^{177}Os ε decay 1976Be62

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 159, 1 (2019)	30-Aug-2019

Parent: ^{177}Os: E=0.0; $J^\pi=1/2^-$; $T_{1/2}$=3.0 min *2*; Q(ε)=4310 *30*; %ε+%$β^+$ decay=100.0

1976Be62: activity produced by spallation of high-energy protons on thallium targets. Assignment to ^{177}Os based on chemical separation and identification of γ rays. Detectors: Ge(Li) anti-Compton spectrometer, two Ge(Li) detectors. Measured: Eγ, Iγ, γγ coin.

Others: 1972Be89, 1970Ar15.

^{177}Re Levels

E(level)†	Jπ‡	$T_{1/2}$‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0#	5/2−	14 min *1*	735.2a *2*	(1/2,3/2)	1404.3a *5*	(1/2,3/2)
38.7# *2*	(1/2−)		741.3a *5*	(1/2,3/2)	1421.3a *4*	(1/2+,3/2)
84.8@ *2*	5/2+	50 μs *10*	772.0a *3*	(1/2,3/2)	1464.4a *5*	(1/2,3/2)
195.8# *2*	(3/2−)		952.7a *2*	(1/2−,3/2)	1744.0a *4*	(1/2−,3/2)
207.7@ *4*	7/2+		1037.3a *6*	(1/2,3/2)		
495.8& *2*	(1/2+)		1073.1a *11*	(1/2,3/2)		

† From a least-squares fit to Eγ.
‡ From Adopted Levels.
# Band(A): π1/2[541].
@ Band(B): π5/2[402].
& Band(C): π1/2[411]?.
a Possible direct feeding in ^{177}Os ε decay.

γ(^{177}Re)

Iγ normalization: The decay scheme is incomplete and information on uncertainties for the γ-ray emission probabilities, as well transition multipolarities and mixing ratios, is missing. Thus absolute γ-ray emission probabilities and log *ft* values have not been determined.

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
38.6 *3*	≈8	38.7	(1/2−)	0.0	5/2−	(E2)	Mult.: α(exp)>19 from intensity balance considerations, compared to α(E1)=0.98, α(M1)=14.4 and α(E2)=322.
x75.4 *5*	≈7						
84.8 *2*	163	84.8	5/2+	0.0	5/2−		Eγ=83, Iγ=60 (1972Be89).
x89.3 *3*	3						
122.9 *3*	11	207.7	7/2+	84.8	5/2+		
x125.4 *3*	103						
x139.5 *6*	5						
x142.1 *5*	<13						
x148.8 *3*	12						
157.2 *2*	32	195.8	(3/2−)	38.7	(1/2−)		Eγ=157.7, Iγ=30 (1972Be89).
x159.2 *3*	8.6						
x162.9 *3*	6						
195.8 *2*	100	195.8	(3/2−)	0.0	5/2−		Eγ=195.5, Iγ=100 (1972Be89).
x≈214	≈3						
x222.7 *6*	≈3						
x228.0 *6*	4						

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^{177}Os ε decay 1976Be62 (continued)

γ(^{177}Re) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
x236.5 5	13					
245.5 4	11	741.3	(1/2,3/2)	495.8	(1/2$^+$)	
x262.2 10	4					
280.1# 5	5	1744.0	(1/2$^-$,3/2)	1464.4	(1/2,3/2)	
x294.6 6	8					
300.2 2	48	495.8	(1/2$^+$)	195.8	(3/2$^-$)	Eγ=300, Iγ=33 (1972Be89).
339.7 6	6	1744.0	(1/2$^-$,3/2)	1404.3	(1/2,3/2)	
x341.3 6	7					
x≈404	≈2					
411.0 2	27	495.8	(1/2$^+$)	84.8	5/2$^+$	
x421.0 2	46					Eγ=422, Iγ=31 (1972Be89).
x446.9 5	6					
x448.6 5	5					
457.0‡ 2	35‡	495.8	(1/2$^+$)	38.7	(1/2$^-$)	Eγ=456, Iγ=20 (1972Be89).
457.0‡ 2	35‡	952.7	(1/2$^-$,3/2)	495.8	(1/2$^+$)	
x465 1	≈5					
x481.4 6	≈8					
539.4 2	36	735.2	(1/2,3/2)	195.8	(3/2$^-$)	
x548.1 3	10					
576.2 3	22	772.0	(1/2,3/2)	195.8	(3/2$^-$)	
x579.2 6	4					
x603.9 6	3					
649.2 4	17	1421.3	(1/2$^+$,3/2)	772.0	(1/2,3/2)	
x653.2 4	8					
x659.6 5	6					
686 1	≈20	1421.3	(1/2$^+$,3/2)	735.2	(1/2,3/2)	
696.6 6	≈16	735.2	(1/2,3/2)	38.7	(1/2$^-$)	
733.3 3	42	772.0	(1/2,3/2)	38.7	(1/2$^-$)	
756# 1	≈6	952.7	(1/2$^-$,3/2)	195.8	(3/2$^-$)	
791.4 4	21	1744.0	(1/2$^-$,3/2)	952.7	(1/2$^-$,3/2)	
841.5 5	11	1037.3	(1/2,3/2)	195.8	(3/2$^-$)	
x871.3 10	≈5					
877.3 10	≈8	1073.1	(1/2,3/2)	195.8	(3/2$^-$)	
x879.3 10	≈7					
913.2 10	≈4	952.7	(1/2$^-$,3/2)	38.7	(1/2$^-$)	
x919.4 6	11					
x928.5 10	≈5					
952.4 5	30	952.7	(1/2$^-$,3/2)	0.0	5/2$^-$	
x975.7 5	≈10					
x991.7 10	≈6					
x1022.7 5	8					
x1113.8 10	6					
x1202.1 5	4.5					
1208.6 5	12	1404.3	(1/2,3/2)	195.8	(3/2$^-$)	
1268.6 4	53	1464.4	(1/2,3/2)	195.8	(3/2$^-$)	
1336.8 6	18	1421.3	(1/2$^+$,3/2)	84.8	5/2$^+$	
x1467.7 10	8					
1743.9 6	20	1744.0	(1/2$^-$,3/2)	0.0	5/2$^-$	

[†] From 1976Be62. Gamma rays that are not placed in the level scheme have $T_{1/2}$≈3 min and may belong to either ^{177}Os ($T_{1/2}$=2.7 min) or ^{176}Os (3.6 min).

[‡] Multiply placed with undivided intensity.

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^{177}Os ε decay 1976Be62 (continued)

γ(^{177}Re) (continued)

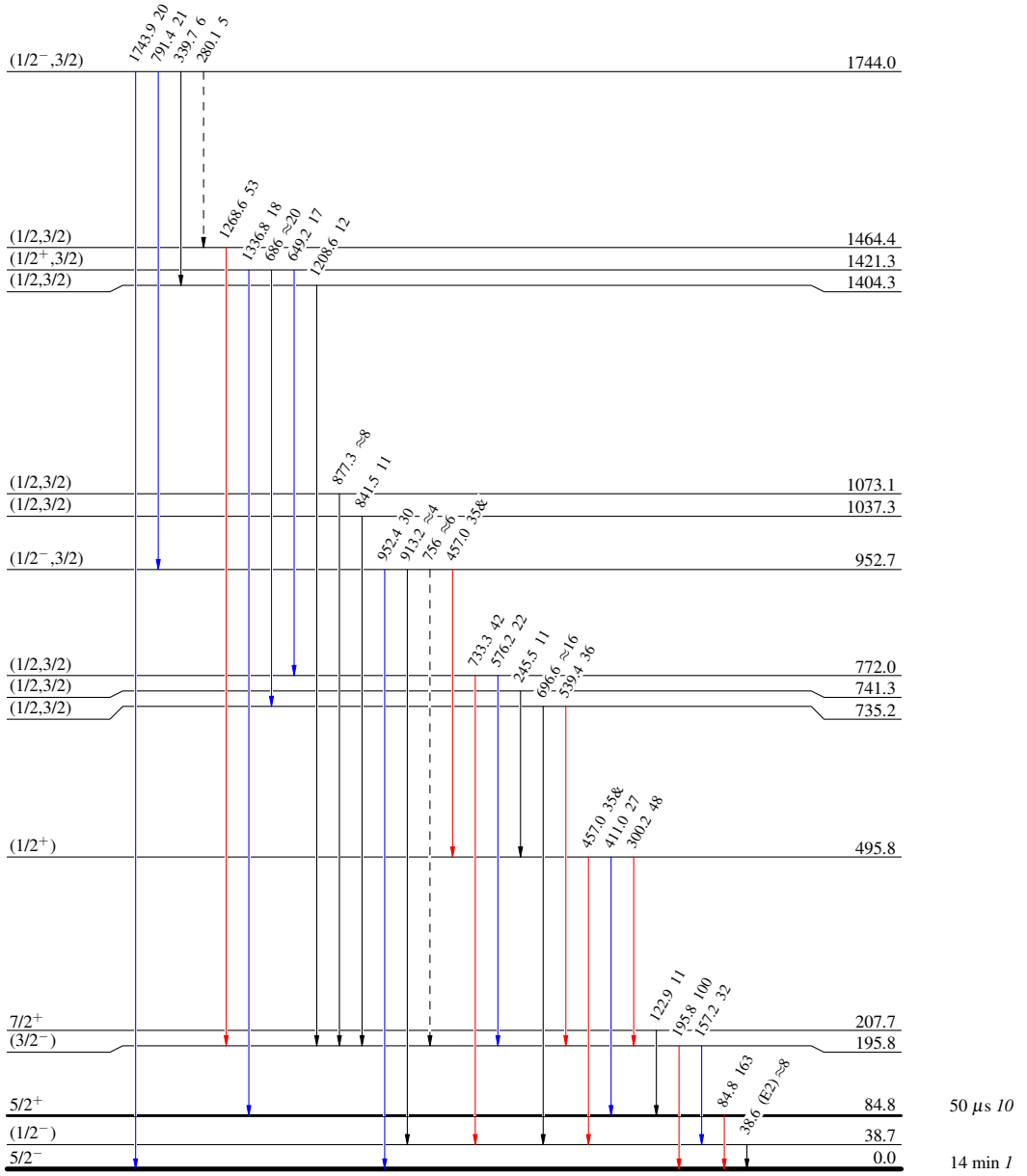
[#] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{177}Os ε decay 1976Be62

Decay Scheme

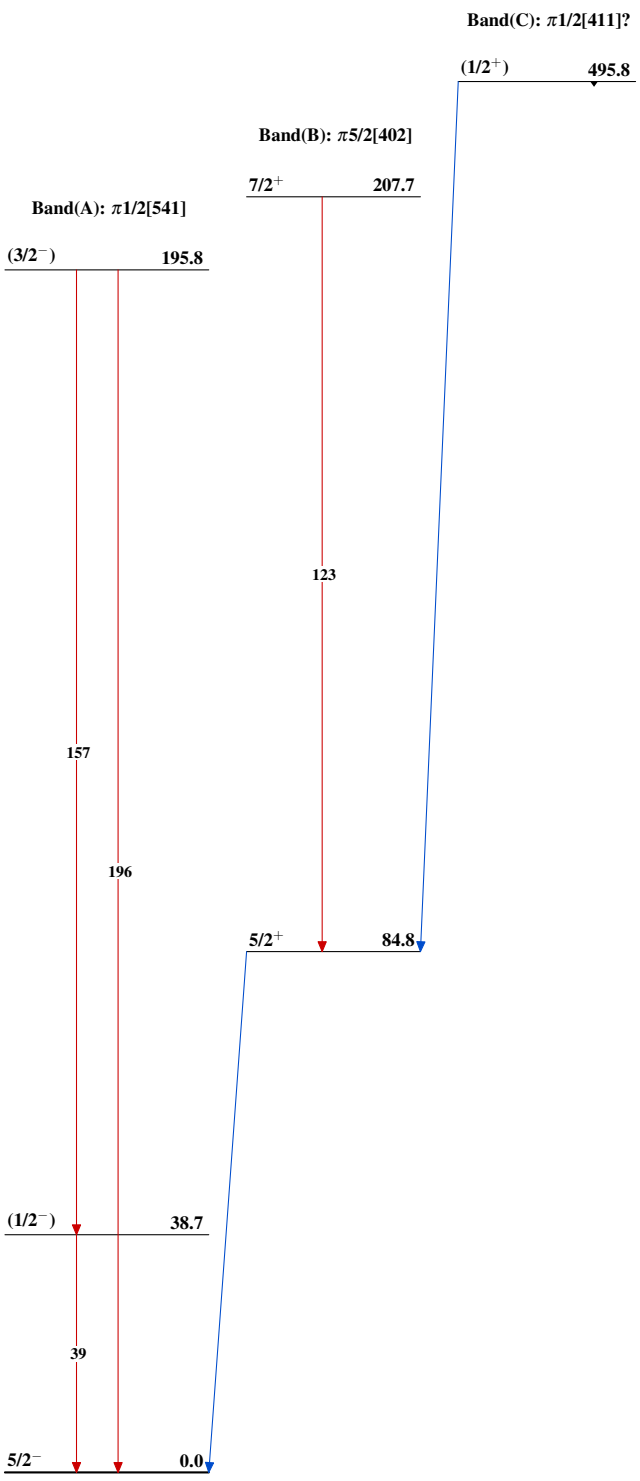
Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{177}_{75}Re_{102}$

^{177}Os ε decay 1976Be62



$^{177}_{75}Re_{102}$