^{108}In ε decay (39.6 min) 1975Fl01,1984Ro10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2008

Parent: ^{108}In: E=29.75 *5*; $J^\pi=2^+$; $T_{1/2}$=39.6 min *7*; Q(ε)=5137 *9*; %ε+%β^+ decay=100.0

^{108}In-Q(ε): Q(g.s.)= 5149 *14* (1986Bo28).

The decay scheme, Eγ, Iγ, and $\gamma\gamma$-coincidence relations are those measured by 1975Fl01. Other measurements: 1962Ka23, 1963Ka18, 1970Di13 and 1984Ro10.

Many unplaced transitions reported by 1984Ro10 are given in the 58.0-min ^{108}In decay. Some could be for this decay also.

1992Ku01 have found a strong 1088 γ from a level at 1721 to the 657 level. They give γ branching but they do not say to what isomer the gammas belong. Authors report α(K)exp data from decay and (p,p$'\gamma$). These data are given in (p,p$'\gamma$).

^{108}Cd Levels

E(level)	J^π	$T_{1/2}$	E(level)	J^π	E(level)	J^π
0	0^+	stable	2162.6 *4*	2^+	3046.7 *3*	$1^+,2^+$
632.99 *15*	2^+		2202.3 *4*	3^-	3452.5 *3*	$1^+,2^+$
1508.4 *5*	4^+		2365.3 *3*	2^+	3811.5 *3*	$1^+,2^+$
1601.18 *20*	2^+		2486	2^+	3825.4 *6*	$1^+,2^+$
1720.5	0^+		2619.0 *4*	$2^+,3^+$		
1913.03 *24*	0^+		2681.5 *3*	2^+		

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ ‡	Iε‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(1341 *9*)	3825.4	0.0085 *12*	3.7 *3*	5.43 *4*	3.7 *3*	av Eβ=149.9 *40*; εK=0.8588 *3*; εL=0.11111 *6*; εM+=0.02779 *2*
(1355 *9*)	3811.5	0.017 *2*	6.3 *4*	5.21 *3*	6.3 *4*	av Eβ=156.0 *40*; εK=0.8585 *3*; εL=0.11103 *6*; εM+=0.02777 *2*
(1714 *9*)	3452.5	0.41 *3*	9.1 *6*	5.25 *3*	9.5 *6*	av Eβ=311.6 *40*; εK=0.8243 *17*; εL=0.10585 *24*; εM+=0.02645 *6*
(2120 *9*)	3046.7	0.76 *6*	3.3 *2*	5.87 *4*	4.1 *3*	av Eβ=489.4 *40*; εK=0.703 *4*; εL=0.0898 *5*; εM+=0.02243 *12*
(2485 *9*)	2681.5	1.3 *1*	2.2 *3*	6.19 *5*	3.5 *4*	av Eβ=652.1 *41*; εK=0.545 *4*; εL=0.0695 *6*; εM+=0.01733 *13*
(2548 *9*)	2619.0	5.0 *3*	7.5 *4*	5.68 *3*	12.5 *7*	av Eβ=680.1 *41*; εK=0.518 *4*; εL=0.0659 *5*; εM+=0.01645 *13*
(2681 *9*)	2486	1.5 *1*	1.8 *1*	6.36 *3*	3.3 *2*	av Eβ=740.1 *41*; εK=0.462 *4*; εL=0.0587 *5*; εM+=0.01465 *12*
(2801 *9*)	2365.3	2.3 *2*	2.1 *1*	6.32 *4*	4.4 *3*	av Eβ=794.8 *41*; εK=0.414 *4*; εL=0.0526 *5*; εM+=0.01312 *11*
(2964 *9*)	2202.3	0.58 *6*	0.40 *4*	7.09 *5*	0.98 *10*	av Eβ=869.0 *42*; εK=0.355 *3*; εL=0.0451 *4*; εM+=0.01125 *10*
(3004 *9*)	2162.6	4.4 *2*	2.9 *2*	6.24 *3*	7.3 *4*	av Eβ=887.1 *42*; εK=0.342 *3*; εL=0.0434 *4*; εM+=0.01083 *10*
(3254 *9*)	1913.03					av Eβ= 990 *40*; εK= 0.274 *22*; εL= 0.035 *3*; εM+= 0.0087 *7* Iε: ΔJ^π=2 implies negligible feeding. The intensity imbalance may be due to unplaced transitions.
(3566 *9*)	1601.18	3.7 *3*	1.1 *1*	6.81 *4*	4.8 *4*	av Eβ=1145.6 *42*; εK=0.2016 *17*; εL=0.02553 *22*; εM+=0.00637 *6*
(3658 *9*)	1508.4					av Eβ= 1180 *40*; εK= 0.188 *15*; εL= 0.0238 *19*; εM+= 0.0059 *5* Iε: ΔJ^π=2 implies negligible feeding. The intensity imbalance may be due to unplaced transitions.
(4534 *9*)	632.99	30.4 *10*	3.50 *12*	6.520 *17*	33.9 *11*	av Eβ=1599.2 *43*; εK=0.0893 *7*; εL=0.01127 *8*;

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^{108}In ε decay (39.6 min) 1975Fl01,1984Ro10 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Comments
		εM+=0.002810 *20* E(decay): E= 3494 *10* (1986Bo28).

† From Iγ+ce) imbalance at each level.
‡ Absolute intensity per 100 decays.

γ(^{108}Cd)

Iγ normalization: normalization of the decay scheme per 100 decays of the parent was made by assuming the sum of γ's to the g.s.=100%. 1963Ka18 established the absence of g.s. feeding using βγ-coincidence measurements. β^+, ε feeding to the levels was deduced by requiring an intensity balance at each level. Approximately 10% of the total intensity observed by 1975Fl01 was not placed in the decay scheme by the authors.

E_γ‡	I_γ‡@	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	Comments
x156.2 *2*	0.21 *3*						
x171.4 *2*	1.03 *7*						
311.6 *3*	1.32 *9*	1913.03	0^+	1601.18	2^+		
x391.3 *1*	0.47 *7*						
x536.1 *1*	1.06 *9*						
632.9 *2*	100	632.99	2^+	0	0^+	E2	Mult.: E2 from adopted γ's.
770.9 *2*	0.42 *7*	3452.5	$1^+,2^+$	2681.5	2^+		E_γ: a 770.5γ reported by 1984Ro10 is placed by them from a 3561 level.
875.4 *4*	3.20 *20*	1508.4	4^+	632.99	2^+	E2	Mult.: α(K)exp allows M1,E2. ΔJ=2 from γ(θ) in (p,2nγ).
884.1# *3*	0.37 *8*	2486	2^+	1601.18	2^+		
x936.0 *3*	0.25 *8*						
968.5 *5*	5.7 *3*	1601.18	2^+	632.99	2^+	M1,E2	
1017.7 *4*	0.20 *6*	2619.0	$2^+,3^+$	1601.18	2^+		
1087.5 *5*	2.00 *14*	1720.5	0^+	632.99	2^+		
1280.1 *4*	0.65 *9*	1913.03	0^+	632.99	2^+		
x1293.7 *3*	0.94 *11*						
x1408.5 *3*	0.19 *10*						
1445.6 *4*	0.32 *8*	3046.7	$1^+,2^+$	1601.18	2^+		
x1475.0 *3*	0.77 *13*						
x1513.1 *2*	1.19 *13*						
1529.4 *5*	9.6 *5*	2162.6	2^+	632.99	2^+		Mult.: 1984Ro10 determine α(K)exp=0.00019 which indicates E1. This mult is not confirmed by new measurement of 1990Ku01 or by data in (n,n′γ).
1569.3 *3*	1.28 *13*	2202.3	3^-	632.99	2^+		
1601.2 *3*	5.3 *3*	1601.18	2^+	0	0^+	E2	
1732.1 *4*	5.0 *3*	2365.3	2^+	632.99	2^+	M1,E2	
1851.9# *5*	4.0 *3*	2486	2^+	632.99	2^+		
x1864.0 *4*	0.70 *20*						
1913.4 *4*		1913.03	0^+	0	0^+	E0	I_γ: pure E0 gives Iγ=0, so Iγ=0.13 *3* from 1975Fl01 probably is an error. Iγ<0.1 (1984Ro10). Mult.: α(K)exp>0.012 (1984Ro10),>0.025 (1992Ku01).
1986.3 *5*	16.2 *9*	2619.0	$2^+,3^+$	632.99	2^+	M1,E2	
2048.3 *4*	4.0 *4*	2681.5	2^+	632.99	2^+		
x2112.4 *3*	0.33 *4*						
2211.1 *5*	0.70 *10*	3811.5	$1^+,2^+$	1601.18	2^+		

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^{108}In ε decay (39.6 min) 1975Fl01,1984Ro10 (continued)

γ(^{108}Cd) (continued)

E_γ ‡	I_γ ‡@	E_i(level)	J_i^π	E_f	J_f^π	E_γ ‡	I_γ ‡@	E_i(level)	J_i^π	E_f	J_f^π
2224.2 *5*	1.80 *20*	3825.4	$1^+,2^+$	1601.18	2^+	3178.4 *4*	2.1 *3*	3811.5	$1^+,2^+$	632.99	2^+
x2278.3 *5*	0.82 *12*					3452.2 *5*	12.0 *7*	3452.5	$1^+,2^+$	0	0^+
x2316.9 *6*	0.40 *10*					x3689.4 *22*	1.40 *20*				
2365.1 *5*	0.70 *10*	2365.3	2^+	0	0^+	3811.8 *5*	5.5 *4*	3811.5	$1^+,2^+$	0	0^+
2413.2 *6*	1.90 *10*	3046.7	$1^+,2^+$	632.99	2^+	3825.5 *20*	3.1 *3*	3825.4	$1^+,2^+$	0	0^+
2681.3 *4*	1.00 *10*	2681.5	2^+	0	0^+	x4052.0 *25*	0.8 *3*				
x2816.0 *10*	0.91 *15*					x4342.8 *23*	1.0 *3*				
3046.8 *4*	3.2 *3*	3046.7	$1^+,2^+$	0	0^+						

† Based on α(K)exp from relative I(ce(K)) and Iγ of 1984Ro10 normalized so that α(K)exp(633γ)=0.00301 (E2 theory).
‡ From 1975Fl01.
# Placed by 1975Fl01 from the 3452 level; however, agreement with energy and branching ratio in (n,n′γ) and in-beam data suggest population of the 2486 level.
@ For absolute intensity per 100 decays, multiply by 0.764 *6*.
x γ ray not placed in level scheme.

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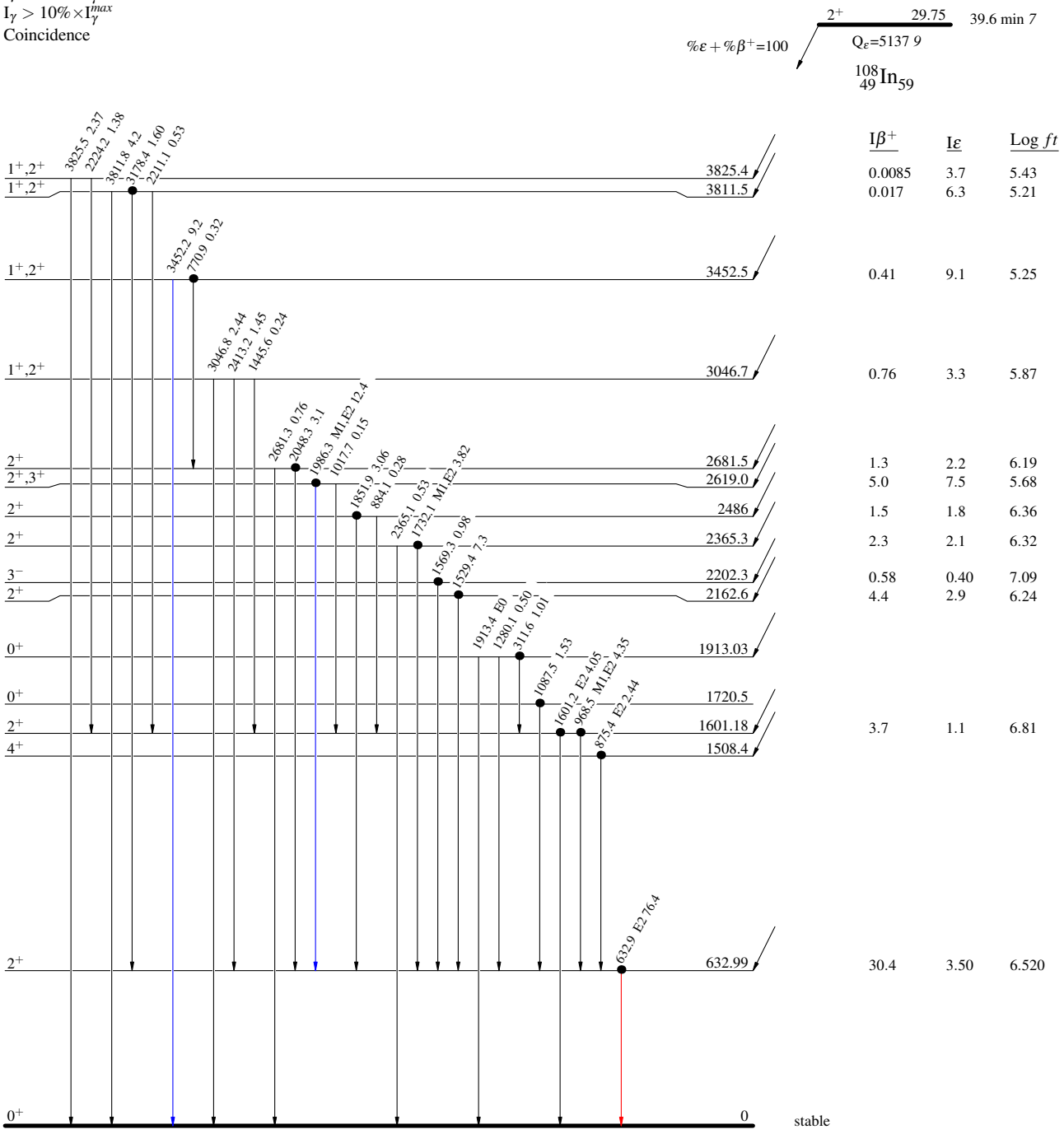
Decay Scheme

Intensities: I_γ per 100 parent decays

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- Coincidence



	Iβ+	Iε	Log *ft*
3825.4	0.0085	3.7	5.43
3811.5	0.017	6.3	5.21
3452.5	0.41	9.1	5.25
3046.7	0.76	3.3	5.87
2681.5	1.3	2.2	6.19
2619.0	5.0	7.5	5.68
2486	1.5	1.8	6.36
2365.3	2.3	2.1	6.32
2202.3	0.58	0.40	7.09
2162.6	4.4	2.9	6.24
1913.03			
1720.5			
1601.18	3.7	1.1	6.81
1508.4			
632.99	30.4	3.50	6.520
0	stable		