^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01

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

Parent: ^{182}Os: E=0.0; $J^\pi=0^+$; $T_{1/2}$=21.84 h *20*; Q(ε)=8.4×10^2 *10*; %ε decay=100.0

^{182}Os-$T_{1/2}$: From ^{182}Os Adopted Levels.

^{182}Os-Q(ε): From 2012Wa38.

^{182}Os-$T_{1/2}$: weighted average of 22.0 h *2* (1976Ka22), 22.10 h *25* (1973Sv01), 22.6 h *24* (1969Hu03), 21.1 h *3* (1960Ne03) and 21.9 h *1* (1958Fo47); reduced χ^2=2. Values of 20.0 h *2* (1963Gr22) and 24 h *1* (1950St89) seem discrepant, thus not included in the averaging procedure. Weighted average of all the measurements is: 21.6 h *3*, but with reduced χ^2=17. Other: 1966Be47.

1973Bu08 (also 1968BuZX): ^{182}Os source from ^{182}W(^{3}He,3n) and ^{185}Re(p,4n) reactions. Measured Eγ, Iγ, ce, γγ, γγ(t).

1973Sv01: ^{182}Os source from (p,xn) reaction on Re. Measured Eγ, Iγ, ce, γγ, isotopic $T_{1/2}$.

1970Ak02: ^{182}Os source from (p,X) on Au and (^{22}Ne,X) on Ho. Measured Eγ, Iγ, ce, subshell ratios, γγ, (x ray)(γ) coin, γγ(t).

1969An13: ^{182}Os source from ^{182}W(α,2n). Measured Eγ, Iγ, γγ, γγ(t).

1969Pl04: ^{182}Os source from (p,spallation) on Pb. Measured Eγ, Iγ, ce, γγ.

1968Ha39: measured ce, subshell ratios, Eγ deduced from ce spectrum.

^{182}Os isotopic identification and half-life measurements: 1976Ka22, 1969Hu03, 1966Be47, 1963Gr22, 1960Su13, 1960Ne03, 1958Fo47, 1950St89.

The level scheme is essentially from 1973Sv01, based on earlier schemes proposed by 1968Ha39, 1968BuZX, 1969An13, 1970Ak02. Several levels proposed by 1968Ha39 have not been confirmed by 1973Sv01.

^{182}Re Levels

The following levels have been rejected either due to revised placements (by 1973Sv01 and 1973Bu08) or non-confirmation of γ ray by 1973Sv01: 346 (1968Ha39,1969An13) decaying by 110.5γ; 486 level (1970Ak02) decaying by 223.0γ and 486γ; 504 level (1969An13) decaying by 241γ; 620 level (1973Sv01) decaying by 110γ and 241γ; 632 level (1968Ha39, 1973Bu08) decaying by 369.2γ and 632.3γ (1968Ha39 also show 286.4γ and 315γ, 1973Bu08 show 122.3γ); 738 level (1968Ha39,1973Bu08) decaying by 359γ, 475γ and 503γ; 797 level (1968Ha39,1973Bu08) decaying by 480γ and 561γ (1968Ha39 also show 450γ and 1973Bu08 show 164γ and 359γ).

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0+x	2^+		Additional information 1. E(level): 2012Au07 give 60 *100* from β decay data, 1984Sl01 estimate it as ≈50 keV based on singlet and triplet coupling of π5/2[402] and ν9/2[624].
55.502+x *10*	$(3)^+$	<0.22[‡] ns	
235.732+x *22*	$(2)^-$	585 ns *30*	$T_{1/2}$: from γγ(t), average of 570 ns *30* (1973Bu08) and 600 ns *30* (1969An13).
263.278+x *24*	1^-	5.1 ns *2*	$T_{1/2}$: From γγ(t) (1969An13).
268.750+x *25*	$(0,1,2)^-$		
379.22+x *3*	$(1,2)^-$	<0.5[‡] ns	
438.28+x *5*	1^-		
510.05+x *3*	1^+	<0.5[‡] ns	
549.67+x *5*	$(1)^-$		
554.57+x *6*	$(2)^+$		
726.97+x *5*	(1^+)		

[†] From Adopted Levels, where all the arguments for J^π assignments are specified.

[‡] From γγ(t) (1970Ak02).

^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

ε radiations

E(decay)	E(level)	Iε[‡]	Log *ft*[†]	Comments
(6×10^{1}[@] *6*)	726.97+x	1.95 *15*	<6.3	
(1.5×10^{2}[@] *15*)	549.67+x	0.65 *11*	7.1 *6*	εK=0.74 *7*; εL=0.19 *5*; εM+=0.064 *20*
(1.6×10^{2}[@] *17*)	510.05+x	62.1 *13*	5.3 *5*	εK=0.76 *5*; εL=0.18 *4*; εM+=0.060 *13*
(2.0×10^{2}[@] *20*)	438.28+x	0.50 *13*	7.6 *4*	εK=0.772 *24*; εL=0.172 *18*; εM+=0.056 *7*
(3×10^{2}[@] *3*)	263.278+x	27 *6*	6.2 *3*	εK=0.791 *9*; εL=0.158 *7*; εM+=0.0507 *25*
(3×10^{2}[#@] *3*)	235.732+x	9 *6*	6.8[1u] *5*	εK=0.742 *24*; εL=0.193 *17*; εM+=0.064 *7* I(ε+β^{+}): intensity inconsistent with first-forbidden unique, unobserved additional intensity must feed this level.

[†] Values have been deduced assuming x=±50 keV.
[‡] Absolute intensity per 100 decays.
[#] Existence of this branch is questionable.
[@] Estimated for a range of levels.

^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

γ(^{182}Re)

A 1410γ with Iγ=0.31 (1969Pl04), <0.1 (1973Sv01) is higher than the Q value, thus cannot belong to ^{182}Os decay.

E_γ †	I_γ ‡ e	E_i(level)	J_i^π	E_f	J_f^π	Mult. c	δ	α d	$I_{(\gamma+ce)}$ e	Comments
5.47 *1*		268.750+x	(0,1,2)$^-$	263.278+x	1$^-$	(M1)		1096	≈4.3	ce(M)/(γ+ce)=0.776 *8* ce(N)/(γ+ce)=0.189 *4*; ce(O)/(γ+ce)=0.0316 *7*; ce(P)/(γ+ce)=0.00230 *5* α(M)=852 *13* α(N)=207 *4*; α(O)=34.7 *6*; α(P)=2.52 *4* E_γ,Mult.: from Ice(M1)≈1.4 and Ice(M2)≈0.9 (1973Bu08). From comparison (by the evaluators) of M1/M2 experimental ratio with the calculated value from theory (using either HSICC or BrIcc codes), mult=M1+E2, δ≈2.4 or E1+M2, δ≈0.2; but adopted Δπ requires M1+E2. 1973Bu08 assign M1. $I_{(\gamma+ce)}$: deduced from intensity balance (evaluators) assuming no net ε feeding to the 269 level.
27.53 *2*	1.20 a *25*	263.278+x	1$^-$	235.732+x	(2)$^-$	M1		39.2		α(L)=30.3 *5*; α(M)=6.94 *10* α(N)=1.682 *24*; α(O)=0.282 *4*; α(P)=0.0206 *3* I_γ: other: 2.7 *12* (1973Sv01). Mult.: M1:M2:M3:N:O::9.0 *15*: 0.97 *20*: 0.15 *6*: 2.3 *3*: 0.35 *7* (1973Sv01). Others: L1:L2:L3:M::13.0:1.82:0.43:4.24 (1968Ha39), L1=40 *8* (1973Bu08).
55.50 *1*	11.1 *5*	55.502+x	(3)$^+$	0.0+x	2$^+$	M1+E2	0.047 *8*	5.07 *9*		α(L)=3.91 *7*; α(M)=0.897 *15* α(N)=0.217 *4*; α(O)=0.0364 *6*; α(P)=0.00260 *4* Mult.,δ: L1:L2:L3:M1:M2:M3:N::39 *4*: 3.90 *20*: 0.82 *9*: 8.9 *3*: 1.07 *4*: 0.241 *14*: 2.8 *6* (1973Sv01). Others: L1:L2:L3:M::18.1:2.34:0.61:5.45 (1968Ha39), L1:L2:L3:M1:M2:M3::50.0: 4.8:1.3:7.2:0.72:0.24 (1970Ak02), L1=36 *4* (1973Bu08).
x65.6 &										
110.46 *2*	0.44 a *7*	379.22+x	(1,2)$^-$	268.750+x	(0,1,2)$^-$	M1(+E2)	<0.65	3.72 *18*		Ice(M)≈0.3 (1968Ha39). α(K)exp=2.9 *5* α(K)=2.8 *4*; α(L)=0.67 *16*; α(M)=0.160 *42* α(N)=0.0385 *98*; α(O)=0.0061 *13*;

$^{182}_{75}Re_{107}$-3

^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

γ(^{182}Re) (continued)

E_γ [†]	I_γ [‡e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[d]	Comments
									α(P)=0.00031 *5* Placement from 1970Ak02 and 1973Bu08. 1973Sv01 place it from a tentative 620 level; 1968Ha39 place it from a 346 level. Additional information 7. I_γ: 0.7 (1973Sv01) for 110.46+111.39. Mult.: K:L2:M::0.76:≈0.024:0.045 (1968Ha39). Other: K/M=1.32 *11*/0.043 *18* (1973Sv01).
111.39 *3*	0.07[a] *2*	549.67+x	(1)$^-$	438.28+x	1$^-$	M1(+E2)	<0.7	3.61 *19*	α(K)exp=3.3 *10* α(K)=2.7 *4*; α(L)=0.67 *17*; α(M)=0.159 *44* α(N)=0.038 *11*; α(O)=0.0061 *14*; α(P)=0.00030 *5* I_γ: 0.7 (1973Sv01) for 110.46+111.39. Additional information 19. Mult.,δ: K:L1:L2:L3::0.12:0.16:≈0.03:0.26 (1968Ha39).
115.92 *5*	1.26 *13*	379.22+x	(1,2)$^-$	263.278+x	1$^-$	M1(+E2)	<1.4	3.0 *4*	α(K)exp=2.3 *9* α(K)=2.09 *72*; α(L)=0.72 *27*; α(M)=0.174 *72* α(N)=0.042 *17*; α(O)=0.0064 *22*; α(P)=2.23×10^{-4} *84* Additional information 8. Mult.: K:L1:L2:L3:M:N:O::<3.9:<1.0:<0.43:<0.02:0.147 *13*:0.043 *6*:0.009 *6* (1973Sv01). Other: K:L1:L3:M::1.90:≈0.26:0.02:0.12 (1968Ha39).
x122.30[#] *10*	0.80[#] *25*								Placement proposed (1973Bu08) from a tentative 632 level.
x126.6[&]									Ice(L1)=0.5, Ice(M)=0.2 (1968Ha39); Ice(M)<0.15 (1973Sv01).
130.80 *3*	6.3 *3*	510.05+x	1$^+$	379.22+x	(1,2)$^-$	E1		0.192	α(K)=0.1572 *22*; α(L)=0.0267 *4*; α(M)=0.00610 *9* α(N)=0.001456 *21*; α(O)=0.000231 *4*; α(P)=1.250×10^{-5} *18* Mult.: L1:L2:L3:M:N::0.116 *13*:0.025 *6*:0.032 *7*:0.036 *9*:0.009 *5* (1973Sv01). Others: K:L1:L2:L3:M::<0.61:0.08:0.030:0.036:0.035 (1968Ha39), K:L1:L2:L3::≈0.9:0.12:0.028:0.036 (1970Ak02).
x136.9[&]	<0.09[b]								Ice(K) is weak (1970Ak02).
143.50 *4*	0.16 *3*	379.22+x	(1,2)$^-$	235.732+x	(2)$^-$	M1+E2	≈1	≈1.436	α(K)exp=0.78 α(K)≈0.962; α(L)≈0.361; α(M)≈0.0884 α(N)≈0.0212; α(O)≈0.00321; α(P)≈9.97×10^{-5} Additional information 9. Mult.: K:L1:L2::<0.23:<0.09:0.005 *4* (1973Sv01). Other: K/L1=0.13:0.06 (1968Ha39).
x164.2[&]	<0.01[a]								Ice(K)=0.6 (1968Ha39); <0.4 (1973Sv01). Placement proposed (1973Bu08) from a tentative 797 level.
x166.1[&]	<0.02[a]								Ice(K)≈0.3 (1968Ha39); <0.2 (1973Sv01).
170.44 *7*	0.40 *6*	549.67+x	(1)$^-$	379.22+x	(1,2)$^-$	[M1+E2]		0.84 *29*	α(K)=0.60 *35*; α(L)=0.19 *4*; α(M)=0.045 *12* α(N)=0.011 *3*; α(O)=0.0017 *3*; α(P)=6.2×10^{-5} *41* E_γ,I_γ: γ from 1973Bu08 only.

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^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

γ(^{182}Re) (continued)

E_γ [†]	I_γ [‡e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[d]	Comments
172.41 *7*	0.65 *10*	726.97+x	(1$^+$)	554.57+x	(2)$^+$	M1+E2	0.9 *3*	0.85 *11*	α(K)exp=0.60 *11* α(K)=0.61 *13*; α(L)=0.176 *13*; α(M)=0.042 *4* α(N)=0.0102 *9*; α(O)=0.00158 *10*; α(P)=6.4×10^{-5} *15* Additional information 22.
174.98 *7*	0.52 *10*	438.28+x	1$^-$	263.278+x	1$^-$	M1+E2	0.9 *4*	0.81 *14*	α(K)exp≈1.1 α(K)=0.59 *16*; α(L)=0.167 *16*; α(M)=0.040 *5* α(N)=0.0097 *11*; α(O)=0.00150 *12*; α(P)=6.2×10^{-5} *19* Additional information 11. Mult.,δ: from L1/M ratio. K:L1:M::<1.0:0.055 *14*:0.028 *4* (1973Sv01) other: K:L1:M::≈0.24:0.045:≈0.02 (1968Ha39).
180.20 *3*	65 *4*	235.732+x	(2)$^-$	55.502+x	(3)$^+$	E1		0.0840	α(K)exp=0.055 *5* α(K)=0.0694 *10*; α(L)=0.01132 *16*; α(M)=0.00258 *4* α(N)=0.000618 *9*; α(O)=9.94×10^{-5} *14*; α(P)=5.77×10^{-6} *8* Additional information 3. Mult.: K:L1+L2:L3:M:N::3.73 *20*:<0.9:<0.25:0.156 *18*:0.057 *14* (1973Sv01). Other: K:L1:L3:M::1.73:0.35:<0.14:0.14 (1968Ha39).
[x]186.7[&]	<0.01[a]								Ice(K)=0.28 (1968Ha39); <0.2 (1973Sv01).
[x]190	0.04[b]								I$_\gamma$: ≈0.2 (1970Ak02).
202.51 *10*	0.108 *20*	438.28+x	1$^-$	235.732+x	(2)$^-$	M1(+E2)	<1	0.60 *10*	α(K)exp=0.66 α(K)=0.48 *11*; α(L)=0.096 *5*; α(M)=0.0226 *16* α(N)=0.0055 *4*; α(O)=0.000883 *25*; α(P)=5.1×10^{-5} *13* Additional information 12. Mult.: K/L1=<0.09/0.010 *3* (1973Sv01).
[x]203.7[#&] *3*	0.05[#] *5*								Ice(K)=0.29 (1968Ha39).
207.80[#f] *6*	<0.05[#]	263.278+x	1$^-$	55.502+x	(3)$^+$				α(K)exp>0.05 E$_\gamma$,I$_\gamma$: 1973Bu08 quote Iγ<0.02 and consider this γ as suspect. 1968Ha39 report weak K and L1 conversion lines corresponding to a 208.1. Placement of this γ in 1968Ha39 from 554 to 346 levels is rejected here since there seems no evidence for the population of a 346 level. Ice(K)=0.0040 *12* (1973Sv01). 1968Ha39 report both the K and L1 ce lines as weak.
216.91 *5*	1.41 *10*	726.97+x	(1$^+$)	510.05+x	1$^+$	M1		0.579	α(K)exp=0.44 *5* α(K)=0.480 *7*; α(L)=0.0764 *11*; α(M)=0.01745 *25* α(N)=0.00423 *6*; α(O)=0.000711 *10*; α(P)=5.21×10^{-5} *8* Additional information 23. Mult.: K; L1:L2:L3:M:N::0.65 *4*:0.103 *14*:0.0088 *20*:<0.0021:<0.046:0.0064 *11* (1973Sv01). Others: K:L1:L3:M::0.48:0.11:0.010:0.038 (1968Ha39), K:L1:L2:M::0.47:0.10:0.005:0.010 (1970Ak02).
[x]223.0[&]	<0.1[b]								Ice(K) is weak (1970Ak02); <0.09 (1973Sv01). Placement proposed (1970Ak02) from a tentative 486 level.

$^{182}_{75}Re_{107}$-5

^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

γ(^{182}Re) (continued)

E_γ [†]	I_γ [‡e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[d]	Comments
235.75 *6*	0.66[a] *20*	235.732+x	(2)$^-$	0.0+x	2$^+$	(E1+M2)	0.2 *1*	0.122 *92*	α(K)exp=0.12 *6* α(K)=0.096 *70*; α(L)=0.020 *17*; α(M)=0.0047 *40* α(N)=0.00114 *96*; α(O)=1.9×10^{-4} *16*; α(P)=1.2×10^{-5} *11* Additional information 4. I_γ: other: <1.5 (1973Sv01); this γ also coincides with another decay (1973Sv01). Mult.,δ: K:L1+L2:L3::0.08 *3*:<0.043:<0.0021 (1973Sv01). Other: K/L1=0.09/0.024 (1968Ha39). E2 is not ruled out by conversion data, ΔJ^π requires E1 or E1+M2.
241.31 *6*	1.75 *10*	510.05+x	1$^+$	268.750+x	(0,1,2)$^-$	(E1)		0.0402	α(K)exp≈0.033 α(K)=0.0334 *5*; α(L)=0.00530 *8*; α(M)=0.001207 *17* α(N)=0.000290 *4*; α(O)=4.70×10^{-5} *7*; α(P)=2.88×10^{-6} *4* Placement from 1970Ak02 and 1973Bu08. 1973Sv01 place it from a tentative 620 level. Additional information 14. Mult.,δ: K/L1=<0.14/0.019 (1968Ha39).
246.77 *6*	1.15 *9*	510.05+x	1$^+$	263.278+x	1$^-$	E1+M2	0.14 *3*	0.072 *16*	α(K)exp=0.056 *9* α(K)=0.058 *13*; α(L)=0.0110 *28*; α(M)=0.00259 *67* α(N)=6.3×10^{-4} *17*; α(O)=1.03×10^{-4} *27*; α(P)=6.6×10^{-6} *18* Additional information 15. Mult.,δ: K:L1:L2:L3::0.068 *9*:<0.012:<0.003:<0.002 (1973Sv01). Other: K:L1:L3:M::0.07:0.02:≈0.004:0.008 (1968Ha39).
[x]261.50[#&] *10*	0.16[#] *6*					M1+E2	≈2.2	≈0.1703	α(K)exp=0.95 α(K)≈0.1181; α(L)≈0.0398; α(M)≈0.00970 α(N)≈0.00233; α(O)≈0.000355; α(P)≈1.159×10^{-5} Placement proposed (1968Ha39,1973Bu08) from a tentative 317 level. Additional information 2.
263.29 *5*	12.9 *4*	263.278+x	1$^-$	0.0+x	2$^+$	E1		0.0325	α(K)exp=0.025 *3* α(K)=0.0270 *4*; α(L)=0.00425 *6*; α(M)=0.000967 *14* α(N)=0.000232 *4*; α(O)=3.78×10^{-5} *6*; α(P)=2.35×10^{-6} *4* Additional information 5. Mult.,δ: K:L1:L2:L3:M::0.355:0.045 *6*:<0.0075:<0.013:0.014 *4* (1973Sv01). Others: K:L1:L2:L3:M::0.355:0.05:0.012:0.010:0.02 (1968Ha39), K/L1=0.37/0.041 (1970Ak02).

$^{182}_{75}Re_{107}$-6

^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

γ(^{182}Re) (continued)

E_γ [†]	I_γ [‡ e]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [c]	δ	α [d]	Comments
268.8 [# f] 5	<0.04 [#]	268.750+x	(0,1,2)$^-$	0.0+x	2$^+$				α(K)exp>0.25 Additional information 6.
274.33 5	3.48 14	510.05+x	1$^+$	235.732+x	(2)$^-$	E1		0.0294	α(K)exp=0.022 2 α(K)=0.0244 4; α(L)=0.00383 6; α(M)=0.000871 13 α(N)=0.000209 3; α(O)=3.41×10^{-5} 5; α(P)=2.14×10^{-6} 3 Additional information 16. Mult.,δ: K:L1:L2:L3:M::0.081 6:0.012 3:<0.006:0.0021 11:0.004 2 (1973Sv01). Other: K:L1:L2:M::0.10:0.019:<0.012:0.009 (1968Ha39).
286.39 10	0.12 4	549.67+x	(1)$^-$	263.278+x	1$^-$	M1		0.270	α(K)exp=0.29 α(K)=0.224 4; α(L)=0.0355 5; α(M)=0.00809 12 α(N)=0.00196 3; α(O)=0.000330 5; α(P)=2.42×10^{-5} 4 Mult.,δ: Ice(K)=0.02 (1970Ak02); K/L1=0.036/≈0.009 (1968Ha39) others: K/L1=<0.033/<0.007 (1973Sv01).
x292.3 [&]	<0.05 [a]								Ice(K)=0.08 (1968Ha39); <0.02 (1973Sv01).
x302.4 [&]	<0.05 [a]								Ice(K)=0.11 (1968Ha39); <0.03 (1973Sv01).
x315.2 [&]	<0.02 [a]								Ice(K)=0.14 (1968Ha39); 0.15 (1970Ak02); <0.07 (1973Sv01). Iγ<0.05 (1973Sv01). Placement proposed (1968Ha39) from a tentative 632 level.
x317.0 [&]	<0.02 [a]								Ice(K)=0.07 (1968Ha39); <0.02 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from a tentative 317 level.
x338.0 [&]	<0.07 [a]								Ice(K)=0.07 (1968Ha39).
x340.1 [&]	<0.02 [a]								Ice(K)=0.07 (1968Ha39); <0.013 (1973Sv01).
x359.0 [&]	<0.05 [a]								Ice(K)=0.10 (1968Ha39); <0.05 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from tentative 738 and 797 levels.
x369.2 [&]	<0.06 [a]								Ice(K)≈0.07 (1968Ha39); <0.02 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from a tentative 632 level.
x373.2 [&]	<0.06 [b]								Ice(K)=0.08 (1968Ha39); <0.04 (1973Sv01).
379.22 7	1.41 13	379.22+x	(1,2)$^-$	0.0+x	2$^+$	E1(+M2)	<0.12	0.017 3	α(K)exp=0.013 3 α(K)=0.0138 24; α(L)=0.0022 5; α(M)=0.00051 12 α(N)=0.00012 3; α(O)=2.0×10^{-5} 5; α(P)=1.4×10^{-6} 4 Additional information 10. Mult.,δ: K/L1+L2=0.019 4/<0.010 (1973Sv01).
x395.7 [&]	<0.02 [a]								Ice(K)=0.09 (1968Ha39); <0.016 (1973Sv01).
x402.6 [&]	<0.04 [a]								Ice(K) is weak (1968Ha39); <0.06 (1973Sv01).
438.46 [@] 15	0.15 [@] 7	438.28+x	1$^-$	0.0+x	2$^+$				α(K)exp<0.076 Iγ: 0.12 3 (1970Ak02). Additional information 13.

$^{182}_{75}Re_{107}$-7

^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

γ(^{182}Re) (continued)

E_γ [†]	I_γ [‡e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[d]	Comments
[x]441	<0.01[b]								I_γ: other: 0.35 (1969An13).
[x]450.3[&]	<0.05[a]								Ice(K)=0.25 (1968Ha39).
									Placement proposed (1968Ha39) from a tentative 797 level.
454.60 *7*	0.56 *4*	510.05+x	1^+	55.502+x	$(3)^+$	E2		0.0278	α(K)exp=0.018 *3* α(K)=0.0207 *3*; α(L)=0.00545 *8*; α(M)=0.001307 *19* α(N)=0.000314 *5*; α(O)=4.89×10^{-5} *7*; α(P)=2.03×10^{-6} *3* Additional information 17.
[x]458	<0.05[b]								I_γ: ≈0.04 (1970Ak02).
458.28[f] *10*	<0.05	726.97+x	(1^+)	268.750+x	$(0,1,2)^-$				α(K)exp>0.05 I_γ: from 1973Sv01. Other: ≈0.04 (1970Ak02). Additional information 24.
[x]475.1[&]	<0.03[a]								Ice(K) is weak (1968Ha39); <0.016 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from a tentative 738 level.
[x]479.9[&]	<0.05[a]								Ice(K) is weak (1968Ha39); <0.016 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from a tentative 797 level.
[x]486	0.09 *2*								E_γ,I_γ: from 1970Ak02; Iγ<0.05 (1973Sv01). Placement proposed (1970Ak02) from a tentative 486 level.
[x]494.6[&]	<0.1[a]								Ice(K)≈0.35 (1968Ha39); <0.008 (1973Sv01). Iγ<0.08 (1973Sv01).
499.08 *8*	0.53 *14*	554.57+x	$(2)^+$	55.502+x	$(3)^+$	M1+E2	0.7 *5*	0.048 *12*	α(K)exp=0.039 *11* α(K)=0.040 *10*; α(L)=0.0067 *12*; α(M)=0.00154 *25* α(N)=0.00037 *6*; α(O)=6.2×10^{-5} *11*; α(P)=4.2×10^{-6} *12* Additional information 20. Mult.,δ: K:L1+L2:L3::0.0214 *13*:0.0043 *7*:<0.0005 (1973Sv01). Other: K/L1=0.037/≈0.009 (1968Ha39).
[x]502.9[&]									Ice(K)=0.17 (1968Ha39); <0.04 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from a tentative 738 level.
510.04 *7*	100	510.05+x	1^+	0.0+x	2^+	M1		0.0581	α(K)=0.0484 *7*; α(L)=0.00752 *11*; α(M)=0.001714 *24* α(N)=0.000416 *6*; α(O)=7.00×10^{-5} *10*; α(P)=5.17×10^{-6} *8* α(K)(M1)=0.0499 used as normalization for ce data for other γ rays. Additional information 18. Mult.,δ: K:L1+L2:L3:M:N::5.23 *20*:0.84 *4*:<0.01:0.198 *9*:0.058 *5* (1973Sv01). Others: K:L1+L2:M:N::5.8:0.88:0.19:0.04 (1970Ak02), K/L1=4.50/0.76 (1969Ha39).
554.68 *20*	0.52 *6*	554.57+x	$(2)^+$	0.0+x	2^+	M1		0.0467	α(K)exp=0.046 *8* α(K)=0.0389 *6*; α(L)=0.00603 *9*; α(M)=0.001374 *20* α(N)=0.000333 *5*; α(O)=5.61×10^{-5} *8*; α(P)=4.15×10^{-6} *6* Additional information 21.

^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01 (continued)

γ(^{182}Re) (continued)

E_γ[†]	I_γ[‡e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ	α[d]	Comments
									Mult.,δ: K:L1+L2:L3::0.025 *3*:0.0042 *5*:<0.0005 (1973Sv01). Other: K/L1=≈0.033/0.007 (1968Ha39).
[x]560.8[&]	<0.06[b]								Ice(K)≈0.10 (1968Ha39); <0.01 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from a tentative 797 level.
[x]580.0[&]	<0.06[b]								Ice(K)≈0.3 (1968Ha39); <0.2 (1973Sv01).
[x]631.1[&] *5*	≈0.04[a]								Ice(K) is weak (1968Ha39); <0.005 (1973Sv01). Iγ<0.06 (1973Sv01). Placement proposed (1968Ha39,1973Bu08) from a tentative 632 level.
726.98 *20*	0.25 *3*	726.97+x	(1$^+$)	0.0+x	2$^+$	M1(+E2)	<0.8	0.021 *3*	α(K)exp=0.018 *3* α(K)=0.0171 *24*; α(L)=0.0027 *3*; α(M)=0.00061 *7* α(N)=0.000148 *17*; α(O)=2.5×10^{-5} *3*; α(P)=1.8×10^{-6} *3* Additional information 25.

[†] Weighted average of 1973Bu08 and 1973Sv01, except that minimum uncertainty is assigned from the lower of the two quoted values by 1973Bu08 and 1973Sv01.
[‡] Weighted average of 1973Bu08 and 1973Sv01.
[#] From 1973Bu08; not reported by 1973Sv01.
[@] From 1973Sv01; not reported by 1973Bu08.
[&] From ce data of 1968Ha39 and/or 1970Ak02, γ not confirmed by 1973Sv01 in their ce data, upper limits on γ intensity quoted. Some of the lines have been identified by 1973Sv01 as possibly belonging to other nuclides. The ce intensities from 1968Ha39 are given under comments but these are renormalized as in 1973Sv01.
[a] From 1973Bu08.
[b] From 1973Sv01.
[c] From ce data of 1973Sv01, 1973Bu08, 1968Ha39.
[d] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr. δ(E2/M1)=1 assumed when not given.
[e] For absolute intensity per 100 decays, multiply by 0.524 *10*.
[f] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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^{182}Os ε decay (21.84 h) 1973Bu08,1973Sv01

Decay Scheme

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