^{108}Cd(d,nγ) 1975Di12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Kumar(a), J. Chen(b) and F. G. Kondev	NDS 137, 1 (2016)	31-May-2016

1975Di12: E(d)=5-11 MeV, EN Tandem Van de Graaff Accelerator, University of Uppsala, Sweden. Target: 1.3-2.0 mg/cm^2 in thickness with 82.35 % enriched; Measured: γ-singles, γγ, nγ, γ(θ), and Iε. Detectors: Two Ge(Li), Liquid scintillator, Si detector with magnetic lens, angular Si detector.

^{109}In Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	$9/2^+$	1320.8 *5*	$5/2^+$	1712.9 *4*	$5/2^+,7/2^+,9/2^+$
650.1 *3*	$1/2^-$	1428.0 *4*	$9/2^+,11/2^+,13/2^+$	1722.3 *5*	$5/2^+,7/2^+,9/2^+$
981.4 *4*	$3/2^-$	1441.4 *5*	$3/2^-,5/2^-$	1814.4 *7*	$1/2^-,3/2^-,5/2^-$
1026.1 *4*	$7/2^+,9/2^+,11/2^+$	1463.6 *4*	$5/2^+,7/2^+,9/2^+$	2065.3 *7*	$7/2^{(-)}$
1098.8 *4*	$5/2^+$	1483.1 *4*	$3/2^+,(1/2^+)$	2356.4 *11*	
1172.1 *4*	$1/2^+,(3/2^+)$	1573.9 *5*	7/2,9/2,11/2	2467.4 *11*	$1/2^+$ to $7/2^+$

† From a least-squares fit to Eγ.
‡ From 1975Di12, based on excitation functions data and deduced γ-ray transition multipolarities.

γ(^{109}In)

Eγ	Iγ†	Ei(level)	J_i^π	Ef	J_f^π	Mult.#	Comments
285.0 *5*	4 *1*	1712.9	$5/2^+,7/2^+,9/2^+$	1428.0	$9/2^+,11/2^+,13/2^+$		
311.6 *5*	4 *2*	1483.1	$3/2^+,(1/2^+)$	1172.1	$1/2^+,(3/2^+)$		
331.2 *3*	100	981.4	$3/2^-$	650.1	$1/2^-$	M1	Mult.: from Adopted Gammas. $a_2/a_0=-0.08$ *4* (1975Di12).
384.2 *3*	44 *4*	1483.1	$3/2^+,(1/2^+)$	1098.8	$5/2^+$	M1(+E2)	Mult.: α(K)exp=12.4×10^{-3} *13*, $A_2/A_0=-0.07$ *4* (1975Di12).
401.6 *4*	6.0 *6*	1428.0	$9/2^+,11/2^+,13/2^+$	1026.1	$7/2^+,9/2^+,11/2^+$	M1,E2	Mult.: α(K)exp=15×10^{-3} *5*.
437.6 *5*	16 *2*	1463.6	$5/2^+,7/2^+,9/2^+$	1026.1	$7/2^+,9/2^+,11/2^+$	M1(+E2)	Mult.: α(K)exp=10×10^{-3} *4*, $A_2/A_0=-0.25$ *7* (1975Di12).
460.1 *5*	3 *1*	1441.4	$3/2^-,5/2^-$	981.4	$3/2^-$	M1,E2	Mult.: α(K)exp=8×10^{-3} *4*.
501.0 *6*	7 *1*	1483.1	$3/2^+,(1/2^+)$	981.4	$3/2^-$		Mult.: α(K)exp≈3.6×10^{-3}. 1975Di12 suggest (M1,E2), not compatible with parity change of the level.
522.2 *3*	52 *4*	1172.1	$1/2^+,(3/2^+)$	650.1	$1/2^-$	E1	Mult.: α(K)exp=1.5×10^{-3} *3*, $A_2/A_0=+0.004$ *30* (1975Di12).
614.2 *4*	20‡ *5*	1712.9	$5/2^+,7/2^+,9/2^+$	1098.8	$5/2^+$	M1,E2	Mult.: α(K)exp=2.5×10^{-3} *9* (1975Di12).
623.6 *4*	25‡ *5*	1722.3	$5/2^+,7/2^+,9/2^+$	1098.8	$5/2^+$	M1,E2	Mult.: α(K)exp=3.5×10^{-3} *13* (1975Di12).
650.1 *3*		650.1	$1/2^-$	0.0	$9/2^+$		
791.2 *5*	38 *5*	1441.4	$3/2^-,5/2^-$	650.1	$1/2^-$	M1,E2	Mult.: α(K)exp=1.4×10^{-3} *4*, $A_2/A_0=+0.09$ *8* (1975Di12).
833.0 *5*	15 *5*	1814.4	$1/2^-,3/2^-,5/2^-$	981.4	$3/2^-$	M1,E2	Mult.: α(K)exp=1.7×10^{-3} *7* (1975Di12).
984.3 *10*	7 *3*	2467.4	$1/2^+$ to $7/2^+$	1483.1	$3/2^+,(1/2^+)$	M1,E2	Mult.: α(K)exp=1.08×10^{-3} *10* (1975Di12).
1026.0 *5*	106 *10*	1026.1	$7/2^+,9/2^+,11/2^+$	0.0	$9/2^+$	E2(+M1)	Mult.: α(K)exp=1.08×10^{-3} *10*, $A_2/A_0=+0.15$ *3* (1975Di12).
1083.9 *5*	13 *2*	2065.3	$7/2^{(-)}$	981.4	$3/2^-$		Mult.: α(K)exp≈1×10^{-3}, 1975Di12 suggest (M1,E2).

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^{108}Cd(d,nγ) 1975Di12 (continued)

$\gamma(^{109}In)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
1099.2 *5*	205 *15*	1098.8	$5/2^+$	0.0	$9/2^+$	E2	Mult.: α(K)exp=0.79×10^{-3} *14*, A_2/A_0=+0.01 *3* (1975Di12).
1320.8 *5*	57 *6*	1320.8	$5/2^+$	0.0	$9/2^+$	E2	Mult.: α(K)exp=0.59×10^{-3} *20*, A_2/A_0=+0.04 *3* (1975Di12).
1375 *1*	9[‡] *3*	2356.4		981.4	$3/2^-$		
1428.4 *6*	26 *5*	1428.0	$9/2^+$,$11/2^+$,$13/2^+$	0.0	$9/2^+$		Mult.: a_2/a_0=+0.32 *12* (1975Di12).
1463.4 *5*	29 *5*	1463.6	$5/2^+$,$7/2^+$,$9/2^+$	0.0	$9/2^+$		
1573.9 *5*	32 *6*	1573.9	7/2,9/2,11/2	0.0	$9/2^+$		
1712.5 *8*	10 *2*	1712.9	$5/2^+$,$7/2^+$,$9/2^+$	0.0	$9/2^+$		
1721.5 *8*	10 *2*	1722.3	$5/2^+$,$7/2^+$,$9/2^+$	0.0	$9/2^+$		

[†] From data at 55° and E(beam)=8 MeV.
[‡] From n-γ and $\gamma\gamma$-coincidence data.
[#] From 1975Di12, based on measured CE data and $\gamma(\theta)$, unless otherwise noted. The α(K)exp values were normalized to α(K)(331.2γ)=0.0176 from the BrIcc program by assuming Mult.=M1.

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Level Scheme

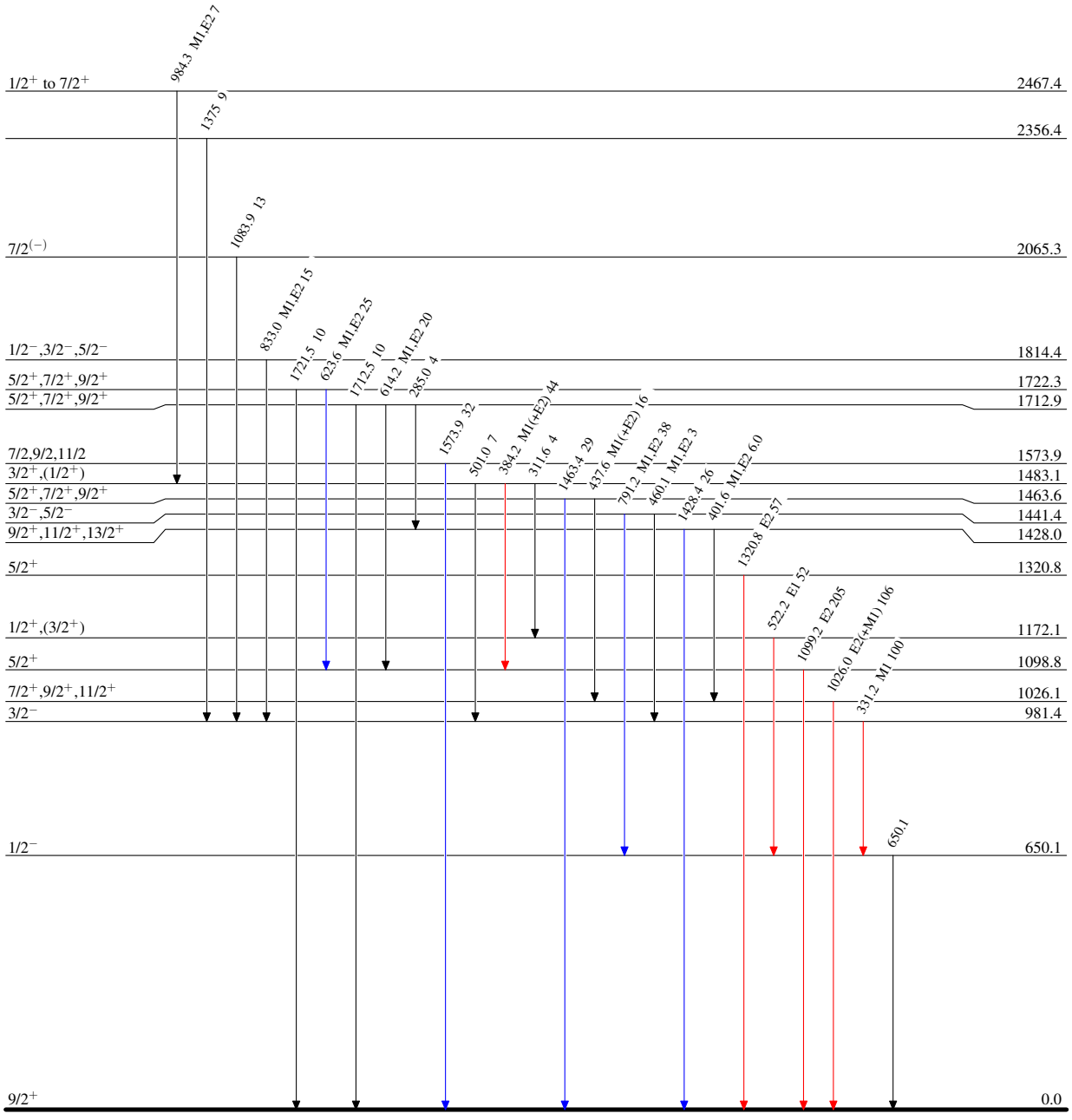
Intensities: Relative I_γ

Legend

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

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

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



$^{109}_{49}In_{60}$