^{181}Ir ε decay 1995Ro09,1978La04,1972Ak03

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

Parent: ^{181}Ir: E=0.0; $J^\pi=5/2^-$; $T_{1/2}$=4.90 min *15*; Q(ε)=4080 *40*; %ε+%$β^+$ decay=100.0

1995Ro09: ISOCELE separator; Ge(HP) detectors; measured $T_{1/2}$, Eγ, Iγ, γγ-coin.

1978La04: Activity of ^{181}Ir from ^{169}Tm(^{16}O,4n), E=90-130 MeV; Ge(Li) detectors, intrinsic Ge detectors for X-rays; measured $T_{1/2}$, Eγ, Iγ, γγ-coin, X-rays, γγ(t).

1972Ak03: Activity of ^{181}Ir from ^{169}Tm(^{16}O,4n), E=94 MeV; Ge(Li) detectors; measured $T_{1/2}$, Eγ, Iγ, γγ-coin.

^{181}Os Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†
0.0 *0*	1/2⁻	320.85 *16*	7/2⁻	509.1 *3*	(9/2⁺)	749.13 *25*
49.03 *21*	7/2⁻	321.0 *3*	11/2⁻	525.0 *4*		1688.4? *3*
93.82 *12*	3/2⁻	334.39 *21*	9/2⁻	574.2 *4*	(9/2⁻)	1701.4? *3*
102.76 *16*	5/2⁻	340.97 *25*	(7/2⁺)	575.76 *22*		1722.1? *4*
156.54 *21*	9/2⁺	367.87 *20*	(5/2⁻)	640.31 *18*		
172.61 *22*	9/2⁻	423.76 *25*	(7/2⁻)	663.0 *4*	11/2⁻	
200.1 *3*	11/2⁺	506.81 *20*	7/2⁻	684.8 *4*		

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

γ(^{181}Os)

E_γ†	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	α[b]	Comments
8.9[@]		102.76	5/2⁻	93.82	3/2⁻			
[x]19.6[&] *2*	6.0[a] *2*					[E1]	6.54	α(L)= 4.96; α(M)= 1.189 I_γ: The intensity of the 19.6-keV γ is too large to be consistent with an M3 (α=6×10^6) as suggested by 1978La04, and is most likely E1 (α=6.5).
43.5[@]		200.1	11/2⁺	156.54	9/2⁺			Mult.: M1 or M!+E2 from intensity balance (1995Ro09).
[x]65.3[&] *2*	≈20[a]							
93.77 *13*	31 *4*	93.82	3/2⁻	0.0	1/2⁻	(E2)	5.75	α(K)= 0.879; α(L)= 3.66; α(M)= 0.932; α(N+..)= 0.280
102.7[@]		102.76	5/2⁻	0.0	1/2⁻			
107.62 *13*	100 *4*	156.54	9/2⁺	49.03	7/2⁻	E1	0.328	α(K)= 0.267; α(L)= 0.0474; α(M)=0.01084; α(N+..)=0.00324
[x]117.9[&] *2*								I_γ: Intensity unreported due to obscuring γ rays (1978La04).
123.50 *13*	28	172.61	9/2⁻	49.03	7/2⁻	M1	3.18	α(K)= 2.62; α(L)= 0.425; α(M)= 0.0974; α(N+..)= 0.0304
138.8[@]		506.81	7/2⁻	367.87	(5/2⁻)			
148.4[@]		321.0	11/2⁻	172.61	9/2⁻			
150.4[@]		574.2	(9/2⁻)	423.76	(7/2⁻)			
166.0[&c]		506.81	7/2⁻	340.97	(7/2⁺)			
168.5[@]		509.1	(9/2⁺)	340.97	(7/2⁺)			
184.5 *2*	27 *3*	340.97	(7/2⁺)	156.54	9/2⁺			

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^{181}Ir ε decay 1995Ro09,1978La04,1972Ak03 (continued)

γ(^{181}Os) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
[x]189.9 *2*	4 *1*					E_γ: From 1978La04, assigned as deexciting the 362.5 level. Not observed in 1995Ro09.
195.3[@]		367.87	(5/2$^-$)	172.61	9/2$^-$	
218.1[@]		320.85	7/2$^-$	102.76	5/2$^-$	
227.03 *13*	58 *3*	320.85	7/2$^-$	93.82	3/2$^-$	
231.63 *13*	29 *4*	334.39	9/2$^-$	102.76	5/2$^-$	
[x]239.2[&] *2*						E_γ: From 1978La04, assigned as deexciting the 411.8 level. Not observed in 1995Ro09. I_γ: Intensity unreported due to obscuring γ rays (1978La04).
251.1[@]		423.76	(7/2$^-$)	172.61	9/2$^-$	
265.0[@]		367.87	(5/2$^-$)	102.76	5/2$^-$	
271.9[@]		321.0	11/2$^-$	49.03	7/2$^-$	
273.9[@]		367.87	(5/2$^-$)	93.82	3/2$^-$	
291.7[@]		340.97	(7/2$^+$)	49.03	7/2$^-$	
308.98 *13*	19 *3*	509.1	(9/2$^+$)	200.1	11/2$^+$	E_γ: assigned as deexciting the 411.5 level from 1978La04.
318.86 *13*	41 *4*	367.87	(5/2$^-$)	49.03	7/2$^-$	
319.5[@]		640.31		320.85	7/2$^-$	
321.0[@]		423.76	(7/2$^-$)	102.76	5/2$^-$	
334.0[@]		506.81	7/2$^-$	172.61	9/2$^-$	
342.2[@]		663.0	11/2$^-$	321.0	11/2$^-$	
350.38 *13*	7	506.81	7/2$^-$	156.54	9/2$^+$	
352.2[@] *3*	3 *1*	509.1	(9/2$^+$)	156.54	9/2$^+$	
[x]352.8[&] *2*	5[a]					
374.8[@]		423.76	(7/2$^-$)	49.03	7/2$^-$	
[x]375.2[&] *2*	16[a]					
404.1[@]		506.81	7/2$^-$	102.76	5/2$^-$	
413.2[@]		506.81	7/2$^-$	93.82	3/2$^-$	
431.2[@]		525.0		93.82	3/2$^-$	
457.3[@]		506.81	7/2$^-$	49.03	7/2$^-$	
481.7[@]		575.76		93.82	3/2$^-$	
484.7[@]		684.8		200.1	11/2$^+$	
528.2[@]		684.8		156.54	9/2$^+$	
537.5[@]		640.31		102.76	5/2$^-$	
546.4[@]		640.31		93.82	3/2$^-$	
576.0[@]		575.76		0.0	1/2$^-$	
576.5[&] *2*	9[a]	749.13		172.61	9/2$^-$	
640.4[@]		640.31		0.0	1/2$^-$	
700.13 *19*	9[a] *4*	749.13		49.03	7/2$^-$	
[x]871.2[&] *2*	4[a]					
[x]873.0 *8*	9 *1*					E_γ,I_γ: From 1972Ak03.
1181.8 *9*	8.7 *14*	1688.4?		506.81	7/2$^-$	
[x]1192.4 *4*	11 *1*					
1347.1 *3*	12 *4*	1688.4?		340.97	(7/2$^+$)	
1380.8 *4*	12.7 *12*	1722.1?		340.97	(7/2$^+$)	
1528.6 *3*	29 *2*	1701.4?		172.61	9/2$^-$	
1545.0[&] *3*	6[a]	1701.4?		156.54	9/2$^+$	
1565.7 *3*	12.9 *12*	1722.1?		156.54	9/2$^+$	
[x]1593.2 *5*	9 *1*					

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^{181}Ir ε decay 1995Ro09,1978La04,1972Ak03 (continued)

γ(^{181}Os) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π
1639.7 *3*	54 *2*	1688.4?		49.03	7/2$^-$
[x]1646.3 *3*	27 *2*				
1652.5[&] *3*	17[a]	1701.4?		49.03	7/2$^-$
[x]1714.8 *3*	6 *1*				

[†] Weighted average of values from 1995Ro09,1978La04 and 1972Ak03. Uncertainty of 0.3 keV assumed for Eγ′s from 1995Ro09.
[‡] Weighted average of values from 1978La04 and 1972Ak03.
[#] Calculated from level scheme intensity balances.
[@] From 1995Ro09.
[&] From 1978La04.
[a] From 1978La04, uncertainties 5-15%.
[b] 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.
[c] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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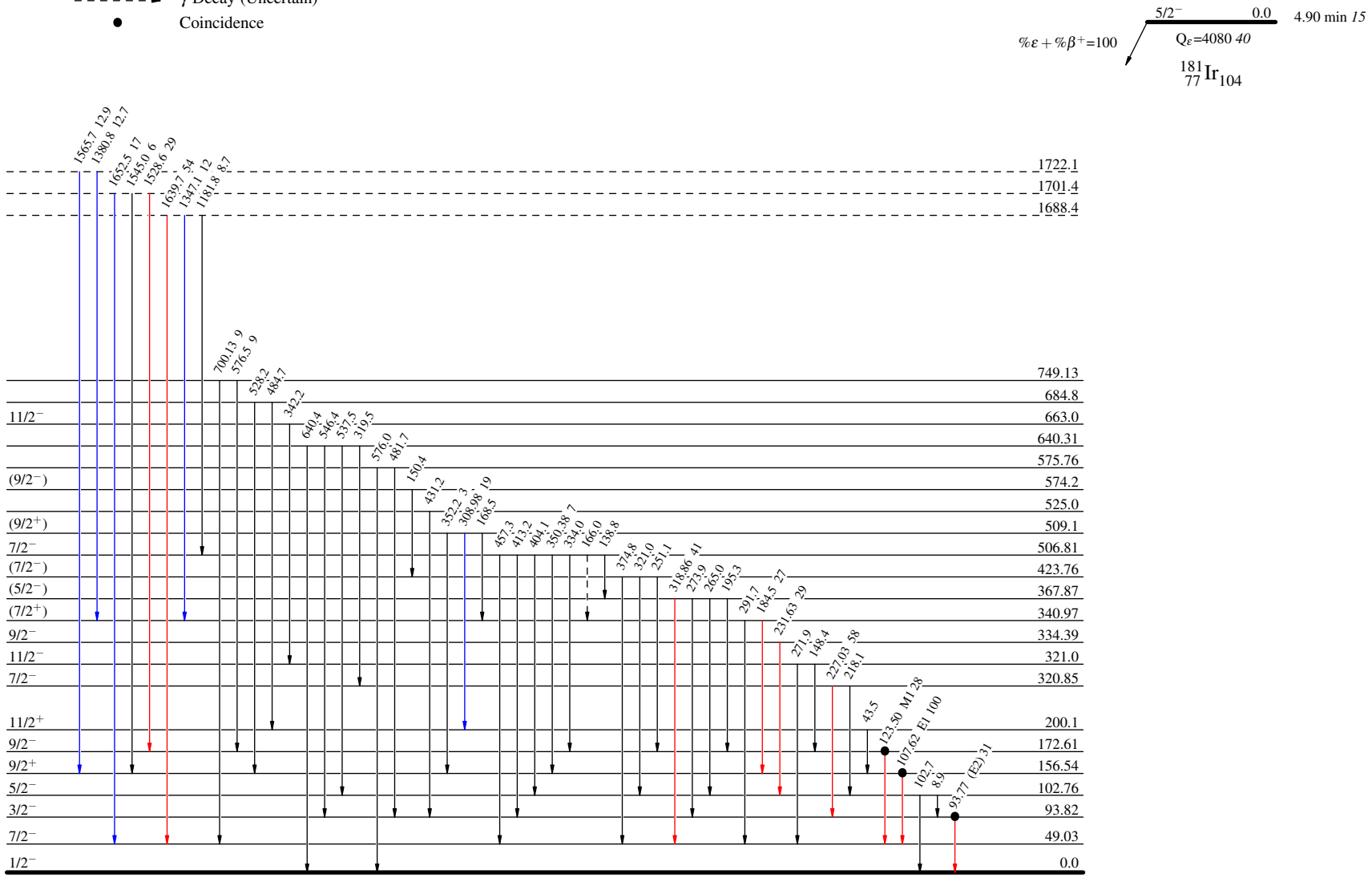
Decay Scheme

Intensities: Type not specified

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)
- Coincidence



$^{181}_{76}Os_{105}$

$^{181}_{76}Os_{105}$-4