^{196}Ir β^- decay (1.40 h) 1968Ja06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong	NDS 108, 1093 (2007)	1-Jan-2006

Parent: ^{196}Ir: E=4.1×10^2 *11*; J$^\pi$=(10,11$^-$); T$_{1/2}$=1.40 h *2*; Q(β^-)=3209 *38*; %β^- decay=100.0
^{196}Ir-%β^- decay: IT decay<0.3% from absence of 779-keV γ present in decay of 52-s ^{196}Ir.
Also 1965Bi04, 1967JaZZ.
1968Ja06,1970To14: source prepared by ^{198}Pt(d,α) and ^{196}Pt(n,p), enriched, chem, γ, ce; semi.

^{196}Pt Levels

E(level)†	J$^\pi$‡	T$_{1/2}$#	Comments
0.0	0$^+$	stable	
355.90 *20*	2$^+$		
877.2 *3*	4$^+$		
1270.7 *3*	5$^-$	1.1 ns *2*	J$^\pi$: supported by E1 deexcitation to 877 level. J$^\pi$: also log *ft* from ^{196}Au ε decay. T$_{1/2}$: from delayed coin (1970To14); see also 1968Ja06.
1374.0 *4*	7$^-$	4.01 ns *16*	J$^\pi$: based upon E2 deexcitation to 5$^-$ level. T$_{1/2}$: from delayed coin (1970To14); see also 1968Ja06.
1430.1? *4*	(5,6$^+$)		J$^\pi$: γ's from 2455 to 7$^-$ and 9$^-$, from 1430 to 4$^+$, and a connecting 2455 to 1430 γ give J$^\pi$(2455)=7$^-$ or 8, and J$^\pi$(1430)=5 or 6$^+$.
1821.1 *4*	9$^-$	<1 ns	J$^\pi$: based upon E2 deexcitation to 7$^-$ level. T$_{1/2}$: from $\gamma\gamma$(t) (1968Ja06).
2161.9? *5*	(9$^-$,10,11$^-$)		J$^\pi$: γ's to 9$^-$, γ's from (9$^-$,10,11$^-$).
2454.6 *4*	7$^-$,8		J$^\pi$: see 1430 level.
2468.4 *4*	10$^-$,11$^-$	<1 ns	J$^\pi$: based upon E2 deexcitation to 9$^-$ level, and log *ft*=6.05, no γ's to J$^\pi$<9. T$_{1/2}$: from $\beta\gamma$(t) measurements (1968Ja06).
2889.3? *5*	(9$^-$,10,11$^-$)		J$^\pi$: γ's to 11$^-$ and 9$^-$, log *ft*=6.5 from (10,11$^-$).
3162.4 *5*	(9$^-$,10,11$^-$)		J$^\pi$: γ's to 11$^-$ and 9$^-$, log *ft*=5.9 from (10,11$^-$).
3176.8? *5*	(9$^-$)		J$^\pi$: γ's to 7$^-$ and 9$^-$, log *ft*=6.7 from (10,11$^-$).
3215.2? *5*	(9$^-$)		J$^\pi$: γ's to 7$^-$ and 9$^-$, log *ft*=6.5 from (10,11$^-$).
3304.0 *4*	(10,11$^-$)		J$^\pi$: γ's to 11$^-$ and 9$^-$, log *ft*=5.1 from (10,11$^-$).

† From least-squares fit to Eγ's.
‡ From the Adopted Levels. Contributing arguments from this data set are given as comments.
# From the Adopted Levels, except as noted.

β^- radiations

Evaluation of transition balance at each level gives no evidence of β^- feeding below the 2468 level.

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(3.2×10^2 *12*)	3304.0	9.1 *4*	5.1 *7*	av Eβ=89 *38*
(4.0×10^2 *12*)	3215.2?	0.82 *6*	6.5 *5*	av Eβ=117 *39*
(4.4×10^2 *12*)	3176.8?	0.70 *8*	6.7 *5*	av Eβ=130 *40*
(4.6×10^2 *12*)	3162.4	4.5 *4*	5.9 *5*	av Eβ=134 *40*
(7.3×10^2 *12*)	2889.3?	5.2 *2*	6.5 *3*	av Eβ=230 *43*
1.16×10^3 *10*	2468.4	80 *4*	6.03 *17*	av Eβ=390 *47*

† Absolute intensity per 100 decays.

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γ(^{196}Pt)

Iγ normalization: Based upon I(γ+ce)=100 for the 356-keV transition.

E_γ	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[a]	Comments
103.3 *2*	19.2 *22*	1374.0	7^-	1270.7	5^-	E2	4.28 *7*	α(K)=0.685 *10*; α(L)=2.70 *5*; α(M)=0.699 *12*; α(N+..)=0.197 *4* Mult.: supported by α(L)exp=2.8 *5*, L/M+=3.9 *5*; Iγ: Required for intensity balance at 1271 and 1374 level. Measured Iγ: 17 *2* (1968Ja06).
^{x}333.0[@]	<0.25							
340.7[#] *4*	1.6 *2*	2161.9?	(9^-,10,11^-)	1821.1	9^-			
355.9 *2*	98 *3*	355.90	2^+	0.0	0^+	E2	0.0602	α(K)=0.0402 *6*; α(L)=0.01516 *22*; α(M)=0.00376 *6*; α(N+..)=0.001079 *16* Mult.: supported by K/L=2.1 *1*, L/M+=2.9 *7*. Mult.: see also ^{196}Au ε decay and ^{196}Pt Coulomb excitation.
393.5 *2*	101 *2*	1270.7	5^-	877.2	4^+	E1	0.01394	α(K)=0.01158 *17*; α(L)=0.00182 *3*; α(M)=0.000418 *6*; α(N+..)=0.0001219 *18* Mult.: supported by α(K)exp=0.012 *2*, K/L=5.3 *2*.
420.9[#] *3*	2.6 *1*	2889.3?	(9^-,10,11^-)	2468.4	10^-,11^-			
447.1 *2*	98 *2*	1821.1	9^-	1374.0	7^-	E2	0.0327	α(K)=0.0235 *4*; α(L)=0.00702 *10*; α(M)=0.001717 *25*; α(N+..)=0.000495 *7* Mult.: supported by α(K)exp=0.019 *1*, K/L=2.8 *6*;
521.4 *2*	100	877.2	4^+	355.90	2^+	E2	0.0224	α(K)=0.01666 *24*; α(L)=0.00435 *7*; α(M)=0.001054 *15*; α(N+..)=0.000305 *5* Mult.: supported by α(K)exp=0.019 *2*, K/L=3.8, L/(M+)=2.7 *15*;
553.0[#] *3*	0.66 *4*	1430.1?	(5,6^+)	877.2	4^+			
^{x}566.4 *4*	0.3 *1*							
^{x}615.9 *4*	0.44 *5*							
633.5 *3*	1.15 *5*	2454.6	7^-,8	1821.1	9^-			
647.3 *2*	95 *3*	2468.4	10^-,11^-	1821.1	9^-	E2	0.01357	α(K)=0.01050 *15*; α(L)=0.00235 *4*; α(M)=0.000561 *8*; α(N+..)=0.0001628 *23* Mult.: supported by α(K)exp=0.0120 *15*, K/L=3.7 *9*.
^{x}659.5[@]	<0.08							
^{x}673.9 *2*	0.18 *4*							
693.9 *2*	4.4 *3*	3162.4	(9^-,10,11^-)	2468.4	10^-,11^-			
722.0[#] *4*	0.67 *7*	3176.8?	(9^-)	2454.6	7^-,8			
727.3[#] *2*	2.7 *1*	2889.3?	(9^-,10,11^-)	2161.9?	(9^-,10,11^-)			
760.6[#] *3*	0.78 *5*	3215.2?	(9^-)	2454.6	7^-,8			
^{x}779.4[@]	<0.04							
835.6 *2*	6.6 *2*	3304.0	(10,11^-)	2468.4	10^-,11^-			
849.4 *3*	0.53 *5*	3304.0	(10,11^-)	2454.6	7^-,8			

Continued on next page (footnotes at end of table)

^{196}Ir β^- decay (1.40 h) 1968Ja06 (continued)

$\gamma(^{196}Pt)$ (continued)

E_γ	I_γ [‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[a]	Comments
[x]868.1 *3*	0.48 *4*							
[x]887.0 *5*	0.11 *2*							
[x]893.0 *5*	0.20 *2*							
[x]904.6 *5*	0.10 *2*							
914.6[#] *3*	0.30 *5*	1270.7	5⁻	355.90	2⁺	[E3]	0.01533	α(K)=0.01145 *16*; α(L)=0.00295 *5*; α(M)=0.000716 *10*; α(N+..)=0.000209 *3* α: E3 α(theory)'s mult. By 0.975 *10* (Cf. 1990Ne01).
[x]926.0 *5*	0.07 *2*							
1024.6[#] *3*	0.26 *3*	2454.6	7⁻,8	1430.1?	(5,6⁺)			
1068[#] *2*	0.074 *18*	2889.3?	(9⁻,10,11⁻)	1821.1	9⁻			
1080.5 *5*	0.12 *2*	2454.6	7⁻,8	1374.0	7⁻			
[x]1091.5[@]	<0.05							
[x]1116.7 *8*	0.073 *22*							
[x]1281.6 *5*	0.061 *24*							
1341.5 *5*	0.29 *3*	3162.4	(9⁻,10,11⁻)	1821.1	9⁻			
1355.8[#] *5*	0.06 *1*	3176.8?	(9⁻)	1821.1	9⁻			
1394.0[#] *5*	0.074 *15*	3215.2?	(9⁻)	1821.1	9⁻			
1482.5 *4*	2.4 *2*	3304.0	(10,11⁻)	1821.1	9⁻			

[†] From the adopted gammas.
[‡] γ intensitys normalized to Iγ(521)=100 (1968Ja06).
[#] Placement based primarily on energy sum.
[@] Unobserved in spectrum; limit placed on Iγ.
[&] For absolute intensity per 100 decays, multiply by 0.96 *3*.
[a] 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