Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	31-May-2008

Q(β^-)=1.025×10^4 *4*; S(n)=5.12×10^3 *4*; S(p)=1.366×10^4 *syst*; Q(α)=−1.153×10^4 *syst* 2012Wa38
Note: Current evaluation has used the following Q record 10250 40 *5020* 60 *13980* syst −11300 syst 2003Au03.
ΔS(p)=ΔQ(α)=300 (syst,2003Au03).
Q(β^-n)=2630 *50* (2003Au03).
^{131}Cd decays by β^-n to ^{130}In, but no information is available about level population.
%β^-n measurements: 1993Ru01, 1986Wa17 (also 1986ReZU,1986ReZS), 1981En05, 1980Lu04. See also evaluations by 1993Ru01 and 1984Ma39.

^{130}In Levels

Cross Reference (XREF) Flags

A ^{130}Cd β^- decay (162 ms)
B ^{130}In IT decay (3.1 μs)
C ^{131}Cd β^-n decay (68 ms)

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	1$^{(-)}$	0.29 s *2*	AB	%β^-=100; %β^-n=0.93 *13* J$^\pi$: β^- decay to 0$^+$ and (2$^+$); shell-model prediction, probable configuration=$\pi 1g^{-1}_{9/2}\otimes\nu 1h^{-1}_{11/2}$. %$\beta^-$n: weighted average of 1.49 *22* (1993Ru01) and 0.90 *5* (1986Wa17). Other: 0.91 *10* (1986ReZS). T$_{1/2}$: weighted average of 0.256 s *18* (1993Ru01, uncertainty increased by the evaluator by a factor of 2), 0.32 s *2* (1986Wa17), 0.33 s *3* (1981Fo02). 1986Wa17, in another report (1986ReZU), also quoted T$_{1/2}$=0.278 s *3*, it is not used in averaging. Other: 1970OsZZ.
50‡ *50*	(10$^-$)	0.54 s *1*		%β^-=100; %β^-n=1.65 *15* %β^-n: combined for (10$^-$) isomer and (5$^+$) isomer at 400. Weighted average of 2.03 *12* (1993Ru01), 1.67 *9* (1986Wa17), 4.3 *15* (1981En05), 1.40 *9* (1980Lu04). T$_{1/2}$: combined value for (10$^-$) isomer and (5$^+$) isomer at 400 is from weighted average of 0.542 s *9* (1993Ru01), 0.55 s *1* (1986Wa17), 0.51 s *4* (1983Sh07), 0.51 s *2* (1981En05), 0.53 s *3* (1981Fo02), 0.53 s *5* (1973Ke12). Others: 0.532 s *6* (1986ReZS), 0.58 s *1* (1976Lu02). J$^\pi$: shell-model prediction, probable configuration=$\pi 1g^{-1}_{9/2}\otimes\nu 1h^{-1}_{11/2}$.
388.3 *2*	(3$^+$)	3.1 μs *3*	AB	%IT=100 J$^\pi$: shell-model prediction (2003Di06); configuration=$\pi g^{-1}_{9/2}\otimes\nu d^{-1}_{3/2}$ (2004Sc42). T$_{1/2}$: from 2004Sc42. Others: <6 μs (2003HeZT), 2003Di06 quote <10 μs from a study by the same group as 2003HeZT.
400‡ *60*	(5$^+$)	0.54 s *1*		%β^-=100; %β^-n=1.65 *15* %β^-n,T$_{1/2}$: combined for (5$^+$) isomer and (10$^-$) isomer at 50 keV. See comment for (10$^-$) isomer above. J$^\pi$: β^- decay to (4$^+$); no γ to 1$^{(-)}$, T$_{1/2}$=0.55 s rules out assignment of J^π=4$^+$; parity from shell-model prediction.
1170.3 *3*	(0 to 3$^-$)		A	J$^\pi$: γ to 1$^{(-)}$.
1669.2 *1*	(1$^-$)		A	J$^\pi$: log *ft*≈5.3 from 0$^+$; shell-model prediction.
2120.2 *2*	1$^+$		A	J$^\pi$: very strong β feeding (log *ft*=4.1) from 0$^+$; configuration=$\pi g_{9/2}\otimes\gamma_{7/2}$.
2585.8 *7*	(0,1)		A	J$^\pi$: log *ft*≈6.8 from 0$^+$.
4407.4 *6*	(1$^+$)		A	J$^\pi$: log *ft*≈5.0 from 0$^+$.
4631.1 *10*	(1$^+$)		A	J$^\pi$: log *ft*≈5.5 from 0$^+$.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{130}In Levels (continued)

E(level)[†]	Jπ	XREF	Comments
5098.1[#] *10*	(1+)	A	Jπ: log *ft*≈4.9 from 0+.
5196.1[#] *10*	(1+)	A	Jπ: log *ft*≈5.0 from 0+.
5390.8[#] *7*	(1+)	A	Jπ: log *ft*≈4.6 from 0+.

† From least-squares fit to Eγ's.
‡ From Eβ− endpoint measurements (1987Sp09). Other: 1985Fo03.
# Neutron-unbound state; however γ decay is favored over the emission of low-energy neutrons due to angular-momentum considerations.

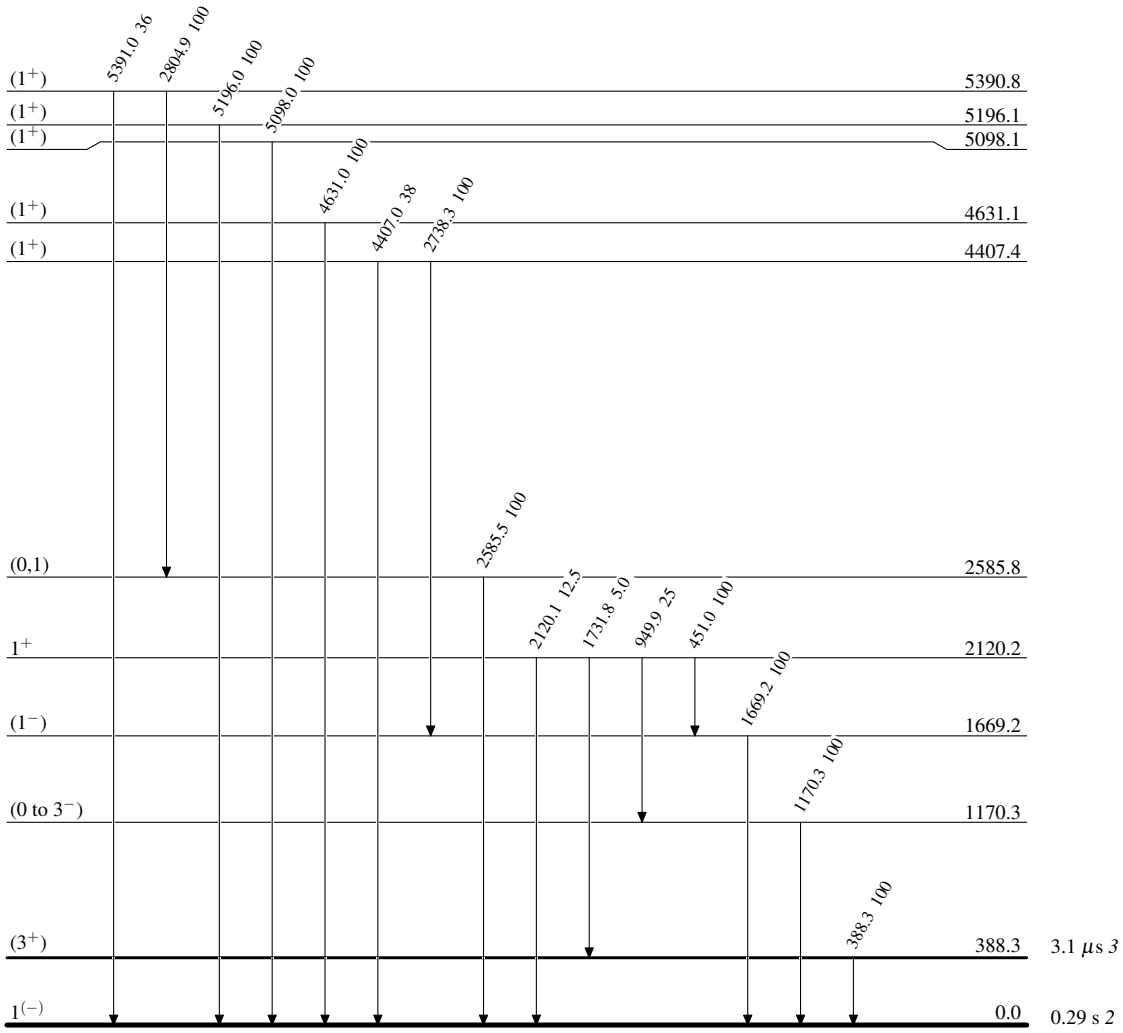
γ(^{130}In)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Comments
388.3	(3+)	388.3 *2*	100	0.0	1(−)	E_γ: average of values from 2003Di06 and 2004Sc42.
1170.3	(0 to 3−)	1170.3 *3*	100	0.0	1(−)	
1669.2	(1−)	1669.2 *1*	100	0.0	1(−)	
2120.2	1+	451.0 *2*	100 *4*	1669.2	(1−)	
		949.9 *5*	25 *3*	1170.3	(0 to 3−)	
		1731.8 *1*	5.0 *5*	388.3	(3+)	
		2120.1 *5*	12.5 *7*	0.0	1(−)	
2585.8	(0,1)	2585.5 *9*	100	0.0	1(−)	
4407.4	(1+)	2738.3 *6*	100 *23*	1669.2	(1−)	
		4407.0 *10*	38 *8*	0.0	1(−)	
4631.1	(1+)	4631.0 *10*	100	0.0	1(−)	
5098.1	(1+)	5098.0 *10*	100	0.0	1(−)	
5196.1	(1+)	5196.0 *10*	100	0.0	1(−)	
5390.8	(1+)	2804.9 *3*	100 *18*	2585.8	(0,1)	
		5391.0 *10*	36 *18*	0.0	1(−)	

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{130}_{49}In_{81}$