^{102}Cd ε decay 1991Ke08,1970Hn02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 1745 (2009)	31-Dec-2008

Parent: ^{102}Cd: E=0; $J^{\pi}=0^+$; $T_{1/2}$=5.5 min *5*; Q(ε)=2587 *8*; %ε+%β^+ decay=100.0

1991Ke08: source: mass separated spallation source produced at ISOLDE (CERN), also by fusion evaporation reactions using an on-line mass separator at GSI. Measured: Eβ, Iβ, Eγ, Iγ, Xγ and $\gamma\gamma$-coin, Ice, α. Deduced: ^{102}Ag levels J, π, Q(β^+).

1970Hn02: measured Eγ, Iγ, $\gamma\gamma$-coin, Ice, α; isotopically separated samples.

Others: 1966Bu05, 1969Ha03, 1970Hn03, 1976CoYX, 1977CoZT.

Absolute α(K) values were determined by simultaneously measuring ce and γ spectra (1970Hn02).

^{102}Ag Levels

E(level)†	J^{π}#	$T_{1/2}$‡	Comments
0	$5^{(+)}$	12.9 min *3*	
9.40 *7*	2^+	7.7 min *5*	E(level): the position of this level was deduced from γ-ray energy differences of γ-rays ordered according to $\gamma\gamma$-coincidence results (1991Ke08).
97.45 *5*	$4^{(+)}$		
125.54 *10*	$2^+,3^+$		
156.49 *6*	3^+		
369.98 *8*	2^+		
490.44 *11*	1^+		
540.59 *13*	$1^+,2^+,3^+$		
1045.59 *15*	1^+		
1368.6 *3*	1^+		
1449.0 *4*	1^+		
1727.2 *7*	(1^+)		
1965.4 *7*	1^+		

† From a least-squares procedure using measured gammas.
‡ From Adopted Levels.
\# From Adopted Levels.

ε,β^+ radiations

β-branches were deduced from total γ-ray transition intensities assuming no β-feeding either to the g.s. or to 9.3-keV isomer.

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(622 *8*)	1965.4		0.36 *2*	4.88 *3*	0.36 *2*	εK=0.8573; εL=0.1142; εM+=0.02846
(860 *8*)	1727.2		0.14 *5*	5.58 *16*	0.14 *5*	εK=0.8598; εL=0.1123; εM+=0.02789
(1138 *8*)	1449.0		0.57 *8*	5.22 *7*	0.57 *8*	εK=0.8614; εL=0.1111; εM+=0.02754
(1218 *8*)	1368.6	0.0021 *4*	6.3 *6*	4.24 *5*	6.3 *6*	av Eβ=95 *4*; εK=0.8614; εL=0.1108; εM+=0.02746
(1541 *8*)	1045.59	0.44 *3*	25.3 *8*	3.841 *18*	25.7 *8*	av Eβ=236 *4*; εK=0.8478; εL=0.10821 *13*; εM+=0.02679 *4*
(2046‡ *8*)	540.59	0.21 *13*	1.1 *7*	>5.5	<1.3	av Eβ=456 *4*; εK=0.721 *4*; εL=0.0914 *4*; εM+=0.02260 *11*
(2097 *8*)	490.44	12.1 *4*	51.8 *15*	3.799 *17*	63.9 *18*	av Eβ=478 *4*; εK=0.701 *4*; εL=0.0888 *5*; εM+=0.02195 *11*

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

^{102}Cd ε decay 1991Ke08,1970Hn02 (continued)

γ(^{102}Ag)

Normalization from sum of I(γ+ce) to g.s. + 9.3 level=100.
α(K)exp, α(L)exp from (1991Ke08), K:(L+M) from (1970Hn02).

E_{γ}[†]	I_{γ}[†@]	E_i(level)	J_i^{π}	E_f	J_f^{π}	Mult.[#]	α[‡]	Comments
(9.40 8)		9.40	2^+	0	$5^{(+)}$	(M3)	1.2×10^7 5	
28[&]	<0.06	125.54	$2^+,3^+$	97.45	$4^{(+)}$			I_{γ}: from γγ data.
59.05 5	2.4 1	156.49	3^+	97.45	$4^{(+)}$	M1	1.89	α(K)= 1.642; α(L)= 0.2057; α(M)= 0.0392; α(N+..)=0.00677 α(K)exp=1.5 2 K/(L+M)=6.2 8
97.46 5	5.9 3	97.45	$4^{(+)}$	0	$5^{(+)}$	M1	0.451 7	α(K)= 0.3916; α(L)= 0.0487; α(M)=0.00927; α(N+..)=0.0016 α(K)exp=0.51 12; α(L)exp=0.058 9 K/(L+M)>3
116.13 8	10.9 6	125.54	$2^+,3^+$	9.40	2^+	M1	0.276 4	α(K)= 0.2395; α(L)= 0.0297; α(M)=0.00565; α(N+..)=0.0016 α(K)exp=0.25 3; α(L)exp=0.030 4 K/(L+M)=6 2
120.47 9	4.6 3	490.44	1^+	369.98	2^+	M1	0.249	α(K)exp=0.20 3 α(K)= 0.2163; α(L)= 0.02677; α(M)= 0.0051
147.09 10	0.87 12	156.49	3^+	9.40	2^+	M1+E2		α(K)exp=0.22 3; α(L)exp=0.037 9 α(K)= 0.2104; α(L)= 0.03592; α(M)= 0.00694; α(N+..)=0.00115 δ: No δ given by (1970Hn02).
156.1 3	0.40 15	156.49	3^+	0	$5^{(+)}$			
213.50 9	7.5 7	369.98	2^+	156.49	3^+	M1	0.0526	α(K)exp=0.0506; α(L)exp=0.0086 19 K/(L+M)=5 2
244.4 7	0.24 10	369.98	2^+	125.54	$2^+,3^+$			
322.5[&]	<0.3	1368.6	1^+	1045.59	1^+			
360.58 10	5.6 3	369.98	2^+	9.40	2^+	E2	0.0171	α(K)exp=0.0165 18; α(L)exp=0.0020 3 α(K)= 0.01461; α(L)= 0.0020; α(M)= 0.00038
384	0.25 10	540.59	$1^+,2^+,3^+$	156.49	3^+			
415.05 15	12.8 9	540.59	$1^+,2^+,3^+$	125.54	$2^+,3^+$	M1,E2		α(K)exp=0.0095 8; α(L)exp=0.00106 15 α(K)= 0.0089; α(L)= 0.0011; α(M)= 0.00022
481.00 18	100 3	490.44	1^+	9.40	2^+	M1,E2		α(K)exp=0.0063 7 α(L)exp=0.00083 11 α(K)(M1)=0.00585 9 $α(K)(E2)=0.00610 9. α(L)(M1)=0.000694 10 $α(L)(E2)=0.000791 12.
505.00 15	12.6 9	1045.59	1^+	540.59	$1^+,2^+,3^+$	M1,E2		α(K)exp=0.0048 7 α(K)= 0.0052; α(L)= 0.00065; α(M)= 0.00012 E_{γ}: placement from 1991Ke08, other placement by 1970Hn02.
531.20 20	1.7 2	540.59	$1^+,2^+,3^+$	9.40	2^+	M1,E2		α(K)exp=0.0058 16 α(K)= 0.0046; α(L)= 0.00057; α(M)= 0.00011

Continued on next page (footnotes at end of table)

^{102}Cd ε decay 1991Ke08,1970Hn02 (continued)

$\gamma(^{102}Ag)$ (continued)

E_γ †	I_γ †@	E_i(level)	J^π_i	E_f	J^π_f
555&	<3.8	1045.59	1^+	490.44	1^+
675.65 *20*	7.0 *4*	1045.59	1^+	369.98	2^+
920& *1*	<0.1	1045.59	1^+	125.54	$2^+,3^+$
998.6 *7*	0.48 *10*	1368.6	1^+	369.98	2^+
1036.1 *3*	23 *1*	1045.59	1^+	9.40	2^+
1079.1 *5*	0.25 *9*	1449.0	1^+	369.98	2^+
1359.2 *3*	10 *1*	1368.6	1^+	9.40	2^+
1439.6 *5*	0.7 *1*	1449.0	1^+	9.40	2^+
1717.8 *7*	0.23 *8*	1727.2	(1^+)	9.40	2^+
1956.0 *7*	0.60 *3*	1965.4	1^+	9.40	2^+

† From 1991Ke08, unless noted otherwise.

‡ Theoretical total conversion coefficients (bricc) were used for calculating I($\varepsilon+\beta^+$). These coefficients corresponded to the multipolarity indicated.

Deduced from α(K)exp, α(L)exp and K:(L+M) ratios. Possible multipolarities, which can be ruled out based on the decay scheme, are omitted.

@ For absolute intensity per 100 decays, multiply by 0.60 *2*.

& Placement of transition in the level scheme is uncertain.

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