^{181}Re ε decay (19.9 h) 1971Da02,1960Ha18

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 106, 367 (2005)	31-Aug-2005

Parent: ^{181}Re: E=0.0; J$^{\pi}$=5/2^{+}; $T_{1/2}$=19.9 h *7*; Q(ε)=1743 *13*; %ε+%β^{+} decay=100.0

1971Da02: ^{181}Re from ^{181}Ta(^{3}He,3n), ^{181}Ta(α,4n); Natural targets; Ge(Li) detectors; measured Eγ, Iγ, $\gamma\gamma$-coin; deduced log *ft*, ^{181}W levels, J^{π}, ICC, γ-multipolarity.

1960Ha18: ^{181}Re from ^{182}W(p,2n); enriched target; conversion electrons measured; multipolarities assigned.

Decay scheme as given by 1971Da02, except where noted.

^{181}W Levels

E(level)†	J$^{\pi}$‡	$T_{1/2}$	Comments
0.0	9/2^{+}		
113.39 *15*	11/2^{+}		
250.59# *25*	13/2^{+}		
365.56 *13*	5/2^{-}	14.59 μs *15*	$T_{1/2}$: from Adopted Levels.
385.20# *16*	1/2^{-}		
409.21 *17*	7/2^{-}		
450.13 *17*	3/2^{-}		
457.86 *18*	1/2^{-}		
475.65 *14*	7/2^{-}		
488.43 *17*	5/2^{-}		
529.43 *16*	3/2^{-}		
560.46 *16*	5/2^{-}		
643.02 *16*	7/2^{-}		
661.75 *17*	7/2^{-}		
726.28 *16*	3/2^{-}		
807.38 *16*	5/2^{-}		
953.43 *17*	7/2^{+}		
993.4# *3*	(9/2)$^{+}$		
1009.32 *17*	(5/2,7/2)$^{+}$		
1086.79 *21*	(7/2)$^{+}$		
1188.34 *18*	3/2^{-}		
1248.85 *18*	5/2^{-}		
1271.97 *18*	5/2^{+}		
1330.70 *23*	5/2^{-},7/2^{-}		
1355.3 *4*	5/2^{-},7/2^{-}		
1365.59 *16*	3/2^{+}		
1377.72 *22*	3/2^{+},5/2^{+}		
1422.8 *3*	5/2^{-},7/2^{-}		
1440.54 *19*	5/2^{+},7/2^{+}		
1469.12 *20*	(5/2)$^{+}$		
1498.14 *20*	7/2^{+}		
1538.0 *5*	(7/2^{+})		

† From least square fit to Eγ's by evaluator.

‡ From Adopted Levels.

γ intensity deexciting this level must be balanced by unobserved γ intensity feeding the level.

^{181}Re ε decay (19.9 h) 1971Da02,1960Ha18 (continued)

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(205 *13*)	1538.0		0.19 *7*	7.20 *18*	0.19 *7*	εK=0.699 *14*; εL=0.225 *10*; εM+=0.076 *4*
(245 *13*)	1498.14		1.6 *4*	6.48 *13*	1.6 *4*	εK=0.729 *8*; εL=0.204 *6*; εM+=0.0677 *23*
(274 *13*)	1469.12		2.3 *3*	6.45 *8*	2.3 *3*	εK=0.743 *6*; εL=0.193 *5*; εM+=0.0637 *17*
(302 *13*)	1440.54		4.6 *6*	6.26 *8*	4.6 *6*	εK=0.753 *5*; εL=0.186 *4*; εM+=0.0608 *13*
(320 *13*)	1422.8		0.58 *12*	7.22 *11*	0.58 *12*	εK=0.759 *4*; εL=0.182 *3*; εM+=0.0593 *11*
(365 *13*)	1377.72		1.9 *3*	6.84 *8*	1.9 *3*	εK=0.770 *3*; εL=0.1741 *20*; εM+=0.0563 *8*
(377 *13*)	1365.59		22.7 *25*	5.79 *7*	22.7 *25*	εK=0.772 *3*; εL=0.1724 *19*; εM+=0.0557 *7*
(388 *13*)	1355.3		1.14 *24*	7.12 *10*	1.14 *24*	εK=0.7737 *24*; εL=0.1711 *17*; εM+=0.0552 *7*
(412 *13*)	1330.70		0.87 *15*	7.30 *9*	0.87 *15*	εK=0.7777 *21*; εL=0.1682 *15*; εM+=0.0541 *6*
(471 *13*)	1271.97		1.1 *5*	7.33 *20*	1.1 *5*	εK=0.7852 *15*; εL=0.1628 *11*; εM+=0.0520 *4*
(494 *13*)	1248.85		1.8 *3*	7.17 *8*	1.8 *3*	εK=0.7875 *13*; εL=0.1611 *10*; εM+=0.0514 *4*
(555 *13*)	1188.34		<1.8	>7.3	<1.8	εK=0.7927 *10*; εL=0.1573 *8*; εM+=0.0500 *3*
(734 *13*)	1009.32		<1.3	>7.7	<1.3	εK=0.8024 *6*; εL=0.1503 *4*; εM+=0.04736 *15*
(750 *13*)	993.4		<0.8	>7.9	<0.8	εK=0.8030 *5*; εL=0.1498 *4*; εM+=0.04720 *14*
(790 *13*)	953.43		<1.3	>7.8	<1.3	εK=0.8044 *5*; εL=0.1488 *4*; εM+=0.04681 *12*
(936 *13*)	807.38		<1.1	>8.0	<1.1	εK=0.8084 *3*; εL=0.14585 *23*; εM+=0.04571 *9*
(1017 *13*)	726.28		16 *5*	6.90 *14*	16 *5*	εK=0.8101 *3*; εL=0.14460 *19*; εM+=0.04525 *7*
(1081 *13*)	661.75		2.2 *7*	7.82 *14*	2.2 *7*	εK=0.8113 *3*; εL=0.14375 *17*; εM+=0.04493 *6*
(1100 *13*)	643.02		0.75 *23*	8.30 *14*	0.75 *23*	εK=0.8116 *3*; εL=0.14353 *16*; εM+=0.04485 *6*
(1183 *13*)	560.46		3.3 *20*	7.7 *3*	3.3 *20*	εK=0.8129 *2*; εL=0.1426 *2*; εM+=0.04452 *5*
(1214 *13*)	529.43		<1.5	>8.1	<1.5	εK=0.8133 *2*; εL=0.1423 *2*; εM+=0.04440 *5*
(1255 *13*)	488.43		<0.8	>8.4	<0.8	εK=0.8138 *2*; εL=0.1419 *2*; εM+=0.04426 *5*
(1267 *13*)	475.65		10.3 *25*	7.29 *11*	10.3 *25*	εK=0.8139 *2*; εL=0.1418 *2*; εM+=0.04422 *5*
(1293 *13*)	450.13		7 *3*	7.48 *19*	7 *3*	εK=0.8142 *2*; εL=0.1416 *2*; εM+=0.04413 *5*
(1334 *13*)	409.21		4.9 *12*	7.66 *11*	4.9 *12*	εK=0.8146 *2*; εL=0.1413 *1*; εM+=0.04401 *4*
(1377 *13*)	365.56	0.004 *3*	15 *10*	7.2 *3*	15 *10*	av Eβ=178.2 *60*; εK=0.8149 *1*; εL=0.1409 *1*; εM+=0.04388 *4*

† Absolute intensity per 100 decays.

γ(^{181}W)

Iγ normalization: normalized assuming the sum Iγ+ce(g.s.)=100.

E_γ[†]	I_γ[‡#f]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	δ[&]	α[g]	Comments
19.7 *2*	0.033 *CA*	385.20	1/2⁻	365.56	5/2⁻	E2		854×10[1]	α(L)= 643×10[1]; α(M)= 1584 I_γ: intensity calculated from the intensity balance through the 385-keV level, assuming no direct feeding by ε decay. Mult.: from 1960Ha18, using relative intensities of nearby L2-electron lines. The limit on the intensity of the L2-line associated with this transition precludes the possibility of a substantial M1 component.
31.1 *2*	0.23 *9*	560.46	5/2⁻	529.43	3/2⁻	M1		25.9	α(L)= 19.91; α(M)= 4.52
38.1 *2*	0.8 *2*	488.43	5/2⁻	450.13	3/2⁻	M1		14.20	α(L)= 10.91; α(M)= 2.477
43.5 *2*	6.2 *12*	409.21	7/2⁻	365.56	5/2⁻	M1+E2	0.10 *3*	11.2 *11*	α(L)= 8.5 *8*; α(M)= 1.97 *21*
65.0 *2*	32 *6*	450.13	3/2⁻	385.20	1/2⁻	M1+E2	0.33 *4*	5.0 *5*	α(L)= 3.8 *4*; α(M)= 0.91 *9*; α(N+..)= 0.27 *3*
71.7 *2*	1.5[d] *6*	529.43	3/2⁻	457.86	1/2⁻	M1+E2	0.29 *+6−4*	13.05 *10*	α(K)= 9.9 *3*; α(L)= 2.4 *3*; α(M)= 0.57 *8*; α(N+..)= 0.171 *22*
72.7 *2*	2.9[d] *12*	457.86	1/2⁻	385.20	1/2⁻	M1		12.35	α(K)= 10.23; α(L)= 1.635; α(M)= 0.370; α(N+..)= 0.1120
93.7 *2*	1.6 *6*	1365.59	3/2⁺	1271.97	5/2⁺	M1+E2	0.38 *+7−6*	5.81 *4*	α(K)= 4.40 *17*; α(L)= 1.08 *10*; α(M)= 0.25 *3*; α(N+..)= 0.076 *8*
102.7 *2*	3.5 *14*	560.46	5/2⁻	457.86	1/2⁻	E2		3.57	α(K)= 0.854; α(L)= 2.050; α(M)= 0.515; α(N+..)= 0.1512
103.1 *2*	2.3 *9*	488.43	5/2⁻	385.20	1/2⁻	E2		3.52	α(K)= 0.848; α(L)= 2.013; α(M)= 0.506; α(N+..)= 0.1485
109.9 *2*	36 *7*	475.65	7/2⁻	365.56	5/2⁻	M1+E2	0.38 *7*	3.61 *5*	α(K)= 2.8 *1*; α(L)= 0.62 *5*; α(M)= 0.145 *12*; α(N+..)= 0.044 *4*
110.3 *2*	13 *3*	560.46	5/2⁻	450.13	3/2⁻	M1+E2	0.17 *7*	3.67 *3*	α(K)= 3.00 *7*; α(L)= 0.51 *3*; α(M)= 0.118 *7*; α(N+..)= 0.0359 *20*
113.3 *2*	9 *CA*	113.39	11/2⁺	0.0	9/2⁺	M1		3.42	α(K)= 2.84; α(L)= 0.451; α(M)= 0.1023; α(N+..)= 0.0313 I_γ: measured intensity Iγ=6.8 was increased by the evaluator to balance feeding through the 113-keV level. Stronger 252.2-keV E3 transition feeding level could also be in error.
[x]125.8 *2*	1.4[a] *5*								
137.2 *2*	0.9 *4*	250.59	13/2⁺	113.39	11/2⁺	M1		1.978	α(K)= 1.640; α(L)= 0.260; α(M)= 0.0593; α(N+..)=0.01809
144.3 *2*	5 *2*	529.43	3/2⁻	385.20	1/2⁻	M1		1.717	α(K)= 1.425; α(L)= 0.2257; α(M)= 0.0513; α(N+..)=0.01565
154.4 *2*	3.6 *14*	643.02	7/2⁻	488.43	5/2⁻	E2		0.766	α(K)= 0.337; α(L)= 0.324; α(M)= 0.0810; α(N+..)=0.02374

γ(^{181}W) (continued)

E_γ[†]	I_γ[‡#f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[&]	α[g]	Comments
163.9 2	1.7 7	529.43	3/2⁻	365.56	5/2⁻	M1+E2	≈0.8	0.973 10	α(K)= 0.720 8; α(L)= 0.1937 20; α(M)= 0.0462 5; α(N+..)=0.01374 14
164.6 2	1.7 7	807.38	5/2⁻	643.02	7/2⁻	M1+E2	≈0.8	0.961 10	α(K)= 0.711 8; α(L)= 0.1907 19; α(M)= 0.0455 5; α(N+..)=0.01352 14
165.8 2	1.7 7	726.28	3/2⁻	560.46	5/2⁻	M1+E2	≈0.8	0.94 1	α(K)= 0.697 7; α(L)= 0.1858 19; α(M)= 0.0443 5; α(N+..)=0.01317 14
167.2 2	1.3[a] 4	643.02	7/2⁻	475.65	7/2⁻	[M1]		1.133	α(K)= 0.94; α(L)= 0.1490; α(M)= 0.0339; α(N+..)=0.01025
175.2 2	6 3	560.46	5/2⁻	385.20	1/2⁻	E2		0.491	α(K)= 0.2427; α(L)= 0.1876; α(M)= 0.0467; α(N+..)=0.01363
177.5 2	22 9	1365.59	3/2⁺	1188.34	3/2⁻	E1		0.0855	α(K)= 0.0708; α(L)=0.01139; α(M)=0.00258; α(N+..)=0.00076
186.2 2	2.5 10	661.75	7/2⁻	475.65	7/2⁻	E2		0.397	α(K)= 0.2060; α(L)= 0.1447; α(M)= 0.0360; α(N+..)=0.01048
193.2 2	1.1[a] 4	643.02	7/2⁻	450.13	3/2⁻	[E2]		0.350	α(K)= 0.1865; α(L)= 0.1239; α(M)= 0.0307; α(N+..)=0.00895
195.0 2	2.2 9	560.46	5/2⁻	365.56	5/2⁻	M1		0.736	α(K)= 0.611; α(L)= 0.0966; α(M)=0.02196; α(N+..)=0.00660
197.0 2	7 3	726.28	3/2⁻	529.43	3/2⁻	M1		0.716	α(K)= 0.594; α(L)= 0.0939; α(M)=0.02134; α(N+..)=0.00641
ˣ201.0 3	2.5 8								
ˣ211.7 3	1.2 4								
ˣ213.0 3	1.5 5								
237.4 3	1.3 4	726.28	3/2⁻	488.43	5/2⁻	[M1]		0.426	α(K)= 0.354; α(L)= 0.0558; α(M)=0.01268; α(N+..)=0.00378
239.3 3	1.2 4	1248.85	5/2⁻	1009.32	(5/2,7/2)⁺	[E1]		0.0401	α(K)= 0.0333; α(L)=0.00522; α(M)=0.00118; α(N+..)=0.00034
ˣ245.5 3	1.5 5								
252.2 3	13.2 33	365.56	5/2⁻	113.39	11/2⁺	E3		0.807	α(K)=0.260 8; α(L)=0.410 13; α(M)=0.106 4; α(N+..)=0.0311 10
262.6 3	2.9 10	1271.97	5/2⁺	1009.32	(5/2,7/2)⁺	M1+E2	0.9 +7−4	0.24 6	α(K)= 0.18 5; α(L)= 0.0393 18; α(M)=0.00922 23; α(N+..)=0.00272 9
276.4 3	8.6 22	726.28	3/2⁻	450.13	3/2⁻	M1+E2	0.8 +9−6	0.21 6	α(K)= 0.17 6; α(L)= 0.034 3; α(M)= 0.0079 4; α(N+..)=0.00233 14
278.1 3	2.2 7	643.02	7/2⁻	365.56	5/2⁻	[M1]		0.276	α(K)= 0.2298; α(L)= 0.0361; α(M)=0.00819; α(N+..)=0.00244
ˣ279.5 3	1.4 5								
296.0 3	2.8 9	661.75	7/2⁻	365.56	5/2⁻	M1+E2	≈0.8	0.1772 18	α(K)= 0.1415 15; α(L)= 0.0274 3; α(M)=0.00636 7; α(N+..)=0.00188
ˣ297.0 3	1.5 5								
316.7 3	1.2 4	726.28	3/2⁻	409.21	7/2⁻	[E2]		0.0730	α(K)= 0.0498; α(L)=0.01767; α(M)=0.00429; α(N+..)=0.00125
318.6 3	15 4	1271.97	5/2⁺	953.43	7/2⁺	M1		0.1916	α(K)= 0.1593; α(L)=0.02493; α(M)=0.00564; α(N+..)=0.00168
331.9 3	18 5	807.38	5/2⁻	475.65	7/2⁻	M1		0.1717	α(K)= 0.1428; α(L)=0.02233; α(M)=0.00505; α(N+..)=0.00150
340.8 3	0.5 2	726.28	3/2⁻	385.20	1/2⁻	[M1]		0.1600	α(K)= 0.1331; α(L)=0.02079; α(M)=0.00470; α(N+..)=0.00140

$^{181}_{74}W_{107}$-4

γ(^{181}W) (continued)

E_γ [†]	I_γ [‡#f]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	δ [&]	α [g]	Comments
[x]350.4 3	4.7 16								
353.6 3	≈6	1440.54	5/2$^+$,7/2$^+$	1086.79	(7/2)$^+$	(M1)		0.0715 8	α(K)= 0.0541 6; α(L)=0.01329 14; α(M)=0.00315 4; α(N+..)=0.00092 I_γ: intensity calculated by evaluator to balance feeding through 1087-keV level.
356.1 3	23 11	1365.59	3/2$^+$	1009.32	(5/2,7/2)$^+$	[E2]		0.0520	α(K)= 0.0368; α(L)=0.01162; α(M)=0.00280; α(N+..)=0.00082
360.7 3	267 53	726.28	3/2$^-$	365.56	5/2$^-$	M1+E2	1.4 +20−7	0.08 3	α(K)= 0.06 3; α(L)= 0.0134 23; α(M)= 0.0031 5; α(N+..)=0.00092 14 I_γ: from 1960Ha18. Other: Iγ=163 from 1971Da02.
365.5 3	763 76	365.56	5/2$^-$	0.0	9/2$^+$	M2		0.472	α(K)= 0.374; α(L)= 0.0751; α(M)=0.01755; α(N+..)=0.00526
[x]376.8 3	1.8 6								
382.3 3	3.6 12	1469.12	(5/2)$^+$	1086.79	(7/2)$^+$	M1+E2	≈0.8	0.0885 9	α(K)= 0.0718 8; α(L)=0.01287 13; α(M)=0.00296 3; α(N+..)=0.00088
398.0 3	8.7 22	807.38	5/2$^-$	409.21	7/2$^-$	M1		0.1060	α(K)= 0.0882; α(L)=0.01372; α(M)=0.00310; α(N+..)=0.00092
409.0 3	3.3 11	409.21	7/2$^-$	0.0	9/2$^+$	[E1][e]		0.01111	α(K)=0.00931; α(L)=0.00139; α(M)=0.00032
412.3 3	14 4	1365.59	3/2$^+$	953.43	7/2$^+$	[E2]		0.0965	α(K)= 0.0804; α(L)=0.01249; α(M)=0.00282; α(N+..)=0.00084
[x]420.0 3	1.4 5								
441.8 3	14[c] 7	807.38	5/2$^-$	365.56	5/2$^-$	(M1)		0.0805	α(K)= 0.0670; α(L)=0.01039; α(M)=0.00235; α(N+..)=0.00070
441.8 3	6[c] 3	1248.85	5/2$^-$	807.38	5/2$^-$	(M1)		0.0805	α(K)= 0.0670; α(L)=0.01039; α(M)=0.00235; α(N+..)=0.00070
475.6 3	14 4	475.65	7/2$^-$	0.0	9/2$^+$	[E1][e]		0.00793	α(K)=0.00666; α(L)=0.00099; α(M)=0.00022
487.1 3	10 5	1440.54	5/2$^+$,7/2$^+$	953.43	7/2$^+$	M1		0.0623	α(K)= 0.0519; α(L)=0.00801; α(M)=0.00181; α(N+..)=0.00054
489.0 3	10 5	1498.14	7/2$^+$	1009.32	(5/2,7/2)$^+$	M1		0.0617	α(K)= 0.0514; α(L)=0.00793; α(M)=0.00179; α(N+..)=0.00054
515.7 3	2.2 7	1469.12	(5/2)$^+$	953.43	7/2$^+$	M1		0.0540	α(K)= 0.0448; α(L)=0.00689
522.1 3	3.1 10	1248.85	5/2$^-$	726.28	3/2$^-$	M1		0.0523	α(K)= 0.0434; α(L)=0.00667
524.4 3	2.6 9	1330.70	5/2$^-$,7/2$^-$	807.38	5/2$^-$	[M1]		0.0517	α(K)= 0.0429; α(L)=0.00660
533.3 3	0.8 4	1009.32	(5/2,7/2)$^+$	475.65	7/2$^-$	[E1]		0.00622	α(K)=0.00520; α(L)=0.00077
544.8 3	3.9 13	1498.14	7/2$^+$	953.43	7/2$^+$	[M1]		0.0468	α(K)= 0.0389; α(L)=0.00597
557.8 3	29 6	1365.59	3/2$^+$	807.38	5/2$^-$	E1		0.00566	α(K)=0.00473; α(L)=0.00070
570.1 3	6.2 16	1377.72	3/2$^+$,5/2$^+$	807.38	5/2$^-$	[E1]		0.00540	α(K)=0.00452; α(L)=0.00066
587.4 3	9.3 23	1248.85	5/2$^-$	661.75	7/2$^-$	E2		0.01440	α(K)=0.01122; α(L)=0.00239
628.8 4	1.8 6	1188.34	3/2$^-$	560.46	5/2$^-$	[M1]		0.0324	α(K)= 0.0269; α(L)=0.00411
632.7 4	2.2 7	1440.54	5/2$^+$,7/2$^+$	807.38	5/2$^-$	[E1]		0.00435	α(K)=0.00364; α(L)=0.00053
639.0 4	87 17	1365.59	3/2$^+$	726.28	3/2$^-$	E1		0.00426	α(K)=0.00357; α(L)=0.00052
643.9 4	7.7 19	1009.32	(5/2,7/2)$^+$	365.56	5/2$^-$	[E1]		0.00420	α(K)=0.00352; α(L)=0.00051
651.2 4	14 4	1377.72	3/2$^+$,5/2$^+$	726.28	3/2$^-$	E1		0.00410	α(K)=0.00344; α(L)=0.00050

γ(^{181}W) (continued)

$E_γ$[†]	$I_γ$[‡#f]	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult.[@]	δ[&]	α[g]	Comments
659.2 4	3.1 10	1188.34	3/2⁻	529.43	3/2⁻	[M1]		0.0287	α(K)=0.02384; α(L)=0.00364
661.8 4	40 8	661.75	7/2⁻	0.0	9/2⁺	E1		0.00397	α(K)=0.00333; α(L)=0.00048
668.2 4	4.2 14	1330.70	5/2⁻,7/2⁻	661.75	7/2⁻	[M1]		0.0277	α(K)=0.02303; α(L)=0.00351
[x]691.8 4	1.6 5								
693.9 4	3.3 11	1355.3	5/2⁻,7/2⁻	661.75	7/2⁻	M1+E2	≈1.5	0.01455 15	α(K)=0.01185 12; α(L)=0.00203
696.9 4	0.8 4	1422.8	5/2⁻,7/2⁻	726.28	3/2⁻				
699.9 4	1.8 6	1188.34	3/2⁻	488.43	5/2⁻	[M1]		0.02462	α(K)=0.02047; α(L)=0.00312
[x]719.9 4	1.8 6								
730.1 4	1.0 4	1188.34	3/2⁻	457.86	1/2⁻	[M1]		0.02211	α(K)=0.01839; α(L)=0.00280
738.0 4	4.0 13	1188.34	3/2⁻	450.13	3/2⁻	M1		0.02152	α(K)=0.01789; α(L)=0.00272
769.7 4	2.1 7	1330.70	5/2⁻,7/2⁻	560.46	5/2⁻	M1		0.01934	α(K)=0.01609; α(L)=0.00245
773.4 4	1.0 4	1248.85	5/2⁻	475.65	7/2⁻	[M1]		0.01911	α(K)=0.01590; α(L)=0.00242
[x]789.4 4	1.0 4								
[x]791.6 4	1.6 5					M1		0.01802	α(K)=0.01499; α(L)=0.00228
803.6 4	20 10	1188.34	3/2⁻	385.20	1/2⁻	M1+E2	≈1	0.01224 13	α(K)=0.01009 10; α(L)=0.00162
805.2 4	42 21	1365.59	3/2⁺	560.46	5/2⁻	E1		0.00269	α(K)=0.00226; α(L)=0.00032
817.5 4	1.8 6	1377.72	3/2⁺,5/2⁺	560.46	5/2⁻	[E1]		0.00262	α(K)=0.00220; α(L)=0.00032
822.7 4	2.2 7	1188.34	3/2⁻	365.56	5/2⁻	M1		0.01636	α(K)=0.01361; α(L)=0.00206
[x]826.7 4	2.3 8								
835.7 4	6.2 15	1365.59	3/2⁺	529.43	3/2⁻	[E1]		0.00251	α(K)=0.00211; α(L)=0.00030
840.4 4	3.8 13	953.43	7/2⁺	113.39	11/2⁺	E2		0.00649	α(K)=0.00525; α(L)=0.00094
848.5 4	1.8 6	1377.72	3/2⁺,5/2⁺	529.43	3/2⁻	[E1]		0.00244	α(K)=0.00205; α(L)=0.00029
854.4 4	2.5 8	1330.70	5/2⁻,7/2⁻	475.65	7/2⁻	M1		0.01487	α(K)=0.01238; α(L)=0.00188
862.7 4	2.4 8	1271.97	5/2⁺	409.21	7/2⁻	[E1]		0.00236	α(K)=0.00198; α(L)=0.00028
877.2 4	6 3	1365.59	3/2⁺	488.43	5/2⁻	[E1]		0.00229	α(K)=0.00192; α(L)=0.00027
879.8 4	7.0 17	993.4	(9/2)⁺	113.39	11/2⁺	M1		0.01382	α(K)=0.01151; α(L)=0.00174
883.2 4	3.5 12	1248.85	5/2⁻	365.56	5/2⁻	M1		0.01369	α(K)=0.01140; α(L)=0.00172
889.5 4	1.6 3	1377.72	3/2⁺,5/2⁺	488.43	5/2⁻	[E1]		0.00223	α(K)=0.00187; α(L)=0.00027
[x]891.7 4	1.4 5								
907.4 4	14 4	1365.59	3/2⁺	457.86	1/2⁻	E1		0.00215	α(K)=0.00180; α(L)=0.00026
946.9 4	3.0 10	1422.8	5/2⁻,7/2⁻	475.65	7/2⁻				
953.6 4	48 12	953.43	7/2⁺	0.0	9/2⁺	M1		0.01131	α(K)=0.00942; α(L)=0.00142
965.1 4	2.8 9	1440.54	5/2⁺,7/2⁺	475.65	7/2⁻	[E1]		0.00191	α(K)=0.00161; α(L)=0.00023
973.2 4	1.8 6	1086.79	(7/2)⁺	113.39	11/2⁺	[E2]		0.00480	α(K)=0.00392; α(L)=0.00067
980.7 4	2.5 8	1365.59	3/2⁺	385.20	1/2⁻	[E1]		0.00186	α(K)=0.00156; α(L)=0.00022
989.4 4	12 3	1355.3	5/2⁻,7/2⁻	365.56	5/2⁻	M1		0.01032	α(K)=0.00859; α(L)=0.00129
993.7 4	1.1[b] 6	993.4	(9/2)⁺	0.0	9/2⁺	(M1)		0.01021	α(K)=0.00850; α(L)=0.00128
993.7 4	2.9[b] 14	1469.12	(5/2)⁺	475.65	7/2⁻	[E1]		0.00181	α(K)=0.00153; α(L)=0.00022
1000.2 5	45 9	1365.59	3/2⁺	365.56	5/2⁻	E1		0.00179	α(K)=0.00151; α(L)=0.00021
1009.4 5	33 8	1009.32	(5/2,7/2)⁺	0.0	9/2⁺	[E2]		0.00446	α(K)=0.00365; α(L)=0.00061
1018.6 5	1.8 6	1469.12	(5/2)⁺	450.13	3/2⁻	[E1]		0.00173	α(K)=0.00146; α(L)=0.00021
1057.1 5	4.0 13	1422.8	5/2⁻,7/2⁻	365.56	5/2⁻				
[x]1068.3 5	2.1 7								

$^{181}_{74}W_{107}$-6

γ(^{181}W) (continued)

E_γ[†]	I_γ[‡#f]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[g]	Comments
1075.6 *5*	14 *4*	1440.54	5/2$^+$,7/2$^+$	365.56	5/2$^-$	E1	0.00157	α(K)=0.00132; α(L)=0.00019
1086.6 *5*	7.6 *19*	1086.79	(7/2)$^+$	0.0	9/2$^+$	E2	0.00385	α(K)=0.00316; α(L)=0.00052
1103.5 *5*	9.3 *23*	1469.12	(5/2)$^+$	365.56	5/2$^-$	E1	0.00150	α(K)=0.00126; α(L)=0.00018
[x]1127.3 *5*	1.6 *5*							
1132.3 *5*	3.0 *10*	1498.14	7/2$^+$	365.56	5/2$^-$	[E1]	0.00143	α(K)=0.00121; α(L)=0.00017
[x]1172.3 *5*	2.6 *9*							
[x]1200.8 *5*	2.7 *9*							
1272.5 *5*	1.5 *5*	1271.97	5/2$^+$	0.0	9/2$^+$	[E2]	0.00283	α(K)=0.00234; α(L)=0.00037
1384.2 *5*	3.1 *10*	1498.14	7/2$^+$	113.39	11/2$^+$	E2	0.00241	α(K)=0.00200; α(L)=0.00031
1440.7 *5*	26 *5*	1440.54	5/2$^+$,7/2$^+$	0.0	9/2$^+$	E2	0.00224	α(K)=0.00186; α(L)=0.00029
1469.2 *5*	11 *3*	1469.12	(5/2)$^+$	0.0	9/2$^+$	E2	0.00216	α(K)=0.00179; α(L)=0.00028
1498.2 *5*	1.1 *4*	1498.14	7/2$^+$	0.0	9/2$^+$	[M1]	0.00372	α(K)=0.00311; α(L)=0.00046
1538.0 *5*	2.6 *9*	1538.0	(7/2$^+$)	0.0	9/2$^+$	(M1)		

[†] From 1971Da02. Energy errors reported to range from ±0.2 keV below 200 keV to ±0.5 keV at 1500 keV. Errors apportioned by the authors.

[‡] Intensities for transitions below 200 keV are from 1960Ha18, and for transitions above 200 keV from 1971Da02, except where noted.

[#] Intensity uncertainty assigned by evaluator according to 1971Da02, which stated relative uncertainties range from 0.5% for the strongest transitions to 50% for the weakest.

[@] From subshell ratios of 1960Ha18 and Ice/Iγ ratios normalizing the data of Ice data of 1960Ha18 to the Iγ data of 1971Da02 assuming the 365.5-keV γ is M2.

[&] Weighted average from 1971Da02 Ice data (assuming 30% uncertainty) and 1960Ha18 Ice data (assuming 25% uncertainty), except where noted. See footnote on the multipolarities.

[a] Transition not observed by 1960Ha18.

[b] Intensity divided by evaluator assuming pure multipolarity.

[c] Intensity divided by 1971Da02.

[d] Intensity of the 72- and 73-keV γ′s was divided by evaluator in order to balance intensity out of the 458-keV level.

[e] Conversion electron data (1971Da02) are consistent with a large M2 admixture but $T_{1/2}$ of the level must then be >20 ns. Evaluator has assumed an unrecognized impurity and a probable E1 assignment. M1 and E2 are ruled out by the data.

[f] For absolute intensity per 100 decays, multiply by 0.074 *6*.

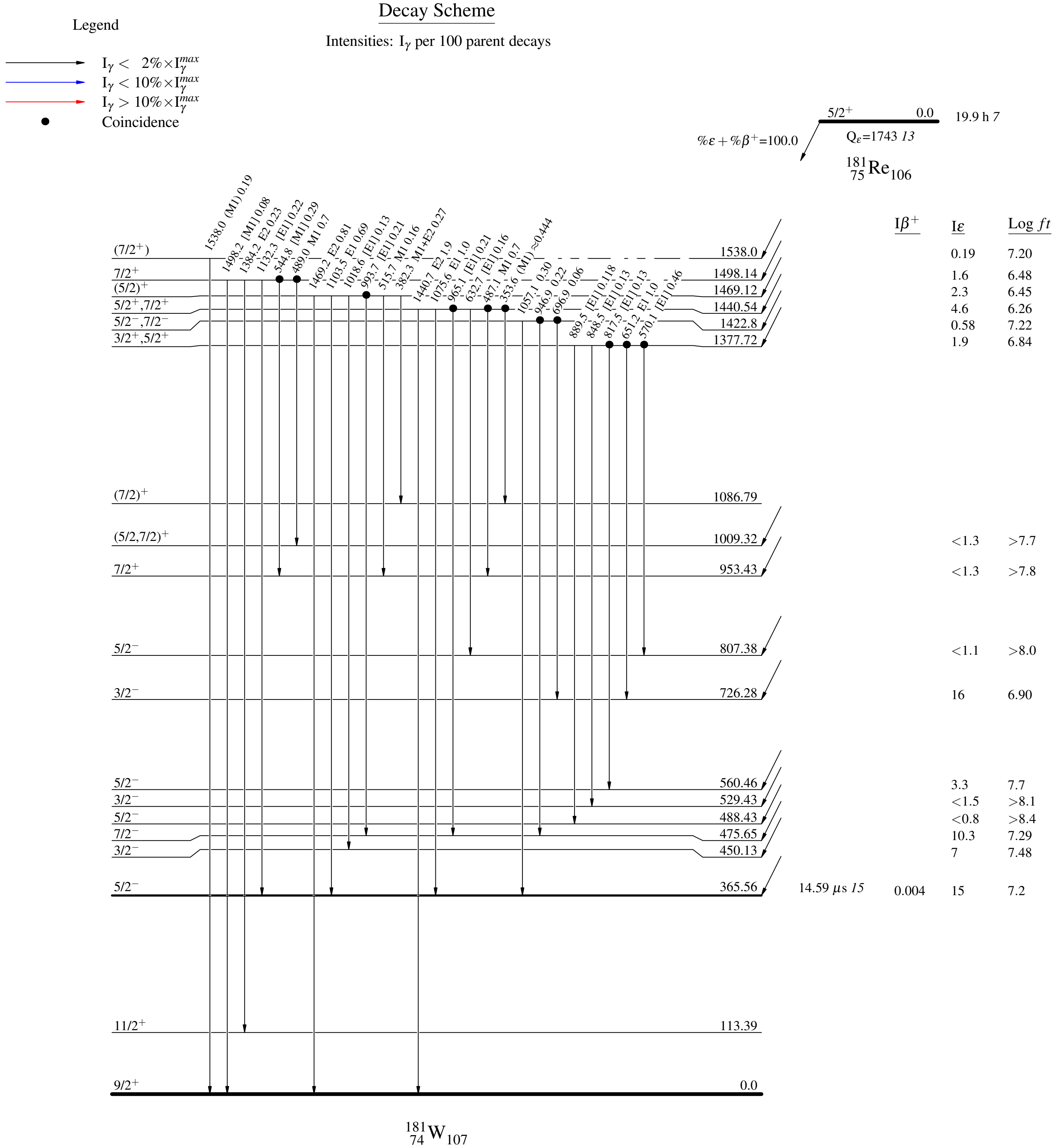
[g] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[x] γ ray not placed in level scheme.

^{181}Re ε decay (19.9 h) 1971Da02,1960Ha18

Decay Scheme

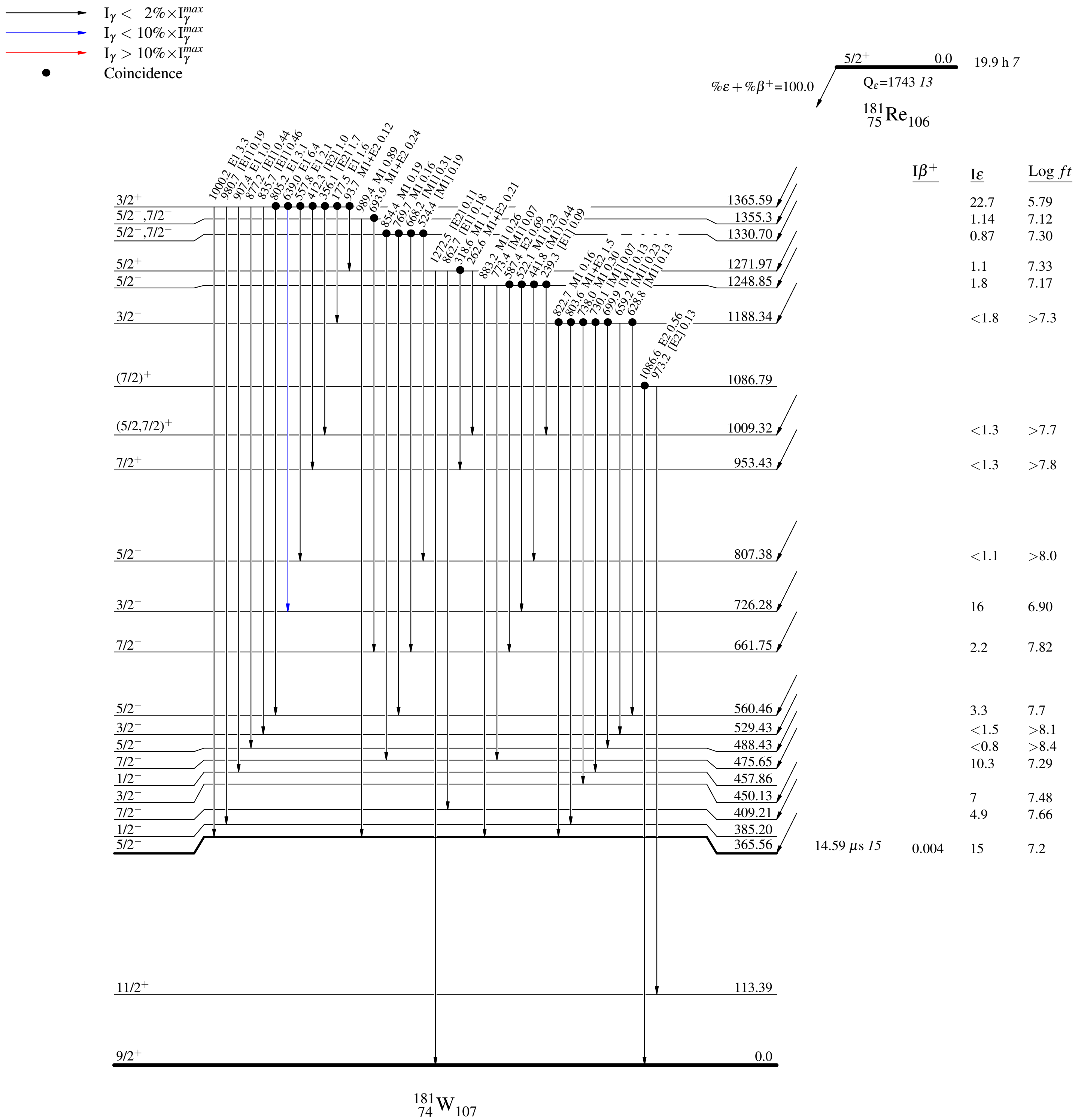
Intensities: I_γ per 100 parent decays



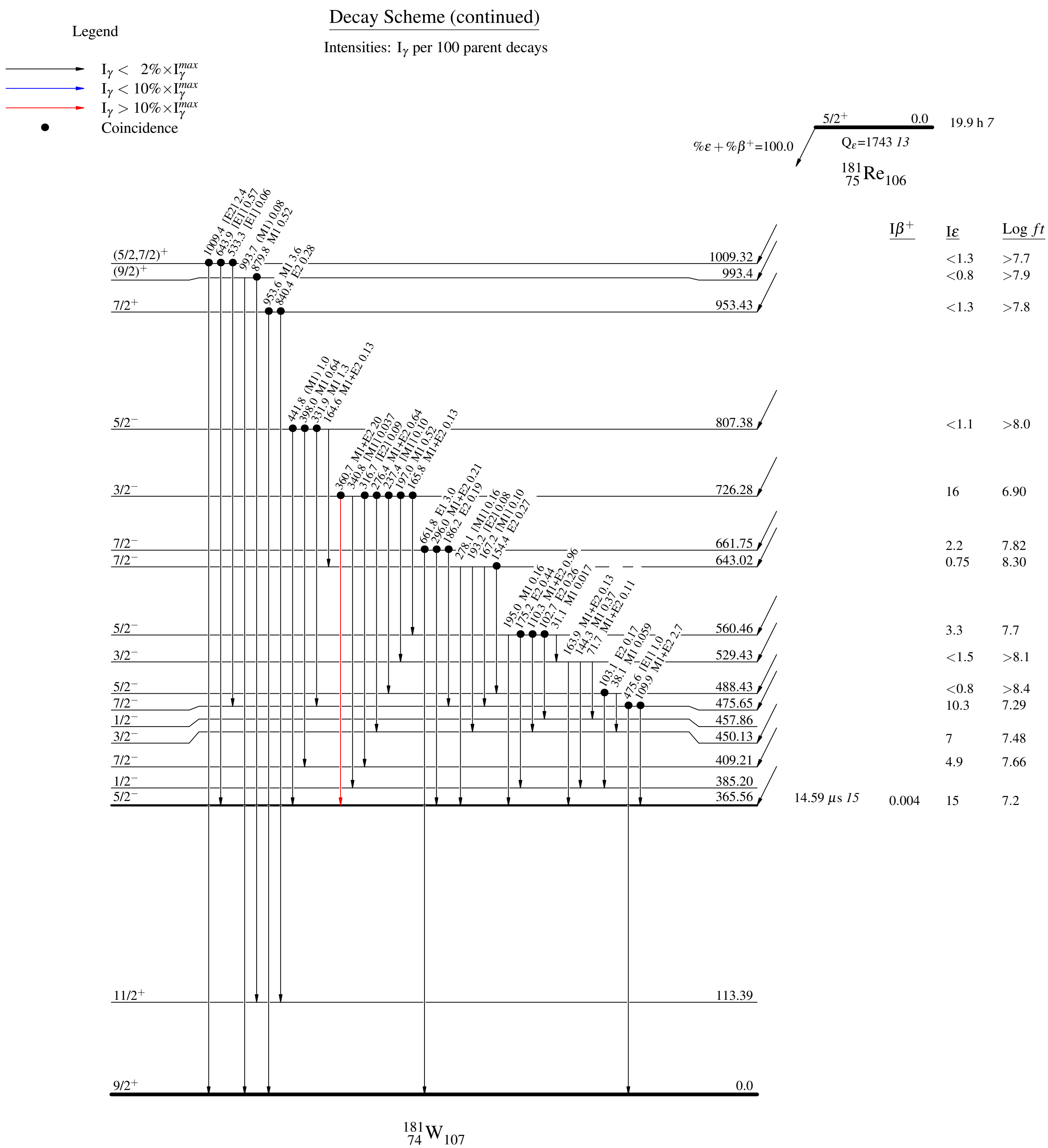
^{181}Re ε decay (19.9 h) 1971Da02,1960Ha18

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays



^{181}Re ε decay (19.9 h) 1971Da02,1960Ha18



^{181}Re ε decay (19.9 h) 1971Da02,1960Ha18

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays