^{196}Os β^- decay (34.9 min) 1977Ha32

History

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

Parent: ^{196}Os: E=0.0; $J^\pi=0^+$; $T_{1/2}$=34.9 min *2*; Q(β^-)=1158 *56*; %β^- decay=100.0

Source prepared by ^{198}Pt(N,n2pγ) E=25-160 MeV; enriched target; chem; measured Eγ, Iγ (Ge(Li), Si(Li)), Eβ, Iβ (scin), $\beta\gamma$ coin; identification of ^{196}Os by observations of known daughter transitions and Kα x ray of ^{196}Ir.

The decay scheme of 1977Ha32 should be considered as very tentative. This is based primarily on the observed singles γ-spectrum decaying with the 34.9-min half-life of ^{196}Os and the secular equilibrium of γ's from the 52-s ^{196}Ir daughter. The gammas were placed without γ-γ coincidence measurement information, based only on energy sums and systematics. See 1977Ha32 in detail.

The authors' Q value of 843 keV *50*, based on $\beta\gamma$ coin with the 408γ, compared with the newly evaluated value of 1158 keV *56* (2003Au03), suggests a problem with the decay scheme. Because of this discrepancy and the lack of mult information (upper limits on α(K)exp only), the evaluators have just adopted the partial decay scheme proposed by 1977Ha32.

^{196}Ir Levels

E(level)[†]	J$^\pi$	$T_{1/2}$[‡]	Comments
0.0	(0$^-$)	52 s *1*	J$^\pi$: From ^{196}Ir Adopted Levels. Proposed configuration π(1/2+(400)) + ν(1/2−(510)), Nilsson orbitals (1977Ha32).
126.20 *20*	(1$^-$)		J$^\pi$: log *ft*≤6.6 from 0$^+$. E(level): no independent corroboration for placement of level.
207.04 *16*	(1$^-$)		J$^\pi$: J^π=(1$^-$) are expected from systematics of odd-odd Ir isotopes.
407.88 *18*	(0,1)$^+$		J$^\pi$: log *ft*≤6.1 from 0$^+$.
522.37 *20*	(0,1)$^+$		J$^\pi$: log *ft*≤6.1 from 0$^+$.

[†] From least-squares fit to Eγ's.
[‡] From ^{196}Ir Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(6.4×10^2 *6*)	522.37	≥3.3	≤6.1	av Eβ=196 *20*
(7.5×10^2 *6*)	407.88	≥6.5	≤6.1	av Eβ=237 *21*
(1.03×10^3 *6*)	126.20	≥5.3	≤6.6	av Eβ=344 *22*
(1.16×10^3 *6*)	0.0	<85	>5.6	av Eβ=393 *23* Iβ^-: Derived the upper limit from transition abundances to the ground state as measured by γ-ray intensities without correction for internal conversion.

[†] From photon intensity imbalance.
[‡] Absolute intensity per 100 decays.

γ(^{196}Ir)

E$_\gamma$[†]	I$_\gamma$[†‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
126.2 *2*	5.3 *3*	126.20	(1$^-$)	0.0	(0$^-$)
200.8 *3*	0.56 *5*	407.88	(0,1)$^+$	207.04	(1$^-$)
207.1 *2*	2.4 *1*	207.04	(1$^-$)	0.0	(0$^-$)
[x]257.8 *2*	2.3 *1*				
[x]308.0 *4*	0.43 *8*				
315.4 *2*	2.5 *1*	522.37	(0,1)$^+$	207.04	(1$^-$)
407.9 *2*	5.9 *2*	407.88	(0,1)$^+$	0.0	(0$^-$)

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^{196}Os β^- decay (34.9 min) 1977Ha32 (continued)

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

E_γ [†]	I_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π
522.2 *3*	0.78 *10*	522.37	$(0,1)^+$	0.0	(0^-)
[x]586.2 *2*	0.59 *13*				
[x]629.1 *4*	1.6 *1*				

[†] Values from 1977Ha32.
[‡] Absolute intensity per 100 decays.
[x] γ ray not placed in level scheme.

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Decay Scheme

Intensities: I_γ per 100 parent decays