^{184}Re ε decay (169 d) 1974Mc08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111,275 (2010)	1-Oct-2009

Parent: ^{184}Re: E=188.0463 *17*; J$^{\pi}$=8$^{(+)}$; $T_{1/2}$=169 d *8*; Q(ε)=1481 *4*; %ε+%β^+ decay=25.5 *8*

^{184}Re-%ε+%β^+ decay: Decay scheme normalized assuming Ti(^{105,} ^{184}Re(^{188,} ^{184}ReI to 1284 level In ^{184}W)=100.

Others: 1960Bo07, 1962Bl12, 1963Bi04, 1963Dz05, 1963Jo03, 1964Ha06, 1966Ag03, 1966Dz04, 1968Ag01, 1969Gl04, 1969Zu01, 1970Ag06, 1970BlZT, 1970Do08, 1970Ku05, 1971Ta19, 1973Ag03, 1973Ag07, 1973Ca08, 1973Hu06, 1973Kr01, 1974SvZY, 1975Bu01, 1976Kl06, 1977Ga21, 1982Al05, 1987Bu26, 1988BuZD.

The decay scheme is that proposed by 1974Mc08 based on energy sums and $\gamma\gamma$-coincidence data.

For tests for violation of time-reversal invariance, see 1977Mu06. a time-reversal-violating asymmetry=(−0.00075 *59*) was obtained from 922γ-253γ(θ) measured In polarized Ni foils At T=20 mK.

For (ce)(γ) see 1963Dz05, 1966Dz04.

For $\gamma\gamma$, see 1973Ag03, 1974Mc08.

^{184}W Levels

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0	0$^+$		
111.2174 *4*	2$^+$		
364.063 *8*	4$^+$		
748.315 *12*	6$^+$		
903.292 *9*	2$^+$		
1005.980 *11*	3$^+$		
1130.039 *10*	(2)$^-$		
1133.848 *11*	4$^+$		
1221.303 *9*	3$^-$		
1284.992 *9*	5$^-$	8.33 μs *18*	$T_{1/2}$: from (216γ)-(200<E(γ)<1000)(t) (1969Gl04, 1970Gl02).
1446.261 *13*	6$^-$		
1501.540 *13*	7$^-$	2.35 ns *10*	$T_{1/2}$: from (K x ray)-(216γ)(t) (1969Gl04).

† From least-squares fit to Eγ.
‡ Spin and parity values are from Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	Iε[†]	Log *ft*	I($\varepsilon+\beta^+$)[†]	Comments
(168 *4*)	1501.540	25.0 *16*	7.14 *5*	25.0 *16*	εK=0.651 *8*; εL=0.260 *6*; εM+=0.0896 *21*

† Absolute intensity per 100 decays.

$\gamma(^{184}$W)

Iγ normalization: decay scheme normalized assuming Ti($^{105,\ 184}$Re($^{188,\ 184}$ReI to 1284 level In ^{184}W)=100.
ce data have been reported by 1970Ag06, 1973Ag03, 1973Ag07, 1973Ca08, 1974Mc08, 1974SvZY, and 1987Bu26. Others: 1964Ha06, 1966Dz04. Extensive internal conversion coefficient data have been deduced by 1973Ag07, 1974Mc08, and 1974SvZY based on their relative I(ce) and I(γ) and normalized so that α(K)(903γ)=0.00452 (E2 theory) or α(K)(252)=0.0898 (E2 theory).

E_γ‡	I_γ#b	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ	α†	Comments
55.2790 *8*	5.9 *6*	1501.540	7⁻	1446.261	6⁻	M1+E2	0.051 *17*	4.68 *12*	α(L)=3.62 *9*; α(M)=0.827 *22*; α(N+..)=0.234 *6* α(N)=0.199 *5*; α(O)=0.0323 *8*; α(P)=0.00223 *4* E_γ: from ce data (1988BuZD). other: 55.278 *5* (1974Mc08). Mult.,δ: from L1/L2=9.1 *8* (1973Ag07). Other: L1/L2=8.3 *22*, L1/L3=10 *3* implying δ=0.173 *+14−15* (1973Ca08).
63.6890 *14*	0.95 *15*	1284.992	5⁻	1221.303	3⁻	E2		25.7	α(L)=19.5 *3*; α(M)=4.92 *7*; α(N+..)=1.314 *19* α(N)=1.157 *17*; α(O)=0.1570 *22*; α(P)=0.000210 *3* E_γ: from ce data (1988BuZD). other: 63.715 *15* (1974Mc08). Mult.: from L2/L3=1.0 *1*, L1/L3<0.03, L1/L2<0.03 (1973Ag07).
87.452 *10*	0.61 *3*	1221.303	3⁻	1133.848	4⁺	E1		0.529	α(K)=0.429 *6*; α(L)=0.0774 *11*; α(M)=0.01768 *25*; α(N+..)=0.00482 *7* α(N)=0.00417 *6*; α(O)=0.000624 *9*; α(P)=3.01×10^{-5} *5* Mult.: from α(K)exp<0.64 (1973Ag07).
91.270 *10*	0.65 *3*	1221.303	3⁻	1130.039	(2)⁻	M1+E2	0.62 *4*	6.03	α(K)=3.98 *12*; α(L)=1.57 *8*; α(M)=0.381 *19*; α(N+..)=0.104 *5* α(N)=0.090 *5*; α(O)=0.0132 *6*; α(P)=0.000400 *13* Mult.: α(K)exp=4.2 *17*, L1/L2=1.4 *4* (1973Ag07). L1/L2=1.03 *11*, L2/L3=1.26 *15* (1973Ca08). δ: from α(K)exp and L-subshell ratios. Others: 0.63 *3* (1973Ca08), 1973Ag07.
111.2174 *4*	14.8 *8*	111.2174	2⁺	0.0	0⁺	E2		2.57	α(K)=0.720 *10*; α(L)=1.402 *20*; α(M)=0.354 *5*; α(N+..)=0.0949 *14* α(N)=0.0834 *12*; α(O)=0.01145 *16*; α(P)=5.54×10^{-5} *8* E_γ: from E(ce(K)) (1988BuZD). others: 111.2172 *11* (1988BuZD, from E(ce(L))); 111.207 *7* (1974Mc08). Mult.: from L1/L2= 0.124 *14*, L1/L3=0.132 *12*, L2/L3=1.07 *8*, M1/M2=0.110 *15*, M1/M3=0.12 *2*, M2/M3=1.1 *1* (1970Ag06) and α(K)exp=0.71 *3* (1973Ag07).
124.060 *20*	0.37 *2*	1130.039	(2)⁻	1005.980	3⁺	(E1)		0.215	α(K)=0.1762 *25*; α(L)=0.0297 *5*; α(M)=0.00677 *10*; α(N+..)=0.00186 *3* α(N)=0.001603 *23*; α(O)=0.000245 *4*; α(P)=1.294×10^{-5} *19* Mult.: from α(K)exp<1.1 (1973Ag07).
127.67 *10*	0.0015 *6*	1133.848	4⁺	1005.980	3⁺	E2(+M1)	>2.8	1.57 *6*	α(K)=0.61 *9*; α(L)=0.72 *3*; α(M)=0.182 *8*; α(N+..)=0.0488 *19* α(N)=0.0429 *17*; α(O)=0.00593 *21*; α(P)=4.9×10^{-5} *9* E_γ: from 1976Kl06. I_γ: from I(ce(L2)) of 1976Kl06 if mult=E2. Mult.,δ: from L1/L2<0.3, L1/L3<0.3, L2/L3=1.2 *6* (1976Kl06).

From ENSDF

γ(^{184}W) (continued)

E_γ [‡]	I_γ [#b]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ	α [†]	Comments
151.134 *20*	0.124 *12*	1284.992	5⁻	1133.848	4⁺	[E1]		0.1286	α(K)=0.1061 *15*; α(L)=0.01742 *25*; α(M)=0.00396 *6*; α(N+..)=0.001094 *16* α(N)=0.000941 *14*; α(O)=0.0001453 *21*; α(P)=8.02×10^{-6} *12*
161.269 *15*	16.6 *3*	1446.261	6⁻	1284.992	5⁻	M1+E2	0.53 *7*	1.09 *3*	α(K)=0.85 *4*; α(L)=0.183 *6*; α(M)=0.0430 *15*; α(N+..)=0.0120 *4* α(N)=0.0103 *4*; α(O)=0.00160 *4*; α(P)=8.5×10^{-5} *4* %Iγ=6.56 *22* assuming recommended normalization. Mult.: α(K)exp=0.85 *15*, L1/L2=3.1 *+9−7*, L1/L3=5.4 *+19−12*, L2/L3=1.7 *+8−5* (1973Ag07). δ: from L-subshell ratios of 1973Ag07. Others: L1/L2=1.5 *3*, L1/L3=3.4 *8* (1973Ca08), implying δ=0.89 *+6−7* and 0.70 *+7−8*, respectively, in disagreement with δ=0.53 *7* from 1973Ag07. α(K)exp data of 1973Ag07 and 1974Mc08 are consistent with δ from 1973Ag07, but not 1973Ca08.
215.326 *12*	7.1 *2*	1221.303	3⁻	1005.980	3⁺	E1		0.0519	α(K)=0.0431 *6*; α(L)=0.00682 *10*; α(M)=0.001549 *22*; α(N+..)=0.000430 *6* α(N)=0.000369 *6*; α(O)=5.78×10^{-5} *8*; α(P)=3.42×10^{-6} *5* Mult.: from α(K)exp=0.0441 *7* (1974Mc08).
216.547 *12*	24.1 *5*	1501.540	7⁻	1284.992	5⁻	E2		0.237	α(K)=0.1362 *19*; α(L)=0.0764 *11*; α(M)=0.0189 *3*; α(N+..)=0.00513 *8* α(N)=0.00448 *7*; α(O)=0.000635 *9*; α(P)=1.096×10^{-5} *16* Mult.: from L2:L3:M=220 *22*:150 *15*:200 *20* (1968Ag01) and α(K)exp=0.117 *8* (1974Mc08).
226.748 *10*	3.77 *10*	1130.039	(2)⁻	903.292	2⁺	E1+M2+E3		0.059 *5*	α(K)=0.059; α(L)=0.042; α(M)=0.0132; α(N+..)=0.00088 Mult.,δ: α(K)exp=0.0421 *12* (1974Mc08), 0.0032 *10* (1973Ag07). From $\gamma(\theta$,H,T) (1973Kr01) and α(K)exp, δ(M2,E1)=−0.02 *3*, δ(E3,E1)=0.10 *3*.
230.45 *6*	0.013 *2*	1133.848	4⁺	903.292	2⁺	E2		0.193	α(K)=0.1152 *17*; α(L)=0.0593 *9*; α(M)=0.01467 *21*; α(N+..)=0.00398 *6* α(N)=0.00347 *5*; α(O)=0.000495 *7*; α(P)=9.38×10^{-6} *14* Mult.: from L1/L2=0.43 *20*, L2/L3=1.8 *7* (1976Kl06).
252.845 *10*	27.3 *7*	364.063	4⁺	111.2174	2⁺	E2		0.1437	α(K)=0.0898 *13*; α(L)=0.0411 *6*; α(M)=0.01011 *15*; α(N+..)=0.00275 *4* α(N)=0.00240 *4*; α(O)=0.000344 *5*; α(P)=7.45×10^{-6} *11* Mult.: from L2:L3:M:N=280 *28*:120 *12*:≈70:≈14 (1968Ag01), α(K)exp=0.086 *10* (1973Ag07), α(K)exp=0.085 *8* (1974Mc08).
(279.0)	<0.0021 [@]	1284.992	5⁻	1005.980	3⁺	[M2]		1.111	α(K)=0.867 *13*; α(L)=0.187 *3*; α(M)=0.0444 *7*; α(N+..)=0.01259 *18* α(N)=0.01074 *15*; α(O)=0.001729 *25*; α(P)=0.0001136 *16*
318.008 *10*	14.7 *2*	1221.303	3⁻	903.292	2⁺	E1+M2	−0.020 *10*	0.0202 *5*	α(K)=0.0168 *4*; α(L)=0.00259 *7*; α(M)=0.000587 *16*; α(N+..)=0.000164 *5*

γ(^{184}W) (continued)

E$_\gamma$[‡]	I$_\gamma$[#b]	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.	δ	α[†]	Comments
									α(N)=0.000140 *4*; α(O)=2.23×10^{-5} *7*; α(P)=1.40×10^{-6} *4* Mult.: from α(K)exp=0.0183 *21* (1974Mc08), 0.022 *5* (1973Ag07). δ: unweighted average of −0.01 *3* (1973Hu06) and −0.029 *8* (1973Kr01) from γ(θ,H,T); however, the latter δ implies B(M2)(W.u.)=2.7 *16* which violates RUL (δ<0.017 needed for B(M2)(W.u.)<1).
381.82 *14*	0.16 *2*	1284.992	5$^-$	903.292	2$^+$	[E3]		0.1579	α(K)=0.0827 *12*; α(L)=0.0570 *8*; α(M)=0.01438 *21*; α(N+..)=0.00392 *6* α(N)=0.00342 *5*; α(O)=0.000490 *7*; α(P)=9.34×10^{-6} *14*
384.250 *12*	8.01 *12*	748.315	6$^+$	364.063	4$^+$	E2		0.0418	α(K)=0.0302 *5*; α(L)=0.00885 *13*; α(M)=0.00213 *3*; α(N+..)=0.000585 *9* α(N)=0.000507 *8*; α(O)=7.54×10^{-5} *11*; α(P)=2.69×10^{-6} *4* Mult.: from K/L (1974SvZY), α(K)exp=0.028 *3* (1974Mc08), α(K)exp=0.028 *5* (1973Ag07).
(385.53)	<0.005[@]	1133.848	4$^+$	748.315	6$^+$	[E2]		0.0414	α(K)=0.0300 *5*; α(L)=0.00876 *13*; α(M)=0.00211 *3*; α(N+..)=0.000579 *9* α(N)=0.000502 *7*; α(O)=7.46×10^{-5} *11*; α(P)=2.67×10^{-6} *4* E$_\gamma$: from level energy difference.
536.674 *15*	8.44 *13*	1284.992	5$^-$	748.315	6$^+$	E1+M2+E3		0.0068 *1*	α(K)=0.0057; α(L)=0.00086; α(M)=0.000195; α(N+..)=0.000025 Mult.,δ: from γ(θ,H,T) (1982Al05), α(K)exp=0.00634 *11* (1987Bu26), and L1/L2=8.0 *16* (1987Bu26, reanalysis of data from 1977Ga21), 1987Bu26 obtain δ(M2,E1)=+0.070 *6*, δ(E3,E1)=−0.025 *4*, and λ=−2.1 *2*. other α(K)exp: 0.0064 *14* (1974Mc08), 0.10 *7* (1976Kl06), 0.0059 *4* (1977Ga21).
539.220 *25*	0.081 *4*	903.292	2$^+$	364.063	4$^+$	E2		0.01744	α(K)=0.01349 *19*; α(L)=0.00303 *5*; α(M)=0.000716 *10*; α(N+..)=0.000198 *3* α(N)=0.0001710 *24*; α(O)=2.62×10^{-5} *4*; α(P)=1.238×10^{-6} *18* Mult.: from α(K)exp=0.0129 *16* (1974Mc08).
641.915 *20*	0.87 *3*	1005.980	3$^+$	364.063	4$^+$	M1+E2	−8.5 *8*	0.01183 *18*	α(K)=0.00938 *14*; α(L)=0.00188 *3*; α(M)=0.000440 *7*; α(N+..)=0.0001225 *18* α(N)=0.0001052 *15*; α(O)=1.636×10^{-5} *24*; α(P)=8.70×10^{-7} *13* Mult.: from L1/L2=3.0 *5*, L1/L3=8.8 *18*, L2/L3=2.9 *8* (1976Kl06), α(K)exp=0.0087 *13* (1973Ag07), α(K)exp=0.0089 *6* (1974Mc04). δ: from γ(θ,H,T) (1973Kr01). Others: −6.7 *+15−26* (1973Hu06), −8.3 *+16−28* (1973Ca08; $\gamma\gamma$(θ)).
769.778 *17*	0.60 *3*	1133.848	4$^+$	364.063	4$^+$	M1+E2	−6.3 *+20−32*	0.0080 *4*	α=0.0080 *4*; α(K)=0.0065 *3*; α(L)=0.00119 *4*; α(M)=0.000275 *9*; α(N+..)=7.68×10^{-5} *24* α(N)=6.59×10^{-5} *20*; α(O)=1.04×10^{-5} *4*; α(P)=6.0×10^{-7} *3* Mult.: α(K)exp=0.0065 *6* (1974Mc08), α(K)exp=0.0053 *13* (1973Ag07). δ: from γ(θ,H,T) (1973Kr01).

$^{184}_{74}$W$_{110}$-4

γ(^{184}W) (continued)

E_γ[‡]	I_γ[#b]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ	α[†]	Comments
792.067 *22*	9.34 *21*	903.292	2$^+$	111.2174	2$^+$	M1+E2	−16.8[&] *5*	0.00733 *11*	α=0.00733 *11*; α(K)=0.00593 *9*; α(L)=0.001082 *16*; α(M)=0.000251 *4*; α(N+..)=7.00×10^{-5} *10* α(N)=6.00×10^{-5} *9*; α(O)=9.45×10^{-6} *14*; α(P)=5.50×10^{-7} *8* Mult.: α(K)exp=0.0063 *6*, L1/L2=3.6 *3*, L1/L3=10.2 *10*, L2/L3=2.8 *3* (1970Ag06); α(K)exp=0.0058 *3* (1974Mc08); K:L:M:N=132:24:6.2:≈1.4 (1966Ag03).
857.25 *3*	0.415 *12*	1221.303	3$^-$	364.063	4$^+$	E1		0.00238 *4*	α(K)=0.00201 *3*; α(L)=0.000288 *4*; α(M)=6.46×10^{-5} *9*; α(N+..)=1.82×10^{-5} *3* α(N)=1.550×10^{-5} *22*; α(O)=2.52×10^{-6} *4*; α(P)=1.758×10^{-7} *25* Mult.: from α(K)exp≈0.003 (1973Ag07). Note that the value given in 1973Ag07 is misprinted as≈0.0003.
894.760 *19*	6.99 *25*	1005.980	3$^+$	111.2174	2$^+$	M1+E2	−13.2 *9*	0.00569 *8*	α=0.00569 *8*; α(K)=0.00464 *7*; α(L)=0.000808 *12*; α(M)=0.000186 *3*; α(N+..)=5.21×10^{-5} *8* α(N)=4.46×10^{-5} *7*; α(O)=7.08×10^{-6} *10*; α(P)=4.32×10^{-7} *6* Mult.: L1/L2=4.5 *4*, L1/L3=11.6 *15*, L2/L3=2.6 *4* (1970Ag06), α(K)exp=0.0050 *7* (1973Ag07), α(K)exp=0.0046 *2* (1974Mc08), K:L=47:7.0 (1966Ag03). δ: from $\gamma(\theta$,H,T) (1973Kr01). Others: −17.5 *+8−10* (1973Hu06), −13 *+4−12* (1973Ca08; $\gamma\gamma(\theta)$).
903.282 *19*	9.46 *21*	903.292	2$^+$	0.0	0$^+$	E2		0.00554 *8*	α=0.00554 *8*; α(K)=0.00452 *7*; α(L)=0.000786 *11*; α(M)=0.000181 *3*; α(N+..)=5.07×10^{-5} *7* α(N)=4.34×10^{-5} *6*; α(O)=6.89×10^{-6} *10*; α(P)=4.20×10^{-7} *6* Mult.: from L1/L3=12.6 *18* (1970Ag06), L1/L2=1.3 *+9−5* (1973Ag03), K:L:M:N=100:18:4.2:≈0.8 (1966Ag03).
920.933 *21*	20.8 *3*	1284.992	5$^-$	364.063	4$^+$	E1+M2+E3	[a]	0.0030 *2*	α(K)=0.0024; α(L)=0.00039; α(M)=0.000088; α(N+..)=0.000030 Mult.: from α(K)exp=0.00283 *18* (1977Ga21),0.0028 *3* (1974Mc08), 0.0021 *4* (1973Ag07); L1/L2=6.6 *11* (1977Ga21); K:L:M=9.2:1.1:0.39 (1966Ag03).
1018.93 *5*	0.240 *25*	1130.039	(2)$^-$	111.2174	2$^+$	(E1)		0.001726 *25*	α=0.001726 *25*; α(K)=0.001459 *21*; α(L)=0.000207 *3*; α(M)=4.64×10^{-5} *7*; α(N+..)=1.308×10^{-5} *1* α(N)=1.114×10^{-5} *16*; α(O)=1.81×10^{-6} *3*; α(P)=1.282×10^{-7} *18* Mult.: from α(K)exp=0.0018 *12* (1976Kl06).
1022.63 *3*	0.46 *3*	1133.848	4$^+$	111.2174	2$^+$	E2		0.00431 *6*	α=0.00431 *6*; α(K)=0.00354 *5*; α(L)=0.000591 *9*; α(M)=0.0001356 *19*; α(N+..)=3.80×10^{-5} *6* α(N)=3.25×10^{-5} *5*; α(O)=5.19×10^{-6} *8*; α(P)=3.29×10^{-7} *5* Mult.: from α(K)exp=0.0037 *3* (1974Mc08), 0.0030 *4* (1973Ag07); K:L=1.2:0.22 (1966Ag03).
1110.082 *26*	1.49 *8*	1221.303	3$^-$	111.2174	2$^+$	E1+M2	+0.08 *3*	0.00159 *10*	α(K)=0.00134 *8*; α(L)=0.000191 *13*; α(M)=4.3×10^{-5} *3*; α(N+..)=1.37×10^{-5} *9*

From ENSDF

γ(^{184}W) (continued)

E_γ[‡]	I_γ[#b]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α[†]	Comments
								α(N)=1.03×10^{-5} *8*; α(O)=1.68×10^{-6} *12*; α(P)=1.19×10^{-7} *9*; α(IPF)=1.645×10^{-6} *25* Mult.: α(K)exp<0.0021 (1974Mc08), 0.0009 *4* (1973Ag07). δ: from $\gamma(\theta$,H,T) (1973Kr01).
1173.77 *3*	3.10 *16*	1284.992	5$^-$	111.2174	2$^+$	(E3)	0.00698 *10*	α(K)=0.00556 *8*; α(L)=0.001090 *16*; α(M)=0.000254 *4*; α(N+..)=7.19×10^{-5} *10* α(N)=6.11×10^{-5} *9*; α(O)=9.63×10^{-6} *14*; α(P)=5.59×10^{-7} *8*; α(IPF)=6.64×10^{-7} *10* Mult.: from α(K)exp=0.0048 *9* (1973Ag07), 0.0063 *10* (1974Mc08); also consistent with M1 (which is ruled out by the decay scheme). K:L:M=3.4:0.61:0.13 (1966Ag03).
1221.29 *4*	0.051 *4*	1221.303	3$^-$	0.0	0$^+$	(E3)	0.00639 *9*	α=0.00639 *9*; α(K)=0.00511 *8*; α(L)=0.000982 *14*; α(M)=0.000229 *4*; α(N+..)=6.61×10^{-5} *10* α(N)=5.49×10^{-5} *8*; α(O)=8.68×10^{-6} *13*; α(P)=5.12×10^{-7} *8*; α(IPF)=2.01×10^{-6} *3* %Iγ=0.0203 *18* assuming adopted normalization. Mult.: from α(K)exp=0.0045 *16* (1973Ag03) and 0.0049 *9* (1973Ag07), also consistent with M1 which is ruled out by the decay scheme.

[†] Additional information 1.

[‡] Eγ data are from 1974Mc08, except As noted. Others: 1970Ku05, 1971Ta19, 1973Ag07, 1974Bu01, 1974SvZY, 1988BuZD.

[#] Relative Iγ based on the decay scheme and Iγ from 1974Mc08 measured in a ^{184}Re ground-state plus metastable-state source in secular equilibrium. The mixed decay can be decomposed to obtain separately the ground-state and metastable-state contributions because 169 d ^{184}Re ε decay directly populates just one level and that level is not fed In ^{184}Re(g.s.) ε decay. Other Iγ: 1970Ku05, 1973Ag07, 1973Ca08, 1974SvZY, 1975Bu01.

[@] Photons unobserved. Limit on I(γ) from I(ce(K)) of 1976Kl06 assuming indicated multipolarity.

[&] from $\gamma(\theta$,H,T); weighted average of −16.7 *8* (1972Bu35), −18.2 *12* (1973Hu06), −16.1 *9* (1973Kr01)). Others: 1969Zu01, −19 *+3−5* (1970Do08), −22 *+6−7* (1973Ca08; $\gamma\gamma(\theta)$), −17.6 *+15−18* (1982Al05). Based on γ-$\gamma(\theta)$, ce-$\gamma(\theta)$, 1969Zu01 and 1970Do08 suggest the possibility of E0 admixture and M1 penetration effects. Taking δ(E2,M1)=−18 *2*, and α(K)=0.0061 *6*, 1969Zu01 obtain E0/E2<0.37, −82<λ<+196. Taking δ(E2,M1)=−16.7 *+14−12*, and α(K)=0.0064 *3*, 1970Do08 obtain −0.28<E0/E2<+0.38, −113<λ<+53. Based on L-subshell ratios, 1972KaYB obtain E0/E2<0.54, but do not consider penetration effects. In the above, E0/E2 is the ratio of conversion electron components, and λ is the M1 penetration parameter.

[a] A_2=0.317 *11*, A_4=+0.08 *6* from $\gamma(\theta$,H,T) (1973Kr01) allows two solutions, δ(M2,E1)=+0.09 *2*, δ(E3,E1)=+0.24 *5* or δ(M2,E1)=−0.14 *4*, δ(E3,E1)=−0.19 *3*. Others: 1973Hu06, also 1973Ca08 (δ(M2,E1)=+0.159 *21*, δ(E3,E1)=+0.17 *4*) from $\gamma\gamma(\theta)$ and 1974MuZA from $\gamma\gamma(\theta$,H,t). Based on these data and α(K)exp measurements, 1974MuZA show that the pair of negative solutions is more probable than the positive pair.

[b] For absolute intensity per 100 decays, multiply by 0.395 *12*.

$^{184}_{74}$W$_{110}$-6

^{184}Re ε decay (169 d) 1974Mc08

Decay Scheme

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