^{181}Os ε decay (2.7 min) 1967Go25,1971Ak03

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

Parent: ^{181}Os: E=49.22; $J^\pi=7/2^-$; $T_{1/2}$=2.7 min *1*; Q(ε)=2960 *30*; %ε+%$β^+$ decay≈100.0

1967Go25: ^{181}Os activity produced by proton on Re; plastic scintillator for positrons, double focusing β spectrometer for conversion electrons, Ge(li) detectors for γ's; measured Eγ, Iγ, E(ce), I(ce), γγ-coin; deduced ICC. deduced levels, J^π, γ-multipolarity.

1971Ak03: ^{181}Os activity produced by proton on Au, ^{16}O on Tm, or ^{11}B on Lu; β spectrograph with a magnet, Ge(Li) detectors, NaI(Tl) detectors; measured Eγ, Iγ, I(ce), γγ-coin, γγ-delay, ICC; deduced log *ft*, level J^π, $T_{1,2}$.

Level scheme is given as presented in 1967Go25.

^{181}Re Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	$5/2^+$	19.9 h *7*	$T_{1/2}$: from Adopted Levels.
118.0	$7/2^+$		
262.9	$9/2^-$	158 ns *10*	$T_{1/2}$: from βγ(t) (1967Go25).

[†] From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ [†]	Iε[†]	Log *ft*	I(ε+$β^+$)[†]	Comments
(2.75×10^3 *3*)	262.9	≈4.7	≈47	≈4.7	≈52	I(ε+$β^+$): calculated by the evaluator from the I(K x ray) and I(511) data of 1967Go25. The x-ray intensity was corrected for the K-fluorescence yield (0.959) and contributions for α(K) from the 118- and 145-keV transitions. The theoretical value εK/$β^+$=9 *3* was used. Assuming all $β^+$ decay goes to the 263-keV level and no additional, strongly converted transitions exist, 48% of the decay must go to higher levels that are not yet reported.

[†] For absolute intensity per 100 decays, multiply by ≈1.0.

γ(^{181}Re)

I(γ+ce) normalization: %IT≤3 from 1998Ro32.
I(K x ray)=200 *50*, I(511)≈14.4.

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	α[&]	Comments
118.09 *5*	28.3 *30*	118.0	$7/2^+$	0.0	$5/2^+$	M1+E2	0.22 *+3−2*	3.260 *15*	α(K)= 2.64 *3*; α(L)= 0.474 *10*; α(M)= 0.1093 *25*; α(N+..)= 0.0335 *8*
144.84 *10*	100	262.9	$9/2^-$	118.0	$7/2^+$	E1		0.1483	I_γ: 24 from 1971Ak03. α(K)= 0.1219; α(L)=0.02041; α(M)=0.00465; α(N+..)=0.00137
x163[#]	≈0.8[#]								
x221[#]	≈0.2[#]								
x238[#]	≈1.0[#]								
x253[#]	≈0.2[#]								

Continued on next page (footnotes at end of table)

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γ(^{181}Re) (continued)

E_γ [†]	I_γ [†@]	E_i(level)
[x]263[#]	≈0.5[#]	
[x]666.0 *10*	0.4 *1*	
[x]1118.8 *10*	4.2 *8*	
[x]1207.0 *15*	0.8 *2*	
[x]1428.0 *15*	0.4 *1*	
[x]1468.0 *10*	1.3 *2*	

[†] From 1967Go25, except as noted.
[‡] From Adopted Levels.
[#] From 1971Ak03.
[@] For absolute intensity per 100 decays, multiply by ≈1.0.
[&] 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.

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Decay Scheme

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