^{205}Hg β^- decay 1971Hi01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 166, 1 (2020)	20-Apr-2020

Parent: ^{205}Hg: E=0.0; $J^\pi=1/2^-$; $T_{1/2}$=5.14 min *9*; Q(β^-)=1533 *4*; %β^- decay=100.0

1971Hi01: ^{205}Hg produced following neutron capture on natural Hg target at the Texas A & M reactor. Measured Eγ, Iγ with a single Ge(Li) detector and $\gamma\gamma$ coin. with a single Ge(Li) and NaI detectors.

Others: 1971Sh35.

^{205}Tl Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0	$1/2^+$		
203.65 *19*	$3/2^+$	1.46 ns *8*	$T_{1/2}$: From β-γ(Δt) in 1971Sh35.
619.3 *3*	$5/2^+$		
1140.6 *3*	$3/2^+$		
1218.6 *4*	$1/2^+$		
1340.3 *5*	$3/2^+$		
1434.0 *5*	$(1/2)^+$		

† From a least-squares fit to Eγ.

‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(99 *4*)	1434.0	0.005 *3*	5.6 *3*	av Eβ=25.8 *11*
(193 *4*)	1340.3	0.006 *3*	6.43 *22*	av Eβ=52.0 *12*
(314 *4*)	1218.6	0.007 *4*	7.03 *25*	av Eβ=88.4 *13*
(392 *4*)	1140.6	0.0035 *17*	7.65 *22*	av Eβ=113.0 *13*
(914 *4*)	619.3	0.014 *7*	8.73[1u] *22*	av Eβ=297.2 *15*
(1329 *4*)	203.65	3.2 *15*	6.51 *21*	av Eβ=458.0 *16* Iβ^-: 3.7% 15 from 1971Hi01 based on α(203.7γ)=0.62; but Iβ^-=3.2% 15 if α(203.7γ)=0.46.
(1533 *4*)	0.0	96.8 *15*	5.257 *11*	av Eβ=540.4 *17*

† Absolute intensity per 100 decays.

γ(^{205}Tl)

Iγ normalization: From the decay scheme and Iβ^-=3.2% 15 to the 203.7-keV level, based on Iβ^-=3.7% 15 from 1971Hi01 and α(203.7γ)=0.46 (adopted gammas). Note that α(203.7γ)=0.62 was used in 1971Hi01.

E$_\gamma$†	I$_\gamma$†@	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.‡	δ‡	α#	Comments
203.70 *20*	100	203.65	$3/2^+$	0.0	$1/2^+$	M1+E2	+1.18 *19*	0.46 *4*	%Iγ=2.2 *10* α(K)exp=0.29 *4*; α(L)exp=0.132 *6*; α(M+...)exp=0.040 *3* α(K)=0.49 *7*; α(L)=0.1630 *25*; α(M)=0.0406 *8* α(N)=0.01020 *20*; α(O)=0.00186 *3*; α(P)=0.000118 *9* α: From adopted gammas.

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^{205}Hg β^- decay 1971Hi01 (continued)

$\gamma(^{205}Tl)$ (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[#]	Comments
415.6 *3*	0.59 *8*	619.3	$5/2^+$	203.65	$3/2^+$	M1+E2	−0.069 *11*	0.1621	%Iγ=0.013 *6* α(K)=0.1330 *19*; α(L)=0.0223 *4*; α(M)=0.00520 *8* α(N)=0.001312 *19*; α(O)=0.000255 *4*; α(P)=2.41×10^{-5} *4*
521.30 *5*	0.032 *8*	1140.6	$3/2^+$	619.3	$5/2^+$	M1+E2	>2.2	0.031 *6*	%Iγ=0.0007 *4* α(K)=0.023 *5*; α(L)=0.0059 *6*; α(M)=0.00144 *14* α(N)=0.00036 *4*; α(O)=6.8×10^{-5} *7*; α(P)=5.0×10^{-6} *8* I_γ: From I(γ(521.3γ)/Iγ(937.2γ) in adopted gammas.
618.6 *7*	0.045 *7*	619.3	$5/2^+$	0.0	$1/2^+$	E2		0.01717	%Iγ=0.0010 *5* α(K)=0.01290 *19*; α(L)=0.00324 *5*; α(M)=0.000790 *12* α(N)=0.000199 *3*; α(O)=3.69×10^{-5} *6*; α(P)=2.73×10^{-6} *4* I_γ: From I(γ(618.6γ)/Iγ(415.6γ) in adopted gammas. Iγ=0.090 *20* in 1971Hi01.
720.8 *8*	0.051 *15*	1340.3	$3/2^+$	619.3	$5/2^+$	[M1,E2]		0.0382	%Iγ=0.0011 *6* α(K)=0.0315 *5*; α(L)=0.00518 *8*; α(M)=0.001205 *18* α(N)=0.000304 *5*; α(O)=5.91×10^{-5} *9*; α(P)=5.62×10^{-6} *8*
937.2 *6*	0.093 *20*	1140.6	$3/2^+$	203.65	$3/2^+$	M1+E2	>4	0.0076 *4*	%Iγ=0.0020 *10* α(K)=0.0060 *4*; α(L)=0.00117 *5*; α(M)=0.000277 *11* α(N)=7.0×10^{-5} *3*; α(O)=1.33×10^{-5} *6*; α(P)=1.12×10^{-6} *6*
1014.7 *8*	0.031 *10*	1218.6	$1/2^+$	203.65	$3/2^+$	[M1,E2]		0.01586	%Iγ=0.0007 *4* α(K)=0.01308 *19*; α(L)=0.00213 *3*; α(M)=0.000495 *7* α(N)=0.0001249 *18*; α(O)=2.43×10^{-5} *4*; α(P)=2.31×10^{-6} *4*
1136.8 *6*	0.21 *5*	1340.3	$3/2^+$	203.65	$3/2^+$	M1+E2	>0.5	0.008 *3*	%Iγ=0.0046 *24* α(K)=0.0063 *24*; α(L)=0.0011 *4*; α(M)=0.00025 *8* α(N)=6.3×10^{-5} *20*; α(O)=1.2×10^{-5} *4*; α(P)=1.1×10^{-6} *4*; α(IPF)=8.7×10^{-7} *21*
1141.1 *15*	0.032 *8*	1140.6	$3/2^+$	0.0	$1/2^+$	M1(+E2)	−0.25 *24*	0.0114 *10*	%Iγ=0.0007 *4* α(K)=0.0094 *8*; α(L)=0.00153 *12*; α(M)=0.00035 *3* α(N)=8.9×10^{-5} *7*; α(O)=1.74×10^{-5} *14*; α(P)=1.65×10^{-6} *14*; α(IPF)=1.33×10^{-6} *11*

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^{205}Hg β^- decay 1971Hi01 (continued)

$\gamma(^{205}Tl)$ (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[#]	Comments
1218.7 *4*	0.28 *5*	1218.6	$1/2^+$	0.0	$1/2^+$	[M1]	0.00996	I_γ: From I(γ(1141.1γ)/Iγ(937.2γ) in adopted gammas. Iγ=0.045 *20* in 1971Hi01. %Iγ=0.0062 *30* α(K)=0.00821 *12*; α(L)=0.001330 *19*; α(M)=0.000309 *5* α(N)=7.79×10^{-5} *11*; α(O)=1.517×10^{-5} *22*; α(P)=1.446×10^{-6} *21*; α(IPF)=9.79×10^{-6} *16*
1230.8 *10*	0.023 *10*	1434.0	$(1/2)^+$	203.65	$3/2^+$	[M1,E2]	0.00971	%Iγ=0.00051 *32* α(K)=0.00801 *12*; α(L)=0.001297 *19*; α(M)=0.000301 *5* α(N)=7.60×10^{-5} *11*; α(O)=1.479×10^{-5} *21*; α(P)=1.410×10^{-6} *20*; α(IPF)=1.192×10^{-5} *25*
1340.3 *8*	0.015 *5*	1340.3	$3/2^+$	0.0	$1/2^+$	[M1,E2]	0.00785	%Iγ=0.00033 *19* α(K)=0.00645 *9*; α(L)=0.001043 *15*; α(M)=0.000242 *4* α(N)=6.11×10^{-5} *9*; α(O)=1.188×10^{-5} *17*; α(P)=1.134×10^{-6} *16*; α(IPF)=3.89×10^{-5} *6*
1433.9 *5*	0.20 *5*	1434.0	$(1/2)^+$	0.0	$1/2^+$	[M1]	0.00666	%Iγ=0.0044 *23* α(K)=0.00544 *8*; α(L)=0.000877 *13*; α(M)=0.000204 *3* α(N)=5.14×10^{-5} *8*; α(O)=1.000×10^{-5} *14*; α(P)=9.54×10^{-7} *14*; α(IPF)=7.58×10^{-5} *11*

† From 1971Hi01, unless otherwise stated.
‡ From adopted gammas, unless otherwise specified.
# Additional information 1.
@ For absolute intensity per 100 decays, multiply by 0.022 *10*.

^{205}Hg β^- decay 1971Hi01

Decay Scheme

Intensities: I_γ per 100 parent decays