^{110}Ag β^- decay (24.56 s) 1972Ka34

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal and F. G. Kondev	NDS 113, 1315 (2012)	1-Aug-2011

Parent: ^{110}Ag: E=0.0; $J^\pi=1^+$; $T_{1/2}$=24.56 s *11*; Q(β^-)=2892.9 *15*; %β^- decay=99.70 *3*

1972Ka34: Enriched ^{109}Ag target in a metallic powder form was was irradiated by neutrons at Kyoto University reactor. γ-rays were detected using Ge(Li) and NaI(Tl) detectors. Measured: Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma(\theta)$. Deduced: Energy levels, J^π, δ.

Others: 1981Ma09, 1972Ok04, 1970Va08, 1967Mo12, 1965Fr01, 1963Da03, 1963Fr07, 1962Ka07.

^{110}Cd Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	0^+	stable	
657.51 *7*	2^+		
1473.07 *11*	0^+		J^π: $\gamma\gamma(\theta)$ only consistent with J=0, if J(657 keV level)=2 (1972Ka34).
1475.78 *9*	2^+		
1731.41 *11*	0^+		
1783.33 *11*	2^+		J^π: $\gamma\gamma(\theta)$ only consistent with J=2, if J(657 keV level)=2 (1972Ka34).
2078.60 *12*	0^+		J^π: $\gamma\gamma(\theta)$ only consistent with J=0, if J(657 keV level)=2 (1972Ka34).
2078.81 *9*	3^-		
2287.42 *16*	2^+		
2331.79 *13*	(2^+)		
2662.02 *12*	0^+		J^π: $\gamma\gamma(\theta)$ only consistent with J=0, if J(657 keV level)=2 (1972Ka34).

[†] From least-squares fit to Eγ's.
[‡] From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡#]	Log *ft*[†]	Comments
(230.9 *15*)	2662.02	0.0063 *8*	4.83 *6*	av Eβ=64.45 *47*
(561.1 *15*)	2331.79	0.0089 *7*	5.96 *4*	av Eβ=176.67 *56*
(605.5 *15*)	2287.42	0.0022 *5*	6.68 *10*	av Eβ=193.08 *57*
(814.1 *15*)	2078.81	0.0027 *5*	7.05 *8*	av Eβ=273.52 *60*
(814.3 *15*)	2078.60	0.0079 *15*	6.59 *9*	av Eβ=273.60 *60*
(1109.6 *15*)	1783.33	0.0107 *17*	6.95 *7*	av Eβ=394.39 *64*
(1161.5 *15*)	1731.41	0.0010 *5*	8.05 *22*	av Eβ=416.28 *64*
(1417.1 *15*)	1475.78	0.0108 *10*	7.35 *4*	av Eβ=526.25 *66*
(1419.8 *15*)	1473.07	0.0382 *23*	6.80 *3*	av Eβ=527.43 *66*
(2235.4 *15*)	657.51	4.45 *24*	5.524 *24*	av Eβ=894.22 *69* E(decay): Others: 2220 *40* (1967Mo12), 2220 (1963Da03), 2180 *6* (1962Ka07). Iβ^-: From 1963Fr07. Iβ(658 keV level)/Iβ(g.s.)=0.0465 *25* (1963Fr07), 0.071 *22* (1967Mo12), 0.21 (1963Da03) and 0.14 *5* (1962Ka07).
(2892.9 *15*)	0.0	95.18 *25*	4.6596 *25*	av Eβ=1199.36 *71* E(decay): Others: 2891 *4* (1967Mo12), 2860 (1963Da03), 2870 *1* (1962Ka07).

[†] From total intensity balances and the level scheme, unless otherwise stated.
[‡] For β^- intensity per 100 decays multiply by 1.0.
[#] For absolute intensity per 100 decays, multiply by 0.9970 *3*.

^{110}Ag β^- decay (24.56 s) 1972Ka34 (continued)

$\gamma(^{110}Cd)$

Iγ normalization: From relative Iγ and measured Iβ (657 keV level)= 4.45% 24 in 1963Fr07.

E_γ[‡]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ	α[†]	Comments
255.4 *3*	0.0023 *11*	1731.41	0^+	1475.78	2^+	E2		0.0556	α(K)=0.0467 *7*; α(L)=0.00719 *11*; α(M)=0.001397 *21*; α(N+..)=0.000251 *4* α(N)=0.000241 *4*; α(O)=9.98×10^{-6} *15* E_γ,I_γ,Mult.: From adopted gammas.
258.3[#] *1*		1731.41	0^+	1473.07	0^+	E0[#]			
295.30 *8*	0.17 *3*	2078.60	0^+	1783.33	2^+	E2		0.0342	α(K)=0.0290 *4*; α(L)=0.00426 *6*; α(M)=0.000826 *12*; α(N+..)=0.0001496 *21* α(N)=0.0001433 *21*; α(O)=6.29×10^{-6} *9* Mult.: A_2=0.259 *17*, A_4=0.753 *26*, 1783.6γ gated (0-2-0 spin sequence).
295.42 *18*	0.0019 *4*	2078.81	3^-	1783.33	2^+	(E1)		0.00805	α(K)=0.00702 *10*; α(L)=0.000836 *12*; α(M)=0.0001597 *23*; α(N+..)=2.98×10^{-5} *5* α(N)=2.83×10^{-5} *4*; α(O)=1.563×10^{-6} *22* I_γ,Mult.,δ: From adopted gammas.
310.4 *6*	0.0010 *5*	1783.33	2^+	1473.07	0^+	[E2]		0.0290	α(K)=0.0246 *4*; α(L)=0.00357 *6*; α(M)=0.000692 *11*; α(N+..)=0.0001257 *20* α(N)=0.0001203 *19*; α(O)=5.38×10^{-6} *9* E_γ,I_γ: From adopted gammas.
548.4 *2*	0.038 *6*	2331.79	(2^+)	1783.33	2^+	[M1]		0.00533	α(K)=0.00465 *7*; α(L)=0.000555 *8*; α(M)=0.0001063 *15*; α(N+..)=2.01×10^{-5} *3* α(N)=1.90×10^{-5} *3*; α(O)=1.116×10^{-6} *16* E_γ,I_γ: From adopted gammas.
603.03 *4*	0.0077 *16*	2078.81	3^-	1475.78	2^+	E1(+M2)	−0.14 *22*	0.0016 *11*	α(K)=0.0014 *10*; α(L)=0.00017 *12*; α(M)=3.2×10^{-5} *24*; α(N+..)=6.E−6 *5* α(N)=6.E−6 *5*; α(O)=3.2×10^{-7} *24* I_γ,Mult.,δ: From adopted gammas.
605.4[#] *3*		2078.60	0^+	1473.07	0^+	E0[#]			
657.50 *8*	100	657.51	2^+	0.0	0^+	E2		0.00314	α(K)=0.00272 *4*; α(L)=0.000342 *5*; α(M)=6.57×10^{-5} *10*; α(N+..)=1.225×10^{-5} *18* α(N)=1.163×10^{-5} *17*; α(O)=6.27×10^{-7} *9*
815.50 *11*	0.85 *2*	1473.07	0^+	657.51	2^+	E2		0.00183	α(K)=0.001591 *23*; α(L)=0.000195 *3*; α(M)=3.74×10^{-5} *6*; α(N+..)=7.01×10^{-6} *10* α(N)=6.64×10^{-6} *10*; α(O)=3.69×10^{-7} *6* Mult.: A_2=0.277 *30*, A_4=0.990 *50*, 657.51γ gated (0-2-0 spin sequence).
818.20 *12*	0.20 *1*	1475.78	2^+	657.51	2^+	M1+E2	−1.36 *6*	0.00191	α(K)=0.001665 *24*; α(L)=0.000201 *3*; α(M)=3.85×10^{-5} *6*; α(N+..)=7.25×10^{-6} *11* α(N)=6.86×10^{-6} *10*; α(O)=3.91×10^{-7} *6*

^{110}Ag β^- decay (24.56 s) 1972Ka34 (continued)

$\gamma(^{110}Cd)$ (continued)

E_γ[‡]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ	α[†]	Comments
									Mult.,δ: From adopted gammas. A_2=0.416 *41*, A_4=0.075 *50* (1979Ve03) and A_2=0.481 *82*, A_4=0.155 *112* (1970Kr03), 657.51γ gated.
1074.00 *12*	0.02 *1*	1731.41	0^+	657.51	2^+	E2		9.74×10^{-4}	α(K)=0.000849 *12*; α(L)=0.0001016 *15*; α(M)=1.95×10^{-5} *3*; α(N+..)=3.66×10^{-6} *6* α(N)=3.46×10^{-6} *5*; α(O)=1.98×10^{-7} *3*
1125.80 *11*	0.34 *1*	1783.33	2^+	657.51	2^+	M1+E2	+0.28 *4*	1.01×10^{-3}	Mult.: From adopted gammas. α(K)=0.000886 *13*; α(L)=0.0001037 *15*; α(M)=1.98×10^{-5} *3*; α(N+..)=4.78×10^{-6} *7* α(N)=3.55×10^{-6} *5*; α(O)=2.11×10^{-7} *3*; α(IPF)=1.023×10^{-6} *16* δ: From adopted gammas. δ=−0.06 *+7−12* (1972Ka34) from $\gamma\gamma(\theta)$ in ^{110}Ag β^- Decay (24.56 s).
1186.30 *12*	0.060 *13*	2662.02	0^+	1475.78	2^+	[E2]		7.92×10^{-4}	Mult.: A_2=0.21 *10*, A_4=−0.07 *14*, 657.51γ gated (2-2-0 spin sequence). α(K)=0.000687 *10*; α(L)=8.16×10^{-5} *12*; α(M)=1.561×10^{-5} *22*; α(N+..)=8.44×10^{-6} *12* α(N)=2.78×10^{-6} *4*; α(O)=1.603×10^{-7} *23*; α(IPF)=5.50×10^{-6} *8*
1421.40 *13*	0.05 *1*	2078.81	3^-	657.51	2^+	E1(+M2)	+0.01 *8*	4.32×10^{-4} *10*	α(K)=0.000226 *9*; α(L)=2.59×10^{-5} *10*; α(M)=4.94×10^{-6} *19*; α(N+..)=0.000176 *3* α(N)=8.8×10^{-7} *4*; α(O)=5.22×10^{-8} *20*; α(IPF)=0.000175 *3*
1473.1[#] *11*		1473.07	0^+	0.0	0^+	E0[#]			Mult.,δ: From adopted gammas.
1475.80 *13*	0.110 *6*	1475.78	2^+	0.0	0^+	E2		5.77×10^{-4}	α(K)=0.000440 *7*; α(L)=5.16×10^{-5} *8*; α(M)=9.87×10^{-6} *14*; α(N+..)=7.51×10^{-5} *11* α(N)=1.760×10^{-6} *25*; α(O)=1.029×10^{-7} *15*; α(IPF)=7.32×10^{-5} *11*
1629.90 *14*	0.05 *1*	2287.42	2^+	657.51	2^+	M1+E2	+0.06 *3*	5.86×10^{-4}	I_γ,Mult.: From adopted gammas. Iγ=0.08 *1* in ^{110}Ag β^- decay (24.56 s). α(K)=0.000407 *6*; α(L)=4.73×10^{-5} *7*; α(M)=9.03×10^{-6} *13*; α(N+..)=0.0001228 *18* α(N)=1.615×10^{-6} *23*; α(O)=9.66×10^{-8} *14*; α(IPF)=0.0001211 *17*
1674.30 *13*	0.160 *7*	2331.79	(2^+)	657.51	2^+	[M1]		5.79×10^{-4}	Mult.,δ: From adopted gammas. α(K)=0.000386 *6*; α(L)=4.47×10^{-5} *7*; α(M)=8.54×10^{-6} *12*; α(N+..)=0.0001401 *20* α(N)=1.528×10^{-6} *22*; α(O)=9.14×10^{-8} *13*; α(IPF)=0.0001385 *20*
1731.4[#] *11*		1731.41	0^+	0.0	0^+	E0[#]			
1783.6 *7*	0.113 *6*	1783.33	2^+	0.0	0^+	E2		5.49×10^{-4}	α(K)=0.000306 *5*; α(L)=3.56×10^{-5} *5*; α(M)=6.79×10^{-6} *10*; α(N+..)=0.000201 *3* α(N)=1.212×10^{-6} *17*; α(O)=7.15×10^{-8} *10*; α(IPF)=0.000200 *3* I_γ: From adopted gammas. Iγ=0.100 *14* in ^{110}Ag β^- decay (24.56 s).
2004.40 *15*	0.080 *8*	2662.02	0^+	657.51	2^+	E2		5.85×10^{-4}	α(K)=0.000246 *4*; α(L)=2.85×10^{-5} *4*; α(M)=5.44×10^{-6} *8*;

$^{110}_{48}Cd_{62}$-3

^{110}Ag β^- decay (24.56 s) 1972Ka34 (continued)

$\gamma(^{110}Cd)$ (continued)

E_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult. @	Comments
						α(N+..)=0.000305 *5* α(N)=9.72×10^{-7} *14*; α(O)=5.76×10^{-8} *8*; α(IPF)=0.000304 *5* Mult.: A_2=0.177 *28*, A_4=0.986 *47*, 657.51γ gated (0-2-0 spin sequence).
2078.4# *3*	2078.60	0$^+$	0.0	0$^+$	E0#	

† Additional information 1.
‡ From 1972Ka34, unless otherwise stated.
# From adopted gammas.
@ From $\gamma\gamma(\theta)$ in 1972Ka34 and the decay pattern, unless otherwise stated.
& For absolute intensity per 100 decays, multiply by 0.0450 *24*.

$^{110}_{48}Cd_{62}$-4

^{110}Ag β^- decay (24.56 s) 1972Ka34

Decay Scheme

Intensities: Relative I_γ