^{197}Hg ε decay (64.14 h) 1992Da14,1994Da29

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong, Zhou Chunmei	NDS 104, 283 (2005)	1-Jan-2002

Parent: ^{197}Hg: E=0.0; $J^\pi=1/2^-$; $T_{1/2}$=64.14 h *5*; Q(ε)=600 *3*; %ε decay=100.0

Sources produced by ^{197}Au(p,n) (1963Ti02,1972Wi21) and ^{197}Au(d,2n) (1943Fr01,1941Sh08).

1992Da14: measured K-electron capture probability Pk(268.7 level)=0.746 *33* and Pk(77.3 level)=0.774 *36*.

1994Da29: measured accurate K x-ray and γ-ray intensities in ε decay branching to different states of ^{197}Au. Branching to g.s. is found to be <2%.

^{197}Au Levels

For the calculated levels, using interacting boson-fermion model, see 1988Na03.

E(level)†	J^π‡	$T_{1/2}$‡	Comments
0.0	3/2$^+$	stable	
77.3510 *20*	1/2$^+$	1.91 ns *1*	$T_{1/2}$: others: 1.95 ns *5* (1967Ba27), 1.95 ns *6* (1968Ba29), 1.84 ns *2* (1972Gu03) from delayed coin.
268.714 *14*	3/2$^+$		Branching: Iγ(269γ)/Iγ(191γ)=0.062 *4* (1979He12), 0.078 *16* (1974HeYW), 0.07 *2* (1967Bu22), 0.076 *7* (1965Ha15), 0.067 *10* (1965He04). See also ^{197}Pt β^- decay and Coul. ex.

† From decay scheme and Eγ's, using least-squares fit to data.
‡ From Adopted Levels.

ε radiations

For the calculated log *ft* using interacting boson-fermion model, see 1988Na03.

E(decay)	E(level)	Iε†#	Log *ft*	Comments
(331 *3*)	268.714	≥1.43	≤7.5	εK=0.7355 *11*; εL=0.1973 *8*; εM+=0.0672 *3* Ek=0.746 *33* (1992Da14), εK/ε exp=0.54 *6* (1965De20).
(523 *3*)	77.3510	≥96.70	≤6.1	εK=0.7720 *4*; εL=0.17120 *24*; εM+=0.05683 *10* Ek=0.774 *36* (1992Da14).
(600 *3*)	0.0	≤1.87‡	≥8.0	εK=0.7790 *3*; εL=0.16611 *17*; εM+=0.05484 *7*

† From γ intensity imbalance, except for the g.s.
‡ From 1994Da29.
\# Absolute intensity per 100 decays.

γ(^{197}Au)

Iγ normalization: From sum I(γ+ce)(g.s.)+ε(g.s.)=100 and ε(g.s.)≤1.87%.

K x-ray Intensities (1995Da32)

Radiations	E,keV	Intensities a
Kα_1 x ray	68.8	100
Kα_2 x ray	67.0	59.21 41
Kβ_1 x ray	77.9	34.1 10
Kβ_2 x ray	80.2	9.77 11

a Relative intensity

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[‡]	Comments
77.351 *2*	100 *2*	77.3510	1/2+	0.0	3/2+	M1+E2	−0.35 *1*	4.24 *7*	α(L)= 3.21 *6*; α(M)= 0.780 *14*; α(N+..)= 0.244 *5* E_γ: Weighted average from 77.345 *8* (1963Ma08) cryst and 77.352 *2*(1974HeYW) semi. δ: from L-subshell ratio data (1959Va13,1972Pa40), sign from Mossbauer. L1:L2:L3=100:44 *4*:33 *2* (1959Va13), 100:44 *3*:35 *2* (1972Pa40). Others: 1953Mi22, 1955Jo22, 1961Ju05, 1970Pl05. M1:M2:M3=100:44 *4*:41 *4* (1972Pa40). Others: 1959Va13. α(L)exp=2.5 (1951Hu17), 2.5 *3* (1976Re13).
191.364 *15*	3.38 *11*	268.714	3/2+	77.3510	1/2+	M1+E2	0.14 *1*	1.175 *2*	α(K)= 0.9616 *22*; α(L)=0.16372 *7*; α(M)=0.03795 *3*; α(N+..)=0.01196 E_γ: from 1974HeYW. Other: 191.39 *5* (1972Wi21). I_γ: from 1979He12. Others: 3.7 *4* (1967Bu22), 2.69 *25* (1974HeYW), 2.9 *4* from (ce(K) 191γ)/(ce(L) 77γ)=1.6 *2*/185 (1961Ju05). δ: from (L1+L2)/L3=66 *5* (1970Sh10). K/L=5.87 *20* (1970Sh10), L1:L2:L3=100:9.5 *4*:2.7 *4* (1967Ba44). α(K)exp=0.90 *10* (1955Jo22). Others: 1960Fe03, 1965He04, 1967Ba44.
268.71 *3*	0.21 *1*	268.714	3/2+	0.0	3/2+	E2(+M1)	>3.4	0.158 *12*	α(K)=0.0821, α(L)=0.0470, α(M)=0.01187, α(N+..)=0.00370, α=0.1447 if mult=E2. α(K)=0.1061, α(L)=0.0483, α(M)=0.01209, α(N+..)=0.00377, α=0.1702 if mult=E2(+M1), δ=3.4. E_γ: from 1974HeYW. Other: 268.75 *5* (1972Wi21). I_γ: from 1979He12. Others: 0.26 *8* (1967Bu22), 0.21 *4* (1974HeYW). δ: from (L1+L2)/L3=2.8 *3* (1970Sh10).

[†] For absolute intensity per 100 decays, multiply by 0.187 *2*.

Continued on next page (footnotes at end of table)

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γ(^{197}Au) (continued)

‡ 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.

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Decay Scheme

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