^{190}Ir ε decay (3.087 h) 1964Ha06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, [1] and Jun Chen[2]	NDS 169,1 (2020)	15-Oct-2020

Parent: ^{190}Ir: E=376.4 *1*; $J^{\pi}=(11)^{-}$; $T_{1/2}$=3.087 h *12*; Q(ε)=1954.2 *12*; %ε+%$β^{+}$ decay=91.4 *2*

^{190}Ir-J^{π},$T_{1/2}$: From ^{190}Ir Adopted Levels. $T_{1/2}$ is adopted from 1996Ga30 in this study. Others from decay study: 3.25 h *20* (1970Bo22), 3.0 h *2* (1963Gr22), 3.2 h *2* (1950Ch11).

^{190}Ir-Q(ε): From 2017Wa10.

^{190}Ir-%ε+%$β^{+}$ decay: %ε=91.4 *2* (1996Ga30). Other: 94.4 *8* (1964Ha06).

1964Ha06: The 3.1-h isomer of ^{190}Ir produced by proton irradiation of enriched ^{190}Os at ORNL. Conversion electrons were analyzed with photographic-recording, permanent-magnet spectrographs. Measured E(ce), I(ce). Deduced conversion sub-shell ratios.

Others:

γ: 1958Sc30, 1955At32, 1960Ka14, 1959Ni30, 1958Di44.

γγ: 1955At32.

ce: 1958Di44.

$T_{1/2}$ and production: 1996Ga30, 1970Bo22, 1963Gr22, 1950Ch11.

γ(θ,H,t): 1987Be54.

Absolute K x ray(Os) measurement: 1987Re05 (% K$α_2$ x ray=27 *4*, % K$α_1$ x ray=47 *4*). Other: 1955At32.

%ε branching: 1996Ga30.

^{190}Os Levels

E(level)†	J^{π}‡	$T_{1/2}$‡	Comments
0.0	0^{+}		
186.7 *1*	2^{+}		
547.90 *15*	4^{+}		
1050.40 *18*	6^{+}		
1666.90 *20*	8^{+}		
1705.80 *22*	$(10)^{-}$	9.86 min *3*	μ=−0.56 +*8*−*12* (1987Be54) μ: from 616γ(θ,H,t) (1987Be54).

† From Eγ data, assuming ΔEγ=0.1 keV.

‡ From the Adopted Levels.

ε,$β^{+}$ radiations

E(decay)	E(level)	Iε†	Log *ft*	I(ε+$β^{+}$)†	Comments
(624.8 *12*)	1705.80	91.4 *2*	4.94 *1*	91.4 *2*	εK=0.7910; εL=0.15817 *19*; εM+=0.05082 *7* Iε: from 1996Ga30. Other: 94.4 *8* (1964Ha06).

† Absolute intensity per 100 decays.

^{190}Ir ε decay (3.087 h) 1964Ha06 (continued)

γ(^{190}Os)

Quoted values of conversion-line intensities from 1960Ha06 under comments (including those given in sub-shell ratios) are normalized to 100 for 502.6γ ce(K) line. A 15% uncertainty has been assigned according to a general statement in 1964Ha06.

E_γ [†]	I_γ [‡ a]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	α [b]	$I_{(\gamma+ce)}$ [a]	Comments
38.9 *1*	0.081 *3*	1705.80	(10)$^-$	1666.90	8$^+$	M2+E3	0.10 *2*	1.23×10^3 *11*	100	α(L)=9.1×10^2 *8*; α(M)=247 *23* α(N)=61 *6*; α(O)=9.8 *8*; α(P)=0.452 *7* L12/L3=1.9 *4*; M/L=0.36 *4*; N/L=0.11 *3* (1958Sc30) L1:L2:L3:M=1200 *180*:270 *41*:750 *113*:750 *113* (1964Ha06) E_γ: transition seen in ce data only (1964Ha06). Uncertainty estimated by evaluators. δ: deduced from L1:L2:L3:M in 1964Ha06 by evaluators using the BrIccMixing code. 1964Ha06 give mult=M2.
[x]116.7[&] *1* 186.7	70.2	186.7	2$^+$	0.0	0$^+$	E2		0.420	100	I(ce(K))=95 *14* (1964Ha06). α(K)=0.203 *3*; α(L)=0.1642 *23*; α(M)=0.0415 *6* α(N)=0.00997 *14*; α(O)=0.001503 *21*; α(P)=1.88×10^{-5} *3* K:L2:L3:M=875 *131*:375 *56*:275 *41*:220 *33* (1964Ha06)
[x]206.6[&] *1* 361.2	94.9	547.90	4$^+$	186.7	2$^+$	E2		0.0535	100	I(ce(K))=35 *5* (1964Ha06). α(K)=0.0370 *6*; α(L)=0.01254 *18*; α(M)=0.00307 *5* α(N)=0.000741 *11*; α(O)=0.0001168 *17*; α(P)=3.81×10^{-6} *6* K:L2:L3=215 *32*:50 *8*:15 *2* (1964Ha06)
502.5 *1*	97.79 *4*	1050.40	6$^+$	547.90	4$^+$	E2		0.0225	100	α(K)=0.01693 *24*; α(L)=0.00426 *6*; α(M)=0.001023 *15* α(N)=0.000248 *4*; α(O)=4.01×10^{-5} *6*; α(P)=1.80×10^{-6} *3* K:L1=100:23 *4* (1964Ha06) ce(L) line partially resolved (1964Ha06).
616.5	98.6	1666.90	8$^+$	1050.40	6$^+$	E2		0.01386	100	α(K)=0.01079 *16*; α(L)=0.00236 *4*; α(M)=0.000558 *8* α(N)=0.0001354 *19*; α(O)=2.22×10^{-5} *4*; α(P)=1.155×10^{-6} *17* K:L1=62 *9*:13 *2* (1964Ha06) ce(L) line partially resolved (1964Ha06).
[x]920[@ c]										
[x]1090[@ c]										

[†] From energies of conversion electrons in 1964Ha06. Estimated ΔEγ=0.1 keV (evaluator).
[‡] 100/(1+α).

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$\gamma(^{190}Os)$ (continued)

From ce data in 1964Ha06, recommended in the Adopted Gammas.
@ Weak γ reported by 1955At32 only.
& Composite line in ce data (1964Ha06).
a For absolute intensity per 100 decays, multiply by 0.914 2.
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.

$^{190}_{76}Os_{114}$-3

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Decay Scheme

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