^{108}In ε decay (58.0 min) 1975Fl01,1984Ro10

History

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

Parent: ^{108}In: E=0.0; $J^\pi=7^+$; $T_{1/2}$=58.0 min *12*; Q(ε)=5137 *9*; %ε+%$β^+$ decay=100.0

^{108}Cd Levels

The relative placement of the 58-min and 39.6-min ^{108}In is now known. Q(ε)=5130 *10* is assumed for calculation of log *ft* values. The decay scheme is that of 1975Fl01 with additional levels proposed by 1984Ro10 on the basis of coincidence data. 1984Ro10 propose many additional levels, some of which are deexcited by only one transition. Only those levels deexcited by three or more transitions, or which appear to correspond to levels seen in other reactions, are included here.

E(level)	J^π	$T_{1/2}$	E(level)	J^π	E(level)	J^π
0	0^+	stable	2645.55	4^+	3367.29 *18*	(6^+)
632.90 *10*	2^+		2706.96 *16*	5^-	3816.07 *16*	6^+
1508.29 *10*	4^+		2807.53 *14*	$(6,7)^+$	4043.4 *5*	
1601.8 *2*	2^+		2975.11 *25*	6^-	4179.0 *5*	
2239.23 *13*	4^+		2994.02 *15*	6^+	4239.6 *5*	
2541.09 *15*	6^+		3057.35 *20*	7^-	4251.2 *5*	
2564.88 *14*	5^+		3110.10 *18*	$(8)^+$	4512.44 *18*	6^+
2601.41 *15*	5^-		3189.40 *18*	$(6^+,7^+,8^+)$	4525.2 *5*	

ε,$β^+$ radiations

E(decay)	E(level)	I$β^+$ ‡	Iε‡	Log *ft*	I(ε+$β^+$)†‡	Comments
(625 *9*)	4512.44		1.5 *2*	5.30 *6*	1.5 *2*	εK=0.8557 *2*; εL=0.1153 *1*; εM+=0.02899 *4*
(1321 *9*)	3816.07	0.0054 *9*	3.1 *3*	5.66 *5*	3.1 *3*	av Eβ=141.0 *40*; εK=0.8592 *2*; εL=0.11122 *5*; εM+=0.02782 *2*
(1770 *9*)	3367.29	0.056 *17*	0.9 *3*	6.43 *13*	1.0 *3*	av Eβ=335.7 *40*; εK=0.8131 *20*; εL=0.1043 *3*; εM+=0.02606 *7*
(1948 *9*)	3189.40	0.47 *7*	3.7 *5*	5.92 *7*	4.2 *6*	av Eβ=413.5 *40*; εK=0.765 *3*; εL=0.0980 *4*; εM+=0.02446 *10*
(2027 *9*)	3110.10	0.75 *10*	4.5 *6*	5.88 *6*	5.2 *7*	av Eβ=448.3 *40*; εK=0.738 *4*; εL=0.0944 *5*; εM+=0.02358 *11*
(2080 *9*)	3057.35	0.193 *21*	0.97 *10*	6.56 *5*	1.16 *12*	av Eβ=471.6 *40*; εK=0.719 *4*; εL=0.0919 *5*; εM+=0.02294 *12*
(2143 *9*)	2994.02	1.6 *2*	6.5 *6*	5.76 *5*	8.1 *8*	av Eβ=499.5 *40*; εK=0.694 *4*; εL=0.0887 *5*; εM+=0.02214 *12*
(2162 *9*)	2975.11	0.26 *3*	1.00 *11*	6.58 *5*	1.26 *14*	av Eβ=507.9 *40*; εK=0.686 *4*; εL=0.0877 *5*; εM+=0.02189 *12*
(2329 *9*)	2807.53	16 *1*	41 *4*	5.04 *4*	57 *5*	av Eβ=582.4 *41*; εK=0.615 *4*; εL=0.0784 *6*; εM+=0.01956 *13*
(2430 *9*)	2706.96	0.31 *9*	2.1 *6*	7.71[1u] *13*	2.4 *7*	av Eβ=649.5 *40*; εK=0.7502 *23*; εL=0.0976 *4*; εM+=0.02444 *8*
(2536 *9*)	2601.41	0.48 *11*	2.5 *6*	7.70[1u] *11*	3.0 *7*	av Eβ=696.3 *40*; εK=0.722 *3*; εL=0.0938 *4*; εM+=0.02348 *9*
(2596 *9*)	2541.09	4.7 *10*	6.3 *13*	5.94 *10*	11.0 *23*	av Eβ=701.8 *41*; εK=0.497 *4*; εL=0.0633 *5*; εM+=0.01579 *13*

† From I(γ+ce)-imbalance at each level.
‡ Absolute intensity per 100 decays.

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γ(^{108}Cd)

Iγ normalization: from sum(Iγ+Ice to g.s.)=100. 1963Ka18 establish the absence of g.s. feeding by use of βγ measurements.

E_γ †	I_γ #a	E_i(level)	J_i^π	E_f	J_f^π	Mult. @	Comments
x166.1 2	0.18 4						
206.1 2	0.37 7	2807.53	$(6,7)^+$	2601.41	5^-		
242.6 2	30 3	2807.53	$(6,7)^+$	2564.88	5^+	M1	I_γ: Iγ= 38 3(1975FL01).
266.4 2	2.3 2	2807.53	$(6,7)^+$	2541.09	6^+		
268.4	0.14 3	2975.11	6^-	2706.96	5^-		E_γ: from (HI,xnγ). I_γ: from Iγ/I(374γ)= 0.34 5 in (HI,xnγ). Transition in ^{108}In decay is masked by 266γ from 2808 level.
302.6‡	0.32 6	3110.10	$(8)^+$	2807.53	$(6,7)^+$		I_γ: from Iγ/I(569γ)= 0.076 13 in (HI,xnγ).
325.6 2	10 1	2564.88	5^+	2239.23	4^+	M1,E2	I_γ: Iγ= 13 1 (1975Fl01).
350.4 2	0.29 6	3057.35	7^-	2706.96	5^-		I_γ: Iγ=0.22 (1980Wi20).
373.7 2	0.42 8	2975.11	6^-	2601.41	5^-		
x403.3 2	0.19 4						
x414.1 2	0.21 4						
x419.1 2	0.17 4						
433.6‡	0.041	2975.11	6^-	2541.09	6^+		I_γ: from Iγ/Iγ(3748)=0.097 15 in adopted γ's. 1980Wi20 report Iγ=0.74. The γ is not seen by 1984Ro10.
448.7 2	0.33 6	3816.07	6^+	3367.29	(6^+)		
455.9 2	0.31 6	3057.35	7^-	2601.41	5^-		
x494.6 2	0.17 4						
517.0‡	0.19 3	3057.35	7^-	2541.09	6^+		I_γ: from Iγ/Iγ(350γ+455γ)=0.313 21 in (HI,xnγ). 1980Wi20 report Iγ/Iγ(350γ)=1.55, in disagreement with (HI,xnγ) and with non observation by 1984Ro10.
x542.1 2	0.15 4						
x544.1 2	0.12 3						
x558.8 2	0.36 8						
569.0 2	4.2 4	3110.10	$(8)^+$	2541.09	6^+	(E2)	Mult.: α(K)exp gives M1,E2. Placement in the decay scheme requires ΔJ=2.
632.9 2	73 3	632.90	2^+	0	0^+	E2	Mult.: E2 from adopted γ's.
637.4 2	1.3 2	2239.23	4^+	1601.8	2^+		
648.3 2	2.6 3	3189.40	$(6^+,7^+,8^+)$	2541.09	6^+		
x666.5 2	0.26 6						
x672.4 2	0.43 8						
x708.0 2	0.46 8						
730.8 2	6.8 7	2239.23	4^+	1508.29	4^+	M1,E2	
754.7 2	1.3 2	2994.02	6^+	2239.23	4^+		I_γ: Iγ=2.4 (1980Wi20).
x760.0 2	0.40 8						
x768.3 2	0.10 2						
x770.5 2	0.38 9						I_γ: 0.08 has been subtracted to account for contribution from 39-min decay from 3452 level of a 770.9γ.
x780.7 2	0.13 3						
826.2 2	0.74 15	3367.29	(6^+)	2541.09	6^+		
x871.4 2	1.1 1						
875.4 2	73 7	1508.29	4^+	632.90	2^+	(E2)	Mult.: α(K)exp allows M1 or E2. ΔJ=2 from decay scheme.
x964.9 2	0.09 2						
968.8 2	2.0 2	1601.8	2^+	632.90	2^+		
x996.1 2	0.54 10						
1008.5 2	0.45 9	3816.07	6^+	2807.53	$(6,7)^+$		

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^{108}In ε decay (58.0 min) 1975Fl01,1984Ro10 (continued)

γ(^{108}Cd) (continued)

E_γ [†]	I_γ [#a]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	Comments
[x]1020.1 2	0.21 4						
1032.8 2	25.8 20	2541.09	6^+	1508.29	4^+	(E2)	Mult.: M1,E2 from α(K)exp, M1 ruled out from ΔJ.
[x]1050.2 2	0.25 5						
1056.6 2	21 2	2564.88	5^+	1508.29	4^+	M1,E2	
[x]1063.5 2	0.44 9						
1093.2 2	4.0 4	2601.41	5^-	1508.29	4^+	E1	
1137.2 2	0.82 16	2645.55	4^+	1508.29	4^+		
[x]1142.0 2	1.1 1						
[x]1167.2 2	0.29 6						
[x]1189.3 2	0.26 5						
1198.6 2	2.3 2	2706.96	5^-	1508.29	4^+	E1	
[x]1214.7 2	0.13 3						
[x]1222.0 2	0.15 3						
[x]1230.3 2	0.59 12						
[x]1246.6 2	0.89 18						
1251.4 2	0.35 7	3816.07	6^+	2564.88	5^+		
[x]1255.1 2	0.11 3						
1257.3 2	0.50 10	4251.2		2994.02	6^+		
1275.1 2	0.54 11	3816.07	6^+	2541.09	6^+		
[x]1282.4 2	0.71 15						
1299.3 2	11 1	2807.53	$(6,7)^+$	1508.29	4^+	E2	
[x]1304.7 2	0.40 8						
[x]1322.0 2	1.4 2						
[x]1363.6 2	0.10 2						
[x]1367.4 2	0.31 6						
[x]1371.9 2	0.11 2						
[x]1375.1 2	0.09 2						
[x]1387.8 2	0.49 10						
1397.5 2	0.93 18	4043.4		2645.55	4^+		
[x]1408.8 2	0.41 8						
[x]1417.9 2	0.11 2						
1432.0 2	0.50 10	4239.6		2807.53	$(6,7)^+$		
1443.5 2	0.41 8	4251.2		2807.53	$(6,7)^+$		
[x]1467.7[&] 2	0.35 7						
1485.8 2	3.2 3	2994.02	6^+	1508.29	4^+	E2	
[x]1489.7 2	0.34 7						
1502.7 2	0.64 12	4043.4		2541.09	6^+		
[x]1512.8 2	1.0 1						
[x]1534.2 2	0.25 5						
1606.3 2	6.2 7	2239.23	4^+	632.90	2^+	E2	
1614.2 2	0.39 8	4179.0		2564.88	5^+		
[x]1622.7 2	0.22 4						
1638.1 2	0.77 16	4179.0		2541.09	6^+		
[x]1661.2 2	0.11 3						
[x]1665.5 2	0.22 4						
1674.9 2	0.23 5	4239.6		2564.88	5^+		
[x]1681.1 2	0.12 2						
[x]1691.9 2	0.35 7						
[x]1729.1 2	0.29 6						
[x]1741.8 2	0.29 6						
[x]1784.0 2	0.29 6						
[x]1794.8 2	0.22 4						
1805.2 2	0.56 12	4512.44	6^+	2706.96	5^-		
[x]1848.3 2	0.13 3						
[x]1852.8 2	0.77 15						
1858.9 2	0.41 8	3367.29	(6^+)	1508.29	4^+		

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^{108}In ε decay (58.0 min) 1975Fl01,1984Ro10 (continued)

γ(^{108}Cd) (continued)

E_γ †	I_γ #a	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ #a	E_i(level)	J_i^π	E_f	J_f^π
x1866.6 2	0.12 3					1984.3 2	0.51 10	4525.2		2541.09	6+
x1904.1 2	0.12 3					x2049.4 2	0.79 16				
1911.4 2	0.13 3	4512.44	6+	2601.41	5−	x2222.9 2	0.53 11				
1923.5 2	0.39 8	4525.2		2601.41	5−	x2225.5 2	0.36 7				
x1927.3 2	0.42 8					2307.5 2	0.58 12	3816.07	6+	1508.29	4+
1939.8 2	0.18 4	4179.0		2239.23	4+	x2414.8 2	0.30 6				
1947.4 2	0.43 9	4512.44	6+	2564.88	5+	x2440.8 2	0.22 4				
x1959.9 2	0.22 4					x2671.5 2	0.50 10				
x1970.9 2	0.12 3										

† From 1984Ro10. Others: 1980Wi20, 1975Fl01.
‡ Reported only by 1980Wi20.
# From 1984Ro10 where available. Other values are from 1980Wi20 as noted. Source used by 1984Ro10, although mainly high-spin ^{108}In did have a low-spin component ($T_{1/2}$=39.6 min). The authors did not determine the separate contributions from the two isomers. By comparing the Iγ data of 1984Ro10 with those of 1975Fl01, the evaluator has determined that 73% 3 of the intensity of the 633γ comes from the 58-min decay. 1984Ro10 state that the uncertainties are≈10%. The evaluator has assigned 20% for Iγ<1 and 10% for Iγ>1. Other: 1980Wi20. Data are consistent with those of 1984Ro10 and 1975Fl01. Also, use of data of 1980Wi20 leads to the same correction factor as obtained above for the Iγ data of 1984Ro10.
@ 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).
& Placed by 1980Wi20 from the 2975 level; however, this placement is inconsistent with γγ data of 1984Ro10 and with branching in (HI,xnγ).
a For absolute intensity per 100 decays, multiply by 1.37 7.
x γ ray not placed in level scheme.

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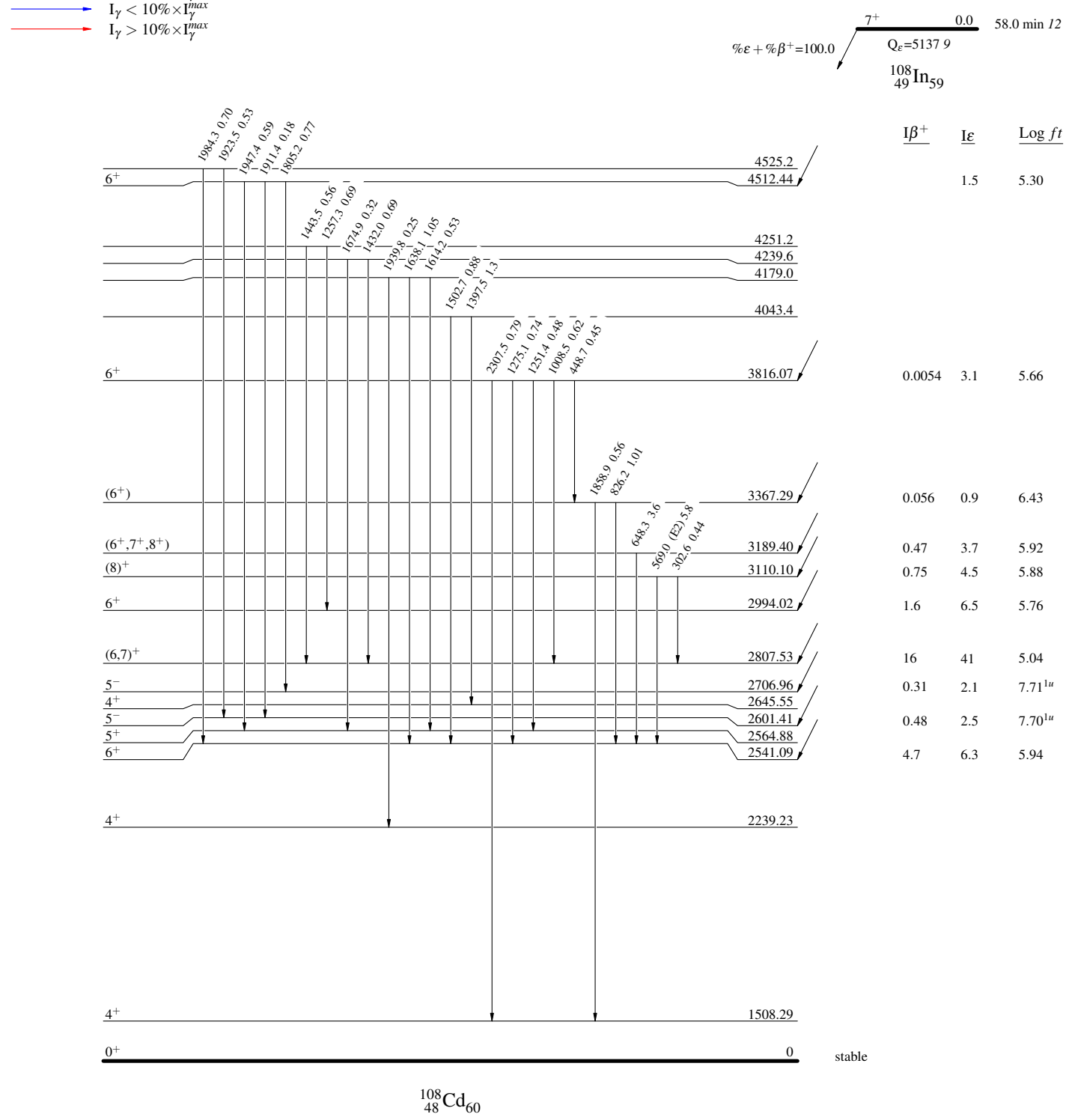
Decay Scheme

Intensities: I_γ per 100 parent decays

Legend

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



^{108}In ε decay (58.0 min) 1975Fl01,1984Ro10

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays