^{191}Hg $\varepsilon+\beta^+$ decay (49 min) 1974Va19,1975Zg01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

Parent: ^{191}Hg: E=0.0; $J^\pi=3/2^{(-)}$; $T_{1/2}$=49 min *10*; Q(ε)=3206 *23*; %ε+%β^+ decay=100

Others: 1973ViZJ, 1974DiZQ, 1975ViZK, 1976ViZM (same research group of 1974Va19), 1976KeZO (same research group of 1975Zg01), 1971Be61, 1978LeZA, 1989GiZY.

1974Va19: Source was produced by spallation of lead with 660-MeV protons and separation from ^{191}Tl. Measured Eγ, Iγ. Reported Iγ from two sources. Higher population of low spin ^{191}Hg g.s. was identified from their Iγ(196.3,224.7) compared to the data in 1971Be61. Measured ^{191}Hg ($3/2^-$) half-life.

1975Zg01: Source was produced primarily through the decay of ^{191}Tl, which was obtained via the ^{181}Ta(^{16}O,6n) reaction. Measured Eγ, conversion electrons, $\gamma\gamma$-coin, $\gamma\gamma$(t). Detectors: Ge(Li), Si(Li). Presented level scheme, no numerical Eγ data are listed.

^{191}Hg(≈49−min) activity assigned to g.s. from systematics.

^{191}Au Levels

Level scheme is tentative.

E(level)†	J^π‡	$T_{1/2}$‡
0.0	$3/2^+$	3.18 h *8*
11.5 *3*	$(1/2^+)$	15.5 ns *15*
207.8 *4*	$(3/2^+)$	
252.36 *19*	$(5/2)^+$	
266.1 *7*	$(11/2^-)$	0.92 s *11*
331.4? *5*	$(5/2^+)$	
490.8 *7*	$(7/2^-)$	
1066?	$(3/2^-)$	

† From least-squares fit to gamma-ray energies.
‡ From Adopted Levels.

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$\gamma(^{191}Au)$

E_γ[‡]	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ[&]	α[†]	Comments
11.2 *6*		11.5	$(1/2^+)$	0.0	$3/2^+$	[M1,E2]		2.6×10^4 *27*	α(M)=2.0×10^4 *21* α(N)=5×10^3 *5*; α(O)=8×10^2 *8*; α(P)=0.74 *34* E_γ: from E(252.6γ)-E(241.4γ).
13.7 *6*		266.1	$(11/2^-)$	252.36	$(5/2)^+$	(E3)		1.2×10^7 *4*	α(L)=5.6×10^6 *17*; α(M)=4.5×10^6 *15* α(N)=1.2×10^6 *4*; α(O)=1.7×10^5 *6*; α(P)=51 *13* E_γ: from the decay of ^{191}Hg (50.8 min) (1971Be61).
196.3 *2*	36 *4*	207.8	$(3/2^+)$	11.5	$(1/2^+)$	M1		1.070 *15*	α(K)=0.880 *13*; α(L)=0.1464 *21*; α(M)=0.0340 *5* α(N)=0.00846 *12*; α(O)=0.001556 *22*; α(P)=0.0001052 *15*
224.7 *2*	33 *4*	490.8	$(7/2^-)$	266.1	$(11/2^-)$	E2		0.253 *4*	α(K)=0.1272 *18*; α(L)=0.0948 *14*; α(M)=0.02424 *35* α(N)=0.00598 *9*; α(O)=0.000982 *14*; α(P)=1.313×10^{-5} *19*
240.8 *2*	24 *5*	252.36	$(5/2)^+$	11.5	$(1/2^+)$	E2		0.2021 *29*	α(K)=0.1070 *15*; α(L)=0.0716 *10*; α(M)=0.01825 *26* α(N)=0.00450 *6*; α(O)=0.000742 *11*; α(P)=1.113×10^{-5} *16*
252.4 *2*	55 *15*	252.36	$(5/2)^+$	0.0	$3/2^+$	M1+E2	0.89 *20*	0.37 *7*	α(K)=0.28 *6*; α(L)=0.0667 *26*; α(M)=0.0160 *4* α(N)=0.00398 *10*; α(O)=0.000702 *30*; α(P)=3.3×10^{-5} *8* Branching Iγ(241γ)/Iγ(252γ) not consistent with values from IT decay and ^{191}Hg(50.8-min) ε decay, or with those from source I.
331.4[a] *5*	21 *3*	331.4?	$(5/2)^+$	0.0	$3/2^+$	D			Mult.,δ: In 1989GiZY D(+Q) and 0.007 *26* based on $\gamma(\theta)$ measurements.
[x]521.4 *6*	4.7 *20*								
575[#a]		1066?	$(3/2^-)$	490.8	$(7/2^-)$				
[x]778 *1*	3.4 *17*								

† Additional information 1.
‡ From 1974Va19, except where otherwise noted.
# From 1975Zg01 (in Fig. 2) only. Eγ from level energy difference.
@ From 1974Va19. Source contains ^{191}Hg (50.8 min) and ^{191}Hg (≈49 min). Iγ data from two mass-separated sources are given by authors. Values presented here are from source 2. Iγ contributions from ^{191}Hg (50.8 min) have been removed by evaluator assuming the 578.7-keV γ to be from the decay of ^{191}Hg (50.8 min). See also 1978LeZA.
& From Adopted Gammas.
a Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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Decay Scheme

Intensities: Relative I_γ