(L)=0.1043 *20*; α(M)=0.0262 *5* α(N)=0.00631 *12*; α(O)=0.000957 *18*; α(P)=1.445×10^{-5} *23* Eγ from 1969Su05. Mult.: from L2:L3:M=≈3:1.7:1 (1964Ha06).
215.51[#h] *20*	0.0264[#] *21*	1491.28	6$^+$	1275.61	5$^+$	[M1,E2]	0.45 *20*	%Iγ=0.103 *9* α(K)=0.33 *20*; α(L)=0.088 *3*; α(M)=0.0211 *16* α(N)=0.0051 *4*; α(O)=0.000826 *12*; α(P)=3.7×10^{-5} *25* Placement from 1972Fo22; γ reported by 1972Fo22 only.
[x]219.96 *15*	0.075[a] *18*					E2	0.242	%Iγ=0.29 *7* α(K)=0.1323 *19*; α(L)=0.0829 *12*; α(M)=0.0208 *3* α(N)=0.00500 *8*; α(O)=0.000761 *11*; α(P)=1.260×10^{-5} *18* α(K)exp=0.23; K/L2=2.3 *7* (1963Em02) K/L2 =2.3 *7*, I_{tot} = 0.16 (1963Em02).
[x]224.13 *16*	0.050 *10*					M1	0.575	%Iγ=0.19 *4* α(K)=0.476 *7*; α(L)=0.0765 *11*; α(M)=0.01753 *25* α(N)=0.00428 *6*; α(O)=0.000740 *11*; α(P)=5.52×10^{-5} *8* α(K)exp=0.38 K/L1=7 *3* (1963Em02).
[x]234.48 *26*	0.042[a] *9*							%Iγ=0.16 *4* α(K)exp=0.071
252.45 *15*	0.070[&] *21*	1460.72	4$^+$	1208.28	2$^+$	(E2)	0.1551	%Iγ=0.27 *9* α(K)=0.0923 *13*; α(L)=0.0476 *7*; α(M)=0.01189 *17* α(N)=0.00286 *4*; α(O)=0.000439 *7*; α(P)=9.00×10^{-6} *13* α(K)exp=0.13 Mult.: E2(+M1) from α(K)exp; ΔJ=2 from level scheme.
[x]261.23 *14*	≤0.06[a]					(M1)	0.377	%Iγ≤0.23 α(K)=0.312 *5*; α(L)=0.0500 *7*; α(M)=0.01147 *17* α(N)=0.00280 *4*; α(O)=0.000484 *7*; α(P)=3.61×10^{-5} *5*

From ENSDF

$\gamma(^{186}Os)$ (continued)

E_γ [†]	I_γ [@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [b]	α [d]	Comments
								α(K)exp≥0.14 E_γ: Weak γ reported in 1973Ho38, placed from 7$^+$ state at 1752.28 keV. Evaluator assume this is the same 7$^+$ state at 1750.93 keV in the Adopted Levels. Eγ does not fit well − evaluators list as unplaced.
^{x}268.98 *14*	0.05 *2*					M1	0.348	%Iγ=0.19 *8* α(K)=0.288 *4*; α(L)=0.0462 *7*; α(M)=0.01058 *15* α(N)=0.00258 *4*; α(O)=0.000446 *7*; α(P)=3.33×10^{-5} *5* α(K)exp=0.24 L3 not observed (1963Em02). Placed by 1969Su05 from 2082 level; however, adopted level scheme requires ΔJ=2 for that transition, inconsistent with the M1 multipolarity implied by α(K)exp.
^{x}272.80 *16*	≤0.17 [a]							%Iγ=0.20 *8* α(K)exp≥0.025
276.54 *14*	0.40 *2*	1628.57	5$^-$	1351.99	4$^+$	E1	0.0297	%Iγ=1.56 *8* α(K)=0.0247 *4*; α(L)=0.00391 *6*; α(M)=0.000894 *13* α(N)=0.000216 *3*; α(O)=3.62×10^{-5} *5*; α(P)=2.30×10^{-6} *4* α(K)exp=0.030 K/L1=12 *5*, L3<<L1, I_{tot} = 0.048 (1963Em02).
281.3 [h]	0.022 *8*	1351.99	4$^+$	1070.48	4$^+$	(E2)	0.1109	%Iγ=0.09 *4* α(K)=0.0697 *10*; α(L)=0.0313 *5*; α(M)=0.00777 *11* α(N)=0.00187 *3*; α(O)=0.000289 *4*; α(P)=6.92×10^{-6} *10* E_γ: from 1964Ha06. Mult.: from K:L2:L3=≈3 (doublet):<2.3 (doublet):0.6 (1964Ha06). K/L3 and L2/L3 limits favor E2.
284.26 [h] *15*	0.017 *11*	1560.1	(5)$^+$	1275.61	5$^+$	E2	0.1074	%Iγ=0.07 *5* α(K)=0.0678 *10*; α(L)=0.0301 *5*; α(M)=0.00746 *11* α(N)=0.00180 *3*; α(O)=0.000278 *4*; α(P)=6.75×10^{-6} *10* Mult.: K:L1:L2:L3=4.2:1:≈0.3:0.3 (1964Ha06); K/L2=4 *2* , I_{tot} = 0.08 (1963Em02).
^{x}288.80 *12*	0.018 *9*					M1	0.287	%Iγ=0.07 *4* α(K)=0.238 *4*; α(L)=0.0380 *6*; α(M)=0.00870 *13* α(N)=0.00212 *3*; α(O)=0.000367 *6*; α(P)=2.74×10^{-5} *4* α(K)exp=0.7
^{x}292.98 *20*	<0.11 [a]					not E1		%Iγ<0.21 α(K)exp>0.04
296.90 *3*	16.1 *4*	434.085	4$^+$	137.15	2$^+$	E2	0.0942	%Iγ=62.8 *9* α(K)=0.0606 *9*; α(L)=0.0255 *4*; α(M)=0.00632 *9* α(N)=0.001523 *22*; α(O)=0.000236 *4*; α(P)=6.08×10^{-6} *9* α(K)exp=0.062 *3* K:L12:L3:M=1.00 *4*:0.27 *1*:0.100 *5*:0.095 *5* (1963Em02). E_γ: from 1972Fo22.
302.89 [#] *8*	0.112 [#] *8*	1070.48	4$^+$	767.480	2$^+$	E2	0.0888	%Iγ=0.44 *4*

$\gamma(^{186}$Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[b]	α[d]	Comments
								α(K)=0.0576 *8*; α(L)=0.0237 *4*; α(M)=0.00586 *9* α(N)=0.001412 *20*; α(O)=0.000219 *3*; α(P)=5.79×10^{-6} *9* α(K)exp=0.071 Other Iγ: 0.095 *17* (1973Ho38).
^{x}305.59 *11*	≤0.09[a]					not E1		%Iγ≤0.18 α(K)exp≥0.08
^{x}309.64 *12*	0.12 *4*					M1,E2	0.160 *78*	%Iγ=0.47 *16* α(K)=0.126 *72*; α(L)=0.027 *5*; α(M)=0.0063 *9* α(N)=0.00153 *23*; α(O)=0.00025 *5*; α(P)=1.41×10^{-5} *86* α(K)exp=0.13 K/M=18 7 (1963EM02).
^{x}311.86 *15*	≤0.06[a]							%Iγ≤0.12 α(K)exp≥0.14
^{x}321.16 *19*								K/L2=1.4 10, I_{tot} = 0.058 (1963EM02).
^{x}322.63 *17*								
^{x}326.55 *21*	≤0.023[a]							%Iγ≤0.04 α(K)exp≥0.13 Doublet (1973Ho38).
^{x}330.22 *17*	0.051 *11*					E2	0.0690	%Iγ=0.20 *5* α(K)=0.0463 *7*; α(L)=0.01725 *25*; α(M)=0.00424 *6* α(N)=0.001024 *15*; α(O)=0.0001602 *23*; α(P)=4.71×10^{-6} *7* α(K)exp=0.059 K/L12=2.5 *18*, I_{tot} = 0.46 (1963Em02).
^{x}334.02 *17*	0.027 *7*					M1	0.193	%Iγ=0.11 *3* α(K)=0.1604 *23*; α(L)=0.0255 *4*; α(M)=0.00585 *9* α(N)=0.001428 *20*; α(O)=0.000247 *4*; α(P)=1.85×10^{-5} *3* α(K)exp=0.19 K/L12=1.8 *8* (1963Em02).
^{x}342.50 *12*	<0.046[a]					not E1		%Iγ=0.09 *9* α(K)exp≥0.11
351.73 *13*	0.30[&] *9*	1812.45	(6)$^+$	1460.72	4$^+$	(E2)	0.0576	%Iγ=1.2 *4* α(K)=0.0395 *6*; α(L)=0.01376 *20*; α(M)=0.00337 *5* α(N)=0.000815 *12*; α(O)=0.0001281 *18*; α(P)=4.06×10^{-6} *6* α(K)exp=0.035, K/L12=3.7 *14*, Eγ (1963Em02) are for triplet in which this transition is the major component.
352	0.09[&] *3*	2056.63	5$^+$,6$^+$	1704.6	(4$^+$)	[E2,M1]	0.113 *56*	%Iγ=0.35 *12* α(K)=0.089 *50*; α(L)=0.018 *5*; α(M)=0.0042 *9* α(N)=0.00103 *22*; α(O)=1.71×10^{-4} *44*; α(P)=1.00×10^{-5} *60* Eγ: from 1978Sp05.
353	0.050[&] *15*	1628.57	5$^-$	1275.61	5$^+$	[E1]	0.01667	%Iγ=0.19 *6* α(K)=0.01388 *20*; α(L)=0.00216 *3*; α(M)=0.000492 *7* α(N)=0.0001191 *17*; α(O)=2.01×10^{-5} *3*; α(P)=1.324×10^{-6} *19* Eγ: from 1978Sp05.

From ENSDF
$^{186}_{76}$Os$_{110}$-7

γ(^{186}Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
365.16[#] 3	0.226[#] 14	1275.61	5^+	910.478	3^+	E2		0.0519	%Iγ=0.88 6 α(K)=0.0360 5; α(L)=0.01207 17; α(M)=0.00295 5 α(N)=0.000713 10; α(O)=0.0001124 16; α(P)=3.72×10^{-6} 6 α(K)exp=0.022 Other Iγ: 0.19 3 (1973Ho38).
[x]387.93 18	<0.046[a]								%Iγ<0.09 α(K)exp>0.09
[x]403.29 16	0.049 14					M1		0.1169	%Iγ<0.19 α(K)=0.0970 14; α(L)=0.01536 22; α(M)=0.00352 5 α(N)=0.000858 12; α(O)=0.0001484 21; α(P)=1.113×10^{-5} 16 α(K)exp=0.082
406.63[#h] 7	0.058[#] 4	1275.61	5^+	868.93	6^+	(E2)		0.0387	%Iγ=0.226 16 α(K)=0.0277 4; α(L)=0.00837 12; α(M)=0.00203 3 α(N)=0.000492 7; α(O)=7.82×10^{-5} 11; α(P)=2.90×10^{-6} 4 α(K)exp=0.034 Other Iγ: 0.05 2 (1973Ho38).
420.81[#] 3	0.74[#] 4	1491.28	6^+	1070.48	4^+	E2		0.0354	%Iγ=2.88 16 α(K)=0.0256 4; α(L)=0.00747 11; α(M)=0.00181 3 α(N)=0.000438 7; α(O)=6.99×10^{-5} 10; α(P)=2.68×10^{-6} 4 α(K)exp=0.024 I_{tot} = 0.75 (1963Em02), Other Iγ: 0.70 9 (1973Ho38).
434.84 3	8.75 23	868.93	6^+	434.085	4^+	E2		0.0324	%Iγ=34.1 6 α(K)=0.0237 4; α(L)=0.00671 10; α(M)=0.001625 23 α(N)=0.000393 6; α(O)=6.28×10^{-5} 9; α(P)=2.49×10^{-6} 4 α(K)exp=0.022 5 K:L12:L3:M:N=1.90 4:0.45 2:0.11 4:0.14 1:0.05 1, I_{tot} = 8.5 (1963Em02). Eγ from 1972Fo22. Other Iγ: 8.7 4 (1972Fo22).
441.50 17	0.42 5	1351.99	4^+	910.478	3^+	E2+M1	+13.3 +22−17	0.0315	%Iγ=1.64 20 α(K)=0.0231 4; α(L)=0.00642 9; α(M)=0.001552 22 α(N)=0.000375 6; α(O)=6.02×10^{-5} 9; α(P)=2.44×10^{-6} 4 α(K)exp=0.026 Mult.: from γ(θ) for oriented nuclei (1981Sp06) and α(K)exp. K/L12=6 4 (1963Em02). Other δ: +16 +5−6 (1982Al11) from γ(θ,H,T).
447.0[h] 6	0.08 4	2223.1?	4^+	1776.4	4^+,5^+				%Iγ=0.31 16 Eγ from 1969Su05. Eγ=446.3 and 447.0 reported in 1964Ha06, but γγ coin data of 1978Sp05 give no evidence for existence of a doublet.
[x]451.4 6	0.036[a] 9								%Iγ=0.14 4 α(K)exp≥0.009

γ(^{186}Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
[x]463.5 *6*	0.057[a] *23*					M1,E2		0.054 *27*	%Iγ=0.22 *9* α(K)=0.044 *24*; α(L)=0.0080 *26*; α(M)=0.00187 *56* α(N)=4.6×10^{-4} *14*; α(O)=7.7×10^{-5} *26*; α(P)=4.9×10^{-6} *28* α(K)exp=0.047 E_γ: from 1969Su05.
476.42[#] *5*	0.162[#] *11*	910.478	3$^+$	434.085	4$^+$	E2+M1	−22 *10*	0.0258 *5*	%Iγ=0.63 *5* α(K)=0.0192 *4*; α(L)=0.00503 *8*; α(M)=0.001211 *18* α(N)=0.000293 *5*; α(O)=4.72×10^{-5} *7*; α(P)=2.03×10^{-6} *4* α(K)exp=0.023 I_{tot} = 0.25 (1963Em02). Mult.,δ: from γ(θ,H,T) (1982Al11) and α(K)exp. K/L12=1.9 *7* (1963Em02). Other Iγ: 0.25 *6* (1973Ho38).
489.6 *6*	0.31 *3*	1560.1	(5)$^+$	1070.48	4$^+$	E2(+M1)	>+42	0.0240	%Iγ=1.21 *12* α(K)=0.0180 *3*; α(L)=0.00462 *7*; α(M)=0.001109 *17* α(N)=0.000269 *4*; α(O)=4.34×10^{-5} *7*; α(P)=1.91×10^{-6} *3* α(K)exp=0.012 Mult.: from γ(θ) for oriented nuclei (1981Sp06) and α(K)exp. E_γ: from 1969Su05. α(K)exp based on Ice from 1964Ha06. δ: +75 *+165−33* (1981Sp06). Other δ: +13.0 *+25−23* (1982Al11), >+15.2 (1978Sp05) from γ(θ,H,T).
[x]515.50 *26*	0.18[a] *5*								%Iγ=0.70 *20* α(K)exp=0.013
542.2[h] *4*	≤0.09[a]	1452.5?	(3$^+$)	910.478	3$^+$				%Iγ≤0.18 α(K)exp≥0.016
552.00[#h] *5*	0.107[#] *7*	1420.94?	8$^+$	868.93	6$^+$	E2		0.0179	%Iγ=0.42 *3* α(K)=0.01372 *20*; α(L)=0.00322 *5*; α(M)=0.000769 *11* α(N)=0.000186 *3*; α(O)=3.04×10^{-5} *5*; α(P)=1.464×10^{-6} *21* α(K)exp=0.013 α(K)exp: Complex ce line (1963Em02). Other %Iγ: 0.07 4 (1973Ho38). Mult.: from adopted gammas.
558.0 *4*	0.15 *5*	1628.57	5$^-$	1070.48	4$^+$	E1		0.00608	%Iγ=0.58 *20* α(K)=0.00509 *8*; α(L)=0.000763 *11*; α(M)=0.0001734 *25* α(N)=4.21×10^{-5} *6*; α(O)=7.17×10^{-6} *10*; α(P)=5.01×10^{-7} *7* α(K)exp=0.0067
565.4 *4*	0.10 *3*	2056.63	5$^+$,6$^+$	1491.28	6$^+$	M1+E2		0.033 *16*	%Iγ=0.39 *12* α(K)=0.027 *14*; α(L)=0.0046 *17*; α(M)=0.00108 *36* α(N)=2.62×10^{-4} *89*; α(O)=4.4×10^{-5} *17*; α(P)=3.0×10^{-6} *16* α(K)exp=0.030
570.3 *5*	0.09 *3*	1480.4	(3)$^-$	910.478	3$^+$	E1		0.00581	%Iγ=0.35 *12* α(K)=0.00487 *7*; α(L)=0.000728 *11*; α(M)=0.0001654 *24*

From ENSDF

$^{186}_{76}$Os$_{110}$-9

γ(^{186}Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
									α(N)=4.02×10^{-5} *6*; α(O)=6.84×10^{-6} *10*; α(P)=4.80×10^{-7} *7* α(K)exp=0.0030 *15* (1978Sp05) Mult.: from α(K)exp (1978Sp05), supported by mult=D from γ anisotropy (1978Sp05). Other α(K)exp: 0.0061 *15* (1974Ya03).
584.42 *19*	1.39 *11*	1351.99	4$^+$	767.480	2$^+$	E2		0.01568	%Iγ=5.4 *4* α(K)=0.01211 *17*; α(L)=0.00274 *4*; α(M)=0.000651 *10* α(N)=0.0001577 *23*; α(O)=2.58×10^{-5} *4*; α(P)=1.294×10^{-6} *19* α(K)exp=0.0115 *11* K:L12:M=1.60 *8*:0.41 *6*:0.16 *5*, I_{tot} = 1.3 (1963Em02).
592.4 *9*	0.080[&] *24*	1460.72	4$^+$	868.93	6$^+$	E2		0.01520	%Iγ=0.31 *10* α(K)=0.01176 *17*; α(L)=0.00263 *4*; α(M)=0.000626 *10* α(N)=0.0001517 *23*; α(O)=2.48×10^{-5} *4*; α(P)=1.257×10^{-6} *18* α(K)exp=0.010
^{x}599.6 *7*	0.052[a] *8*								%Iγ=0.20 *4* α(K)exp=0.018
622.33[#] *4*	0.82[#] *4*	1491.28	6$^+$	868.93	6$^+$	M1+E2	+10.0 *+20−12*	0.01381 *21*	%Iγ=3.20 *16* α(K)=0.01078 *17*; α(L)=0.00232 *4*; α(M)=0.000549 *8* α(N)=0.0001333 *20*; α(O)=2.19×10^{-5} *4*; α(P)=1.156×10^{-6} *18* α(K)exp=0.0109 Mult.: from $\gamma(\theta)$ for oriented nuclei (1981Sp06) and α(K)exp. I_{tot} = 0.86 (1963Em02). Other Iγ: 0.79 *9* (1973Ho38). Other δ: +14 *+7−4* (1982Al11) from $\gamma(\theta$,H,T).
630.35[#] *4*	1.13[#] *6*	767.480	2$^+$	137.15	2$^+$	M1+E2	−13.7 *+17−23*	0.01330	%Iγ=4.41 *23* α(K)=0.01040 *15*; α(L)=0.00223 *4*; α(M)=0.000528 *8* α(N)=0.0001280 *18*; α(O)=2.11×10^{-5} *3*; α(P)=1.114×10^{-6} *16* α(K)exp=0.0106 Mult.: from $\gamma(\theta)$ for oriented nuclei (1981Sp06) and α(K)exp. K/L12=4 *1*, I_{tot} = 1.2 (1963Em02). Other Iγ: 1.26 *23* (1973Ho38). Other δ: −10 *+2−3* (1982Al11) from $\gamma(\theta$,H,T).
636.38[#] *4*	1.57[#] *8*	1070.48	4$^+$	434.085	4$^+$	M1+E2	+24 *+26−8*	0.01294	%Iγ=6.1 *3* α(K)=0.01012 *15*; α(L)=0.00216 *3*; α(M)=0.000512 *8* α(N)=0.0001242 *18*; α(O)=2.04×10^{-5} *3*; α(P)=1.084×10^{-6} *16* α(K)exp=0.0115 Mult.: from $\gamma(\theta)$ for oriented nuclei (1981Sp06) and α(K)exp. K/L12=5 *1*, I_{tot} = 1.8 (1963Em02). Other Iγ: 1.78 *23* (1973Ho38). Other δ: −19 *+6−13* (1982Al11) from $\gamma(\theta$,H,T).
649.8 *7*	0.35 *4*	1560.1	(5)$^+$	910.478	3$^+$	E2		0.01231	%Iγ=1.36 *16*

From ENSDF

γ(^{186}Os) (continued)

$E_γ$[†]	$I_γ$[@e]	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult.[b]	δ[c]	α[d]	Comments
									α(K)=0.00965 *14*; α(L)=0.00204 *3*; α(M)=0.000482 *7* α(N)=0.0001170 *17*; α(O)=1.93×10^{-5} *3*; α(P)=1.034×10^{-6} *15* α(K)exp=0.0080
[x]661.9 *7*	0.08 *4*					M1+E2		0.022 *11*	%Iγ=0.31 *16* α(K)=0.0180 *87*; α(L)=0.0030 *11*; α(M)=7.0×10^{-4} *25* α(N)=1.72×10^{-4} *61*; α(O)=2.9×10^{-5} *11*; α(P)=2.0×10^{-6} *11* α(K)exp=0.021
[x]671.4 *6*	0.32[a] *15*								%Iγ=1.2 *6* Eγ from 1969Su05.
679.5[h] *5*	0.046 *23*	2031.3	4^+	1351.99	4^+	M1		0.0300	%Iγ=0.18 *9* α(K)=0.0249 *4*; α(L)=0.00388 *6*; α(M)=0.000887 *13* α(N)=0.000217 *3*; α(O)=3.75×10^{-5} *6*; α(P)=2.83×10^{-6} *4* α(K)exp=0.026
684.8[h] *4*	0.08 *4*	1452.5?	(3^+)	767.480	2^+	M1		0.0294	%Iγ=0.31 *16* α(K)=0.0244 *4*; α(L)=0.00381 *6*; α(M)=0.000869 *13* α(N)=0.000212 *3*; α(O)=3.67×10^{-5} *6*; α(P)=2.77×10^{-6} *4* α(K)exp=0.028
700.37[h]	0.06 *3*	1976.0?		1275.61	5^+				%Iγ=0.23 *12* $E_γ$: from 1973Ho38. May be the same γ as the 701.2 *6* γ in 1969Su05; however, Iγ=0.30 *8* for that γ.
705.7 *9*	0.23 *5*	1776.4	$4^+,5^+$	1070.48	4^+	E2(+M1)	<−3	0.0196 *77*	%Iγ=0.90 *20* α(K)=0.0161 *66*; α(L)=0.00267 *85*; α(M)=6.2×10^{-4} *19* α(N)=1.50×10^{-4} *47*; α(O)=2.57×10^{-5} *84*; α(P)=1.80×10^{-6} *77* α(K)exp=0.0066 *13* (1978Sp05); α(K)exp=0.0078 (1973Ho38,1963Em02) Mult.: α(K)exp consistent with E2, but 706γ(θ,H,T) rules out pure E2. δ: −10 *+2−9* or −10 *+7−∞*, respectively, for J(1776 level)=4 or 5 (1982Al11).
712.7[g] *4*	0.20[g&] *6*	1480.4	$(3)^-$	767.480	2^+	[E1]		0.00370	%Iγ=0.78 *24* α(K)=0.00311 *5*; α(L)=0.000458 *7*; α(M)=0.0001038 *15* α(N)=2.52×10^{-5} *4*; α(O)=4.32×10^{-6} *6*; α(P)=3.09×10^{-7} *5* α(K)exp: 0.0060 for doubly-placed γ. Other α(K)exp: 1974Ya03. Additional information 1. Mult.: D from anisotropy (1982Al11), E1 or E2 from α(K)exp (for doublet).
712.7[gh] *4*	0.16[g&] *5*	1622.0?		910.478	3^+				%Iγ=0.62 *20* See comments on 713γ from 1481 level.
729.5 *4*	0.15 *3*	2081.59	4^+	1351.99	4^+	M1+E2		0.0173 *78*	%Iγ=0.58 *12* α(K)=0.0142 *67*; α(L)=0.00237 *87*; α(M)=5.5×10^{-4} *20* α(N)=1.33×10^{-4} *48*; α(O)=2.27×10^{-5} *85*; α(P)=1.59×10^{-6} *78* α(K)exp=0.018 Mult.: from α(K)exp≈0.010 in fig. 3 of 1978Sp05.
760.0 *4*	0.13 *2*	1628.57	5^-	868.93	6^+	(E1)		0.00326	%Iγ=0.51 *8*

$\gamma(^{186}Os)$ (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
									α(K)=0.00274 *4*; α(L)=0.000402 *6*; α(M)=9.12×10^{-5} *13* α(N)=2.22×10^{-5} *4*; α(O)=3.80×10^{-6} *6*; α(P)=2.74×10^{-7} *4* Mult.: D from $\gamma(\theta)$ for oriented nuclei (1978Sp05), $\Delta\pi$=yes from level scheme. Inconsistent α(K)exp≈0.007 (fig. 3, 1978Sp05) is attributed by authors to possible contamination from neighboring isotope; earlier α(K)exp datum (0.0092) is assumed by the evaluators to have been similarly contaminated.
767.51[#] *3*	1.34[#] *7*	767.480	2$^+$	0.0	0$^+$	E2		0.00856	%Iγ=5.2 *3* α(K)=0.00683 *10*; α(L)=0.001322 *19*; α(M)=0.000310 *5* α(N)=7.53×10^{-5} *11*; α(O)=1.254×10^{-5} *18*; α(P)=7.34×10^{-7} *11* α(K)exp=0.0075 K/L12=4.0 *8*, I_{tot} = 1.5 (1963Em02). Other Iγ: 1.38 *11* (1973Ho38).
773.28 *3*	2.29 *11*	910.478	3$^+$	137.15	2$^+$	M1+E2	−60 +*12*−*20*	0.00842	%Iγ=8.9 *4* α(K)=0.00673 *10*; α(L)=0.001298 *19*; α(M)=0.000304 *5* α(N)=7.39×10^{-5} *11*; α(O)=1.231×10^{-5} *18*; α(P)=7.23×10^{-7} *11* α(K)exp=0.0070 Mult.: from $\gamma(\theta)$ for oriented nuclei (1981Sp06) and α(K)exp. K/L12=5 *1*, I_{tot} = 2.4 (1963Em02). E_γ: from 1972Fo22. Other Iγ: 2.34 *12* (1972Fo22). Other δ: −87 +*32*−∞ (1982Al11) from $\gamma(\theta$,H,T).
^{x}780.8[g] *4*	0.17[g] *7*								%Iγ=0.7 *3* I_γ: from Iγ=0.30 *6* for doublet and Iγ=0.13 *4* from 2057 level.
780.8[g] *4*	0.13[g&] *4*	2056.63	5$^+$,6$^+$	1275.61	5$^+$				%Iγ=0.51 *16* Iγ=0.30 *6*, α(K)exp=0.016 for doublet.
^{x}794.2 *12*	<0.057								%Iγ<0.11 α(K)exp>0.011
805.5 *5*	0.30 *2*	2081.59	4$^+$	1275.61	5$^+$	M1+E2		0.0136 *59*	%Iγ=1.17 *8* α(K)=0.0112 *50*; α(L)=0.00184 *67*; α(M)=4.2×10^{-4} *15* α(N)=1.03×10^{-4} *37*; α(O)=1.76×10^{-5} *66*; α(P)=1.25×10^{-6} *59* α(K)exp=0.0090 Mult.: from α(K)exp≈0.010 in fig. 3 of 1978Sp05. K/L12=4 *2* (1963Em02).
841.50[#] *3*	1.27[#] *6*	1275.61	5$^+$	434.085	4$^+$	E2(+M1)	<−16	0.0122 *52*	%Iγ=4.95 *23* α(K)=0.0101 *44*; α(L)=0.00165 *59*; α(M)=3.8×10^{-4} *14*

γ(^{186}Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
									α(N)=9.2×10^{-5} *33*; α(O)=1.58×10^{-5} *58*; α(P)=1.12×10^{-6} *52* α(K)exp=0.0057 Mult.: from $\gamma(\theta)$ for oriented nuclei (1981Sp06) and α(K)exp. δ: based on δ=−29 *+13−120* (1981Sp06). Other δ: +34 *+26−10* (1982Al11) from $\gamma(\theta$,H,T). K/L12=5 *2*, I_{tot} = 1.3 (1963Em02). Other Iγ: 1.33 *17* (1973Ho38).
847	0.13[&] *4*	1916.1	4$^+$,5,6$^+$	1070.48	4$^+$				%Iγ=0.51 *16* E_γ: from 1978Sp05; E=846.6 for unplaced γ in 1973Ho38, but Iγ=1.64 *11* for that γ, suggesting different identity or typographical error in Iγ. Not reported in 1969Su05.
882 *1*	0.035 *11*	1750.93	7$^+$	868.93	6$^+$	M1		0.01529	α(K)=0.01275 *19*; α(L)=0.00197 *3*; α(M)=0.000449 *7* α(N)=0.0001096 *16*; α(O)=1.90×10^{-5} *3*; α(P)=1.439×10^{-6} *21* α(K)exp=0.014
907	0.15[&] *5*	1776.4	4$^+$,5$^+$	868.93	6$^+$				%Iγ=0.58 *20* E_γ: from 1978Sp05.
933.34[#] *4*	1.36[#] *7*	1070.48	4$^+$	137.15	2$^+$	E2		0.00570	%Iγ=5.3 *3* α(K)=0.00463 *7*; α(L)=0.000825 *12*; α(M)=0.000192 *3* α(N)=4.66×10^{-5} *7*; α(O)=7.84×10^{-6} *11*; α(P)=4.97×10^{-7} *7* α(K)exp=0.0043 *8* K:L12:M=6 *1*:1.4 *3*:1.1 *3*, I_{tot} = 1.2 (1963Em02). Other Iγ: 1.37 *11* (1973Ho38).
943.6 *4*	0.222 *11*	1812.45	(6)$^+$	868.93	6$^+$	M1(+E2)	+0.4 *5*	0.0120 *23*	%Iγ=0.87 *5* α(K)=0.0100 *20*; α(L)=0.0016 *3*; α(M)=0.00035 *6* α(N)=8.6×10^{-5} *15*; α(O)=1.5×10^{-5} *3*; α(P)=1.12×10^{-6} *23* α(K)exp=0.0165 *14* (1978Sp05) I_{tot} = 0.3 (1963Em02). Mult.: from $\gamma(\theta)$ for oriented nuclei (1981Sp06) and α(K)exp. δ: from δ=−0.1 to +0.8 (1981Sp06). Other δ: +0.80 *20* or −0.12 *+14−10* (1978Sp05; authors favor the larger option); +0.7 *+8−3* (1982Al11).
^{x}959.6 *15*	0.057 *11*					E2,M1		0.0089 *36*	%Iγ=0.22 *5* α(K)=0.0074 *30*; α(L)=0.00119 *42*; α(M)=2.72×10^{-4} *93* α(N)=6.6×10^{-5} *23*; α(O)=1.14×10^{-5} *41*; α(P)=8.2×10^{-7} *36* α(K)exp=0.0070
1011.1 *5*	0.19 *2*	2081.59	4$^+$	1070.48	4$^+$	M1		0.01094	%Iγ=0.74 *8* α(K)=0.00912 *13*; α(L)=0.001402 *20*; α(M)=0.000320 *5* α(N)=7.81×10^{-5} *11*; α(O)=1.352×10^{-5} *19*; α(P)=1.027×10^{-6} *15* α(K)exp=0.0089 1978Sp05 estimate δ(D,Q)=−0.01 *+10−8* or +1.0 *2* from $\gamma(\theta)$; α(K)exp favors the former.
1026.5 *3*	0.308 *11*	1460.72	4$^+$	434.085	4$^+$	M1(+E2)	≤+0.8	0.0094 *12*	%Iγ=1.20 *5* α(K)=0.0078 *10*; α(L)=0.00122 *14*; α(M)=0.00028 *3*

γ(^{186}Os) (continued)

E_γ [†]	I_γ [@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	δ[c]	α[d]	Comments
									α(N)=6.8×10^{-5} *8*; α(O)=1.17×10^{-5} *14*; α(P)=8.8×10^{-7} *12* α(K)exp=0.0134 *11* (1978Sp05) I_{tot} = 0.4 (1963Em02). Mult.: from γ(θ) for oriented nuclei (1981Sp06) and α(K)exp. Other δ: +0.81 *20* or +0.08 *+14−11* (1978Sp05; authors favor the larger option). α(K)exp exceeds α(K)(M1).
1046.6 *6*	0.082 *10*	1916.1	4$^+$,5,6$^+$	868.93	6$^+$				%Iγ=0.32 *4* Eγ from 1969Su05. Based on nonobservance of ce, 1969Su05 favor mult=E1.
1057.25[#] *8*	0.79[#] *4*	1491.28	6$^+$	434.085	4$^+$	E2		0.00445	%Iγ=3.08 *16* α(K)=0.00364 *5*; α(L)=0.000622 *9*; α(M)=0.0001437 *21* α(N)=3.49×10^{-5} *5*; α(O)=5.92×10^{-6} *9*; α(P)=3.90×10^{-7} *6* α(K)exp=0.0037 *13* K:L12:M=0.3 *1*:0.08 *2*:0.04 *2*, I_{tot} = 0.76 (1963Em02). Other Iγ: 0.80 *8* (1973Ho38).
1071.0	0.040 *9*	1208.28	2$^+$	137.15	2$^+$	M1		0.00947	%Iγ=0.16 *4* α(K)=0.00790 *11*; α(L)=0.001212 *17*; α(M)=0.000276 *4* α(N)=6.75×10^{-5} *10*; α(O)=1.169×10^{-5} *17*; α(P)=8.89×10^{-7} *13* α(K)exp=0.014 I_γ: weighted average of 0.034 *11* (1973Ho38) and 0.050 *15* (1978Sp05). Eγ, Ice from 1964Ha06.
1107.1 *15*	0.194 *23*	2666.6	(6)$^+$	1560.1	(5)$^+$	(E2)		0.00406	%Iγ=0.76 *9* α(K)=0.00333 *5*; α(L)=0.000562 *8*; α(M)=0.0001296 *19* α(N)=3.15×10^{-5} *5*; α(O)=5.35×10^{-6} *8*; α(P)=3.57×10^{-7} *5*; α(IPF)=2.50×10^{-7} *17* α(K)exp=0.0041
1121.1 *6*	0.125 *23*	2031.3	4$^+$	910.478	3$^+$				%Iγ=0.49 *9* Eγ from 1969Su05.
1171.5 *5*	0.38 *6*	2081.59	4$^+$	910.478	3$^+$	M1+E2	−2.0 *4*	0.0044 *4*	%Iγ=1.48 *23* α(K)=0.0037 *3*; α(L)=0.00059 *4*; α(M)=0.000136 *9* α(N)=3.30×10^{-5} *22*; α(O)=5.7×10^{-6} *4*; α(P)=4.0×10^{-7} *4*; α(IPF)=2.46×10^{-6} *11* α(K)exp=0.0042 1978Sp05 estimate δ(D,Q)=−0.3 *1* (α(K)=0.0063 *2*) or −2.0 *4* (α(K)=0.0037 *3*) from γ(θ); α(K)exp favors the latter.
1187.9[fh] *4*	0.51[f] *6*	1622.0?		434.085	4$^+$				%Iγ=1.99 *23* Mult.: α(K)exp≈0.004 *1* in fig. 3 of 1978Sp05, mult=E2(+M1), for doublet. K/L=6 4 (1963Em02).
1187.9[f] *4*	0.51[f] *6*	2056.63	5$^+$,6$^+$	868.93	6$^+$			0.00357	%Iγ=1.99 *23*

From ENSDF

$^{186}_{76}Os_{110}$-14

$\gamma(^{186}$Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[b]	α[d]	Comments
								α=0.00357; α(K)=0.00292; α(L)=0.00049 Mult.: α(K)exp≈0.004 *1* in fig. 3 of 1978Sp05, mult=E2(+M1), for doublet.
1209		1208.28	2$^+$	0.0	0$^+$			E_γ: from 1978Sp05.
1213	0.10[&] *3*	2081.59	4$^+$	868.93	6$^+$			%Iγ=0.39 *12* E_γ: from 1978Sp05.
1251[‡h]		2119.9?		868.93	6$^+$			E_γ: from table I of 1978Sp05.
1264.7 *8*	0.20 *2*	2031.3	4$^+$	767.480	2$^+$	E2	0.00315	%Iγ=0.78 *8* α(K)=0.00260 *4*; α(L)=0.000422 *6*; α(M)=9.70×10^{-5} *14* α(N)=2.36×10^{-5} *4*; α(O)=4.02×10^{-6} *6*; α(P)=2.77×10^{-7} *4*; α(IPF)=1.183×10^{-5} *20* α(K)exp=0.0030 Mult.: stretched Q from $\gamma(\theta)$ for oriented nuclei (1978Sp05).
1271	0.16[&] *5*	1704.6	(4$^+$)	434.085	4$^+$			%Iγ=0.62 *20* E_γ: from 1978Sp05.
1314.4[g] *6*	0.42[g&] *13*	2081.59	4$^+$	767.480	2$^+$	(E2)	0.00294	%Iγ=1.6 *5* α(K)=0.00242 *4*; α(L)=0.000389 *6*; α(M)=8.94×10^{-5} *13* α(N)=2.18×10^{-5} *3*; α(O)=3.71×10^{-6} *6*; α(P)=2.58×10^{-7} *4*; α(IPF)=1.95×10^{-5} *3* Iγ=0.51 *6* (1973Ho38) so α(K)exp=0.0020, mult=E2 (fig. 3, 1978Sp05) for doublet dominated by this transition. K/L12=3 2 (1963Em02).
1314.4[g]	0.20[g&] *6*	2666.6	(6)$^+$	1351.99	4$^+$			%Iγ=0.78 *24* Iγ=0.51 *6* (1973Ho38) so α(K)exp=0.0020 for 1314γ doublet.
1323.7 *7*	0.30 *3*	1460.72	4$^+$	137.15	2$^+$	E2	0.00290	%Iγ=1.17 *12* α(K)=0.00238 *4*; α(L)=0.000384 *6*; α(M)=8.80×10^{-5} *13* α(N)=2.14×10^{-5} *3*; α(O)=3.66×10^{-6} *6*; α(P)=2.55×10^{-7} *4*; α(IPF)=2.12×10^{-5} *4* α(K)exp=0.0022 *5* (1978Sp05)
1334.0[h] *15*	0.039 *9*	3414.3?	(4$^+$)	2081.59	4$^+$	E0+M1+E2		%Iγ=0.15 *4* α(K)exp=0.019 Ice from 1964Ha06; Eγ from 1969Su05; placement from 1973Ho38, based on energy sum alone.
1343.1[f] *11*	0.060[f] *6*	1480.4	(3)$^-$	137.15	2$^+$			%Iγ=0.234 *24* Eγ from 1969Su05.
1343.1[f] *11*	0.060[f] *6*	1776.4	4$^+$,5$^+$	434.085	4$^+$			%Iγ=0.234 *24* Eγ from 1969Su05.
[x]1363.5	0.038 *5*							%Iγ=0.148 *20* E_γ: from 1964Ha06.
1378.1 *6*	0.16 *4*	1812.45	(6)$^+$	434.085	4$^+$	E2	0.00270	%Iγ=0.62 *16* α(K)=0.00221 *4*; α(L)=0.000353 *5*; α(M)=8.09×10^{-5} *12* α(N)=1.97×10^{-5} *3*; α(O)=3.37×10^{-6} *5*; α(P)=2.36×10^{-7} *4*;

From ENSDF

$^{186}_{76}Os_{110}$-15

γ(^{186}Os) (continued)

E_γ [†]	I_γ [@e]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [b]	δ [c]	α [d]	Comments
									α(IPF)=3.30×10^{-5} *5* α(K)exp=0.0023 *4* (1978Sp05) Eγ from 1969Su05.
[x]1393.6	0.057 *6*								%Iγ=0.222 *24* E_γ: from 1964Ha06. γ absent in 1969Su05.
1434[‡h]		2302.9?		868.93	6^+				E_γ: from 1978Sp05.
[x]1439.9 *15*	0.200 *17*					M1,E2		0.0036 *11*	%Iγ=0.78 *7* α(K)=0.00292 *88*; α(L)=4.5×10^{-4} *13*; α(M)=1.03×10^{-4} *29* α(N)=2.50×10^{-5} *71*; α(O)=4.3×10^{-6} *13*; α(P)=3.2×10^{-7} *11*; α(IPF)=6.1×10^{-5} *12* α(K)exp=0.0030
1467.1[h] *18*	0.13 *3*	2958.4?	+	1491.28	6^+	E2		0.00243	%Iγ=0.51 *12* α(K)=0.00197 *3*; α(L)=0.000311 *5*; α(M)=7.11×10^{-5} *11* α(N)=1.731×10^{-5} *25*; α(O)=2.96×10^{-6} *5*; α(P)=2.10×10^{-7} *3*; α(IPF)=5.73×10^{-5} *10* α(K)exp=0.0023
1508.1 *7*	0.24 *2*	2377.1	5^+,6^+	868.93	6^+	M1		0.00415	%Iγ=0.94 *8* α(K)=0.00338 *5*; α(L)=0.000514 *8*; α(M)=0.0001169 *17* α(N)=2.85×10^{-5} *4*; α(O)=4.95×10^{-6} *7*; α(P)=3.79×10^{-7} *6*; α(IPF)=0.0001017 *15* α(K)exp=0.0050 Mult.,δ: from α(K)exp≈0.0038 in fig. 3 of 1978Sp05 and γ(θ,H,T) (1982Al11). δ(D,Q)=−0.07 *3* if J(2377 level)=6 (1982Al11).
1567	0.12[&] *4*	1704.6	(4^+)	137.15	2^+				%Iγ=0.47 *16* E_γ: from 1978Sp05.
1597.1 *8*	0.22 *2*	2031.3	4^+	434.085	4^+	M1		0.00366	%Iγ=0.86 *8* α(K)=0.00294 *5*; α(L)=0.000445 *7*; α(M)=0.0001014 *15* α(N)=2.48×10^{-5} *4*; α(O)=4.29×10^{-6} *6*; α(P)=3.29×10^{-7} *5*; α(IPF)=0.0001466 *21* α(K)exp=0.0032
1621.7 *20*	0.23 *2*	2056.63	5^+,6^+	434.085	4^+	(E2)		0.00208	%Iγ=0.90 *8* α(K)=0.001642 *24*; α(L)=0.000254 *4*; α(M)=5.80×10^{-5} *9* α(N)=1.413×10^{-5} *20*; α(O)=2.43×10^{-6} *4*; α(P)=1.748×10^{-7} *25*; α(IPF)=0.0001099 *18* α(K)exp=0.0013 *6* (1978Sp05) Mult.: E1,E2 from α(K)exp; Δπ=no from level scheme.
1647.4 *6*	1.21 *6*	2081.59	4^+	434.085	4^+	E2+M1	+0.073 *10*	0.00342	%Iγ=4.72 *23* α(K)=0.00272 *4*; α(L)=0.000411 *6*; α(M)=9.37×10^{-5} *14* α(N)=2.29×10^{-5} *4*; α(O)=3.97×10^{-6} *6*; α(P)=3.04×10^{-7} *5*; α(IPF)=0.0001732 *25*

γ(^{186}Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	α[d]	Comments
								α(K)exp=0.0017 Mult.: anisotropy suggests significant D component (1978Sp05). δ from γ(θ,H,T) (1982Al11). K/L12 ≈ 4 (1963Em02).
1690.8[h] *19*	0.073 *11*	2559.7?		868.93	6^+			%Iγ=0.28 *5* Eγ from 1969Su05.
1701.0[h] *7*	0.54 *2*	2135.1?	$3^+,4^+,5^+$	434.085	4^+	M1(+E2)	0.0026 *7*	%Iγ=2.11 *8* α(K)=0.00201 *51*; α(L)=0.00031 *8*; α(M)=7.0×10^{-5} *17* α(N)=1.7×10^{-5} *5*; α(O)=2.9×10^{-6} *8*; α(P)=2.21×10^{-7} *61*; α(IPF)=0.00017 *4* α(K)exp=0.0022 δ(D,Q)=−0.044 *15*, −0.67, +0.45, respectively, for J(2135 level)=4, 3, 5 (from γ(θ,H,T), 1982Al11). K/L12 ≈ 3 (1963Em02).
1730		2599.2	$4^{(+)},5,6^{(+)}$	868.93	6^+			Eγ: from 1978Sp05.
1737.8[‡h] *20*	0.194 *17*	2606.3?	$(5^+,6^+)$	868.93	6^+	(M1+E2)	0.0025 *6*	%Iγ=0.76 *7* α(K)=0.0019 *5*; α(L)=0.00029 *7*; α(M)=6.6×10^{-5} *16* α(N)=1.6×10^{-5} *4*; α(O)=2.8×10^{-6} *7*; α(P)=2.10×10^{-7} *57*; α(IPF)=0.00019 *4* α(K)exp=0.0021
1751.4 *9*	0.215 *11*	2620.0	$5^+,6^+$	868.93	6^+	M1	0.00303	%Iγ=0.84 *5* α(K)=0.00234 *4*; α(L)=0.000354 *5*; α(M)=8.06×10^{-5} *12* α(N)=1.97×10^{-5} *3*; α(O)=3.41×10^{-6} *5*; α(P)=2.62×10^{-7} *4*; α(IPF)=0.000233 *4* α(K)exp=0.0028 δ(D,Q)=−0.126 *20* if J(2620 level)=6; from γ(θ,H,T) (1982Al11). K/L12 ≈ 3 (1963Em02).
1789.0[h] *20*	0.045 *5*	2223.1?	4^+	434.085	4^+	E0+M1+E2		%Iγ=0.175 *20* α(K)exp=0.0052 *16* (1978Sp05)
1800.1[h] *25*	≤0.034[a]	2234?		434.085	4^+			%Iγ=0.07 *7* Eγ: from 1963Em02.
[x]1829.2 *5*	0.032 *13*							%Iγ=0.12 *5*
[x]1842.6 *5*	0.034 *9*							%Iγ=0.13 *4*
[x]1869.0 *5*	0.102 *14*							%Iγ=0.40 *6*
1893.7 *5*	0.060 *15*	2031.3	4^+	137.15	2^+			%Iγ=0.23 *6*
1943	0.16[&] *5*	2377.1	$5^+,6^+$	434.085	4^+			%Iγ=0.62 *20* Eγ: from 1978Sp05.
[x]1997.1 *5*	0.071 *14*							%Iγ=0.28 *6*
2138.6[h] *5*	0.021 *4*	3414.3?	(4^+)	1275.61	5^+			%Iγ=0.082 *16* Placement from 1973Ho38; based on energy sum alone.
[x]2144.3 *5*	0.084 *10*							%Iγ=0.33 *4* Eγ: fits 3215 to 1070 transition.
2165.2 *5*	0.153 *25*	2599.2	$4^{(+)},5,6^{(+)}$	434.085	4^+			%Iγ=0.60 *10*

From ENSDF

$^{186}_{76}Os_{110}$-17

γ(^{186}Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[b]	Comments
2172.2[‡h] 5	0.056 11	2606.3?	(5$^+$,6$^+$)	434.085	4$^+$		%Iγ=0.22 5
2185.8 5	0.162 19	2620.0	5$^+$,6$^+$	434.085	4$^+$		%Iγ=0.63 8
[x]2242.0 5	0.37 11						%Iγ=1.4 5 E_γ: fits 3111 to 869 transition.
[x]2315.6 5	0.051 8						%Iγ=0.20 4 E_γ: fits 3185 to 869 transition.
2339.7[‡h] 5	0.098 12	2773.8?	(4$^+$)	434.085	4$^+$	E0+M1+E2	%Iγ=0.38 5 α(K)exp=0.0019 Ice from 1964Ha06. Transition may include a contribution from ^{185}Ir and/or ^{188}Ir; nevertheless, α(K)exp suggests presence of E0 component in transition (1973Ho38).
2357.3[h] 5	0.072 11	3226.3?		868.93	6$^+$		%Iγ=0.28 5 E_γ: also consistent with a 3269 to 912 transition, but that placement is not consistent with observed (1978Sp05) 2357γ-435γ coin.
2383.7[‡h] 5	0.096 10	3252.7?	(6$^+$)	868.93	6$^+$	E0+M1+E2	%Iγ=0.37 4 α(K)exp=0.0033 Ice from 1964Ha06.
2399.1[‡h] 5	0.104 14	3268.9?		868.93	6$^+$	E0+M1+E2	%Iγ=0.41 6 α(K)exp=0.0023 Ice from 1964Ha06.
2544.3[‡h] 5	0.067 14	2978.4?		434.085	4$^+$		%Iγ=0.26 6
[x]2580.3 5	0.020 6						%Iγ=0.078 24 α(K)exp=0.0094 Ice from 1964Ha06.
2676[‡h]		3110.1?		434.085	4$^+$		E_γ: from 1978Sp05.
[x]2733.7 5	0.015 5						%Iγ=0.058 20 α(K)exp=0.013 Ice from 1964Ha06.
2751[‡h]		3185.1?		434.085	4$^+$		E_γ: from 1978Sp05.
[x]2770.7 5	0.009 3						%Iγ=0.035 12
2780.4[‡] 5	0.083 13	3214.5?		434.085	4$^+$		%Iγ=0.32 5
[x]2790.2 5	0.046 7						%Iγ=0.18 3
[x]2805.8 5	0.015 4						%Iγ=0.058 16
2835.2[h] 5	0.200 19	3268.9?		434.085	4$^+$		%Iγ=0.78 8 Placement from 1973Ho38 and 1969Su05; based on energy sum alone.
[x]2853.1 5	0.057 8						%Iγ=0.22 4
[x]2866.5 5	0.015 5						%Iγ=0.058 20
[x]2912.5 5	0.025 7						%Iγ=0.10 3
[x]2967.0 5	0.029 6						%Iγ=0.113 24
2980.1[h] 5	0.019 4	3414.3?	(4$^+$)	434.085	4$^+$		%Iγ=0.074 16 Placement from 1973Ho38; based on energy sum alone.
[x]2994.8 5	0.017 3						%Iγ=0.066 12

$\gamma(^{186}$Os) (continued)

E_γ[†]	I_γ[@e]	E_i(level)	E_f	J^π_f	Comments
[x]3007.3 *5*	0.032 *5*				%Iγ=0.125 *20*
[x]3040.3 *5*	0.010 *3*				%Iγ=0.039 *12*
[x]3074.6 *5*	0.0066 *20*				%Iγ=0.026 *8*
3132.2[h] *5*	0.012 *2*	3268.9?	137.15	2^+	%Iγ=0.047 *8* Placement from 1973Ho38; based on energy sum alone.

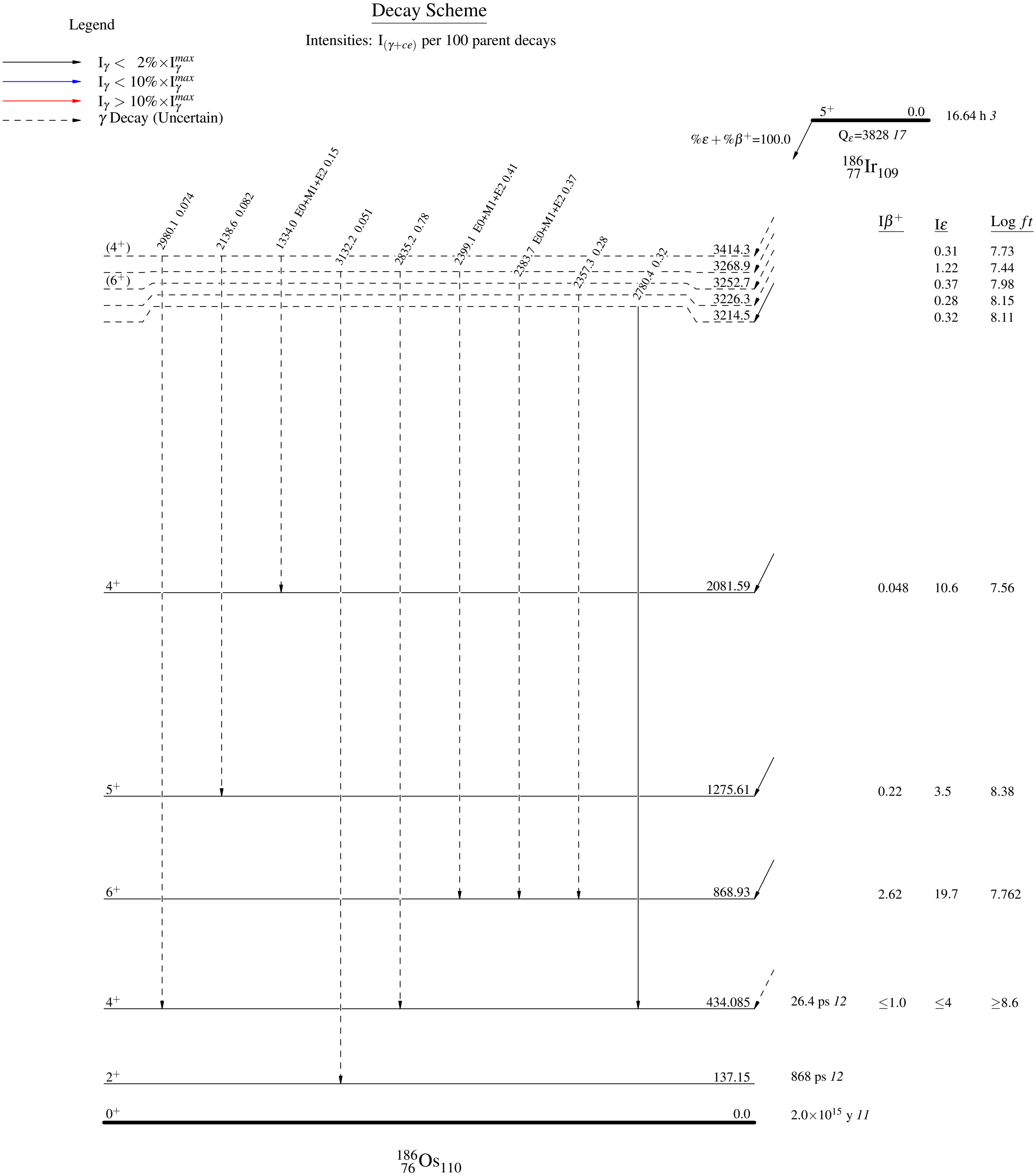
[†] From ce data of 1963Em02 if E≤1800, from 1973Ho38 for E>1800; exceptions are noted.
[‡] Placement given in table 1 of 1978Sp05.
[#] From 1972Fo22. Iγ normalized so Iγ(137)=10.7 *6*.
[@] From 1973Ho38, except as noted; normalized so I(137γ)=10.7. Iγ data reported in 1973Ho38 supersede those from 1969Su05 (Same research group of 1973Ho38).
[&] From 1978Sp05 based on γγ coincidence data; ΔI_γ=30%.
[a] From 1969Su05, scaled so I(137γ)=10.7 *11*. This normalization effects a 14% reduction in conversion coefficient values given in 1969Su05, as recommended by 1973Ho38.
[b] From measured conversion coefficient data, unless indicated to the contrary.
[c] From 1981Sp06, unless noted otherwise; deduced from γ(θ,H,T).
[d] Additional information 2.
[e] For absolute intensity per 100 decays, multiply by 3.90 *3*.
[f] Multiply placed with undivided intensity.
[g] Multiply placed with intensity suitably divided.
[h] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{186}_{76}Os_{110}$-19

^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22

Decay Scheme

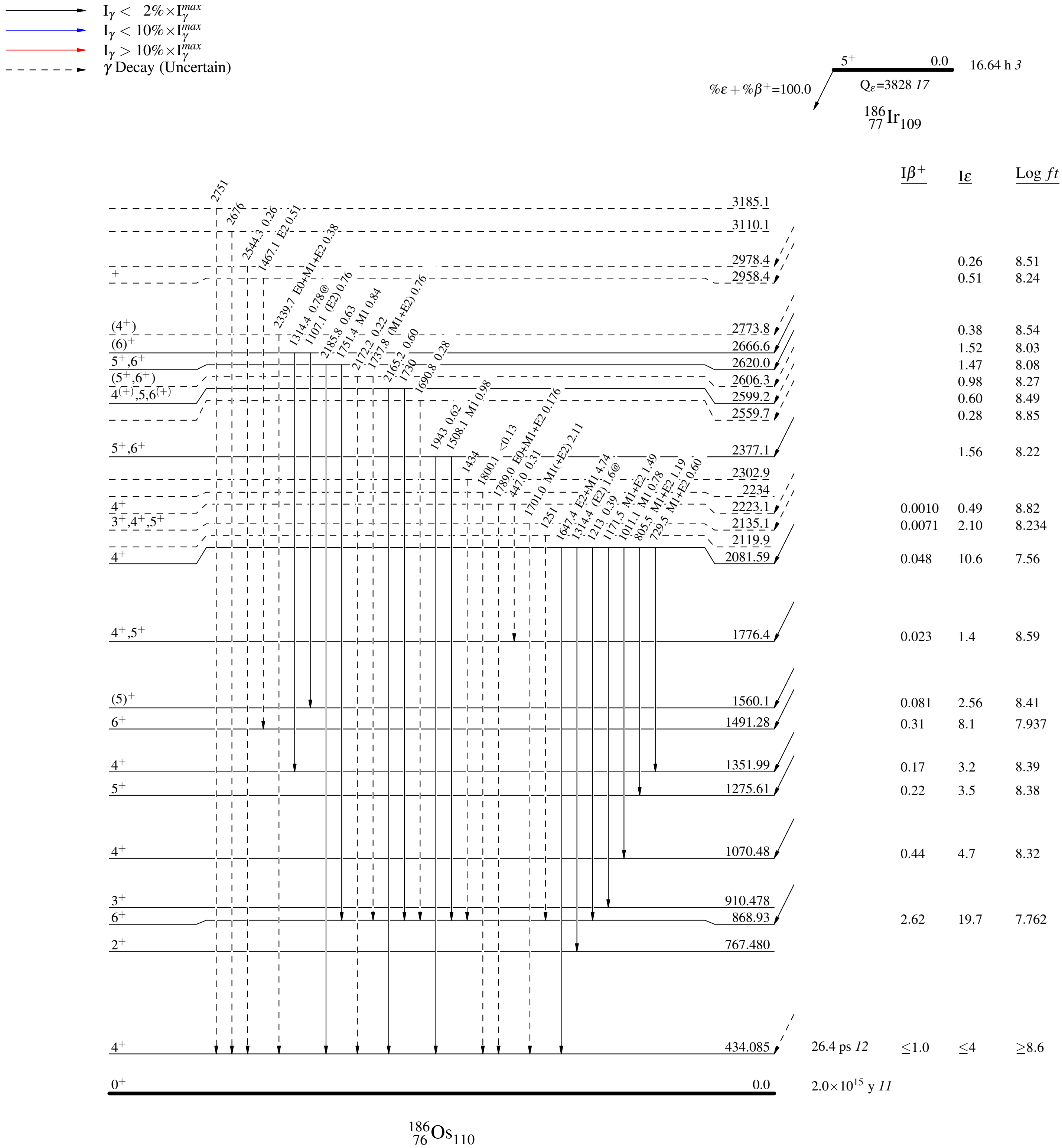
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22

Decay Scheme (continued)

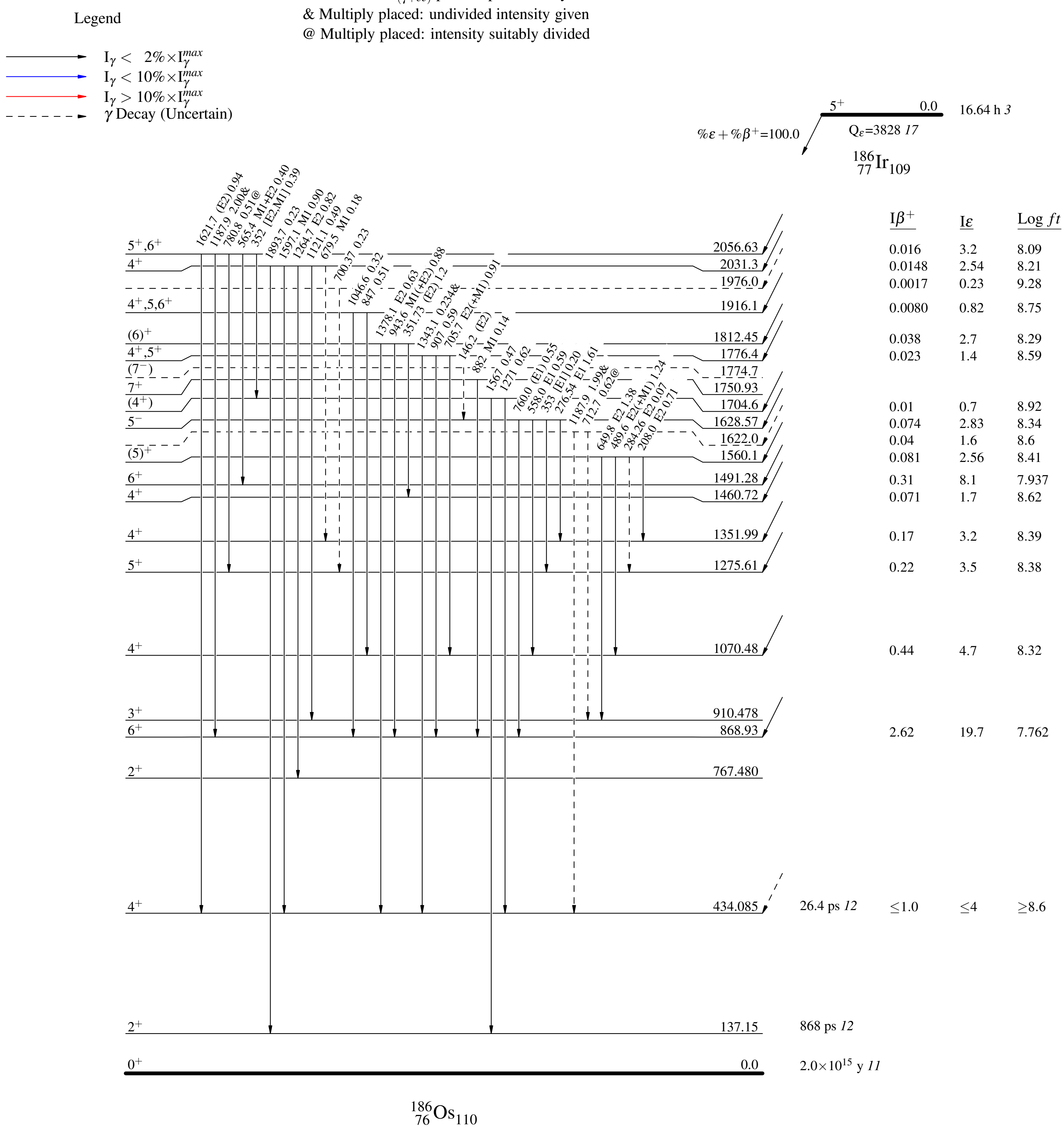
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided



^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22

Decay Scheme (continued)

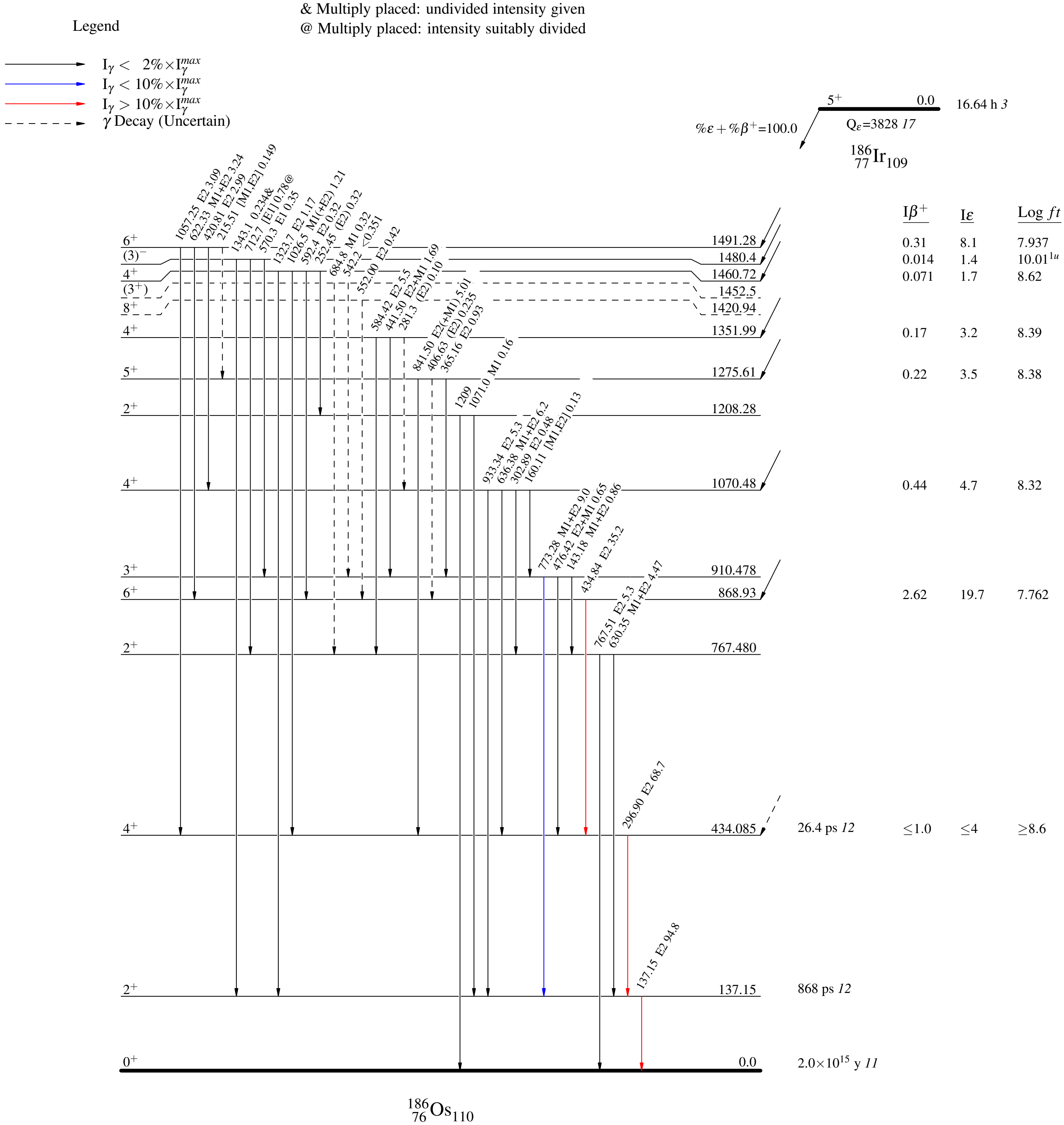
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



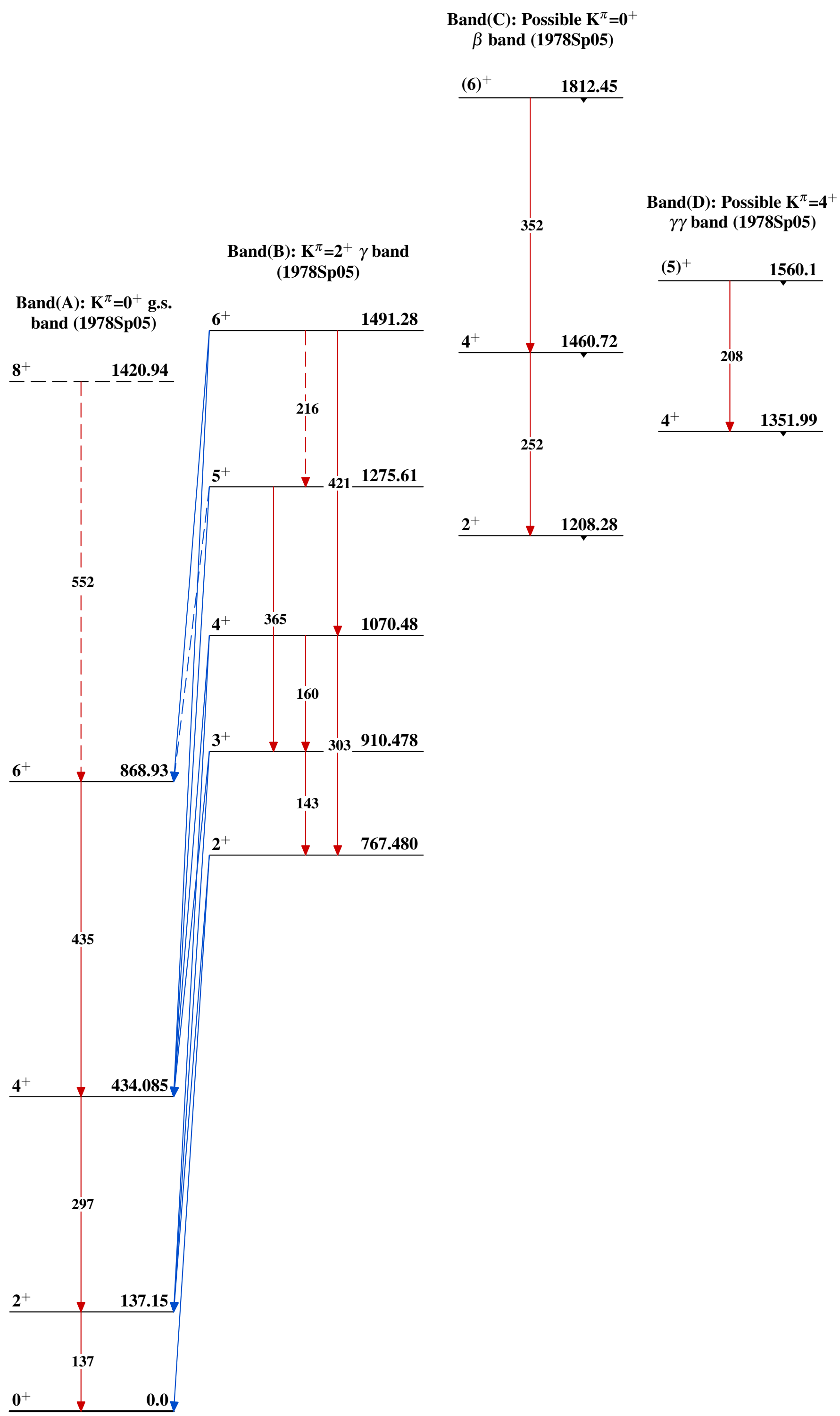
^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22

Decay Scheme (continued)

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



^{186}Ir ε decay (16.64 h) 1978Sp05,1973Ho38,1972Fo22



$^{186}_{76}Os_{110}$