

$^{116}\text{Cd}(\gamma, \text{pol } \gamma')$ 2005Ko32

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 717 (2010)	1-Dec-2009

E=Bremsstrahlung beam with maximum energy of 4 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma(\theta)$, $\gamma(\text{lin pol})$ of scattered γ rays and integrated scattering cross sections using three HPGe detectors, one detector with an anti-Compton shield. Deduced excitation energies, spins, parities, decay widths, decay branchings and transition probabilities. Enriched targets.

 ^{116}Cd Levels

E(level)	J^π	$\Gamma_0^\dagger$	$I_{S,0}$ eV b ‡	Comments
0	0 ⁺			
513	2 ⁺			E(level), J^π : from Adopted Levels for ^{116}Cd .
2478	1 ⁻	0.0097 eV 6	18.2 11	B(E1) $\uparrow$ = 1.82×10^{-5} 11 Interpreted as member of two-phonon quintuplet (2 ⁺ ⊗3 ⁻).
2488	1 ⁺	0.0021 eV 3	3.9 6	B(M1) $\uparrow$ =0.035 6
2659	1 ⁺	0.0045 eV 4	7.3 7	B(M1) $\uparrow$ =0.062 6
2762	1	0.0020 eV 5	3.0 7	B(M1) $\uparrow$ =0.025 6; B(E1) $\uparrow$ = 0.27×10^{-5} 6
2829	1 ⁻	0.0145 eV 10	21 3	B(E1) $\uparrow$ = 1.83×10^{-5} 13
2845	1 ⁺	0.0069 eV 13	9.8 23	B(M1) $\uparrow$ =0.077 15
3068	1 ⁺	0.0207 eV 10	25.4 12	B(M1) $\uparrow$ =0.186 9
3156	1 ⁻	0.0052 eV 5	6.0 69	B(E1) $\uparrow$ = 0.48×10^{-5} 5
3282	1	0.0009 eV 6	1.0 6	B(M1) $\uparrow$ =0.007 4; B(E1) $\uparrow$ = 0.08×10^{-5} 5
3401	1	0.0017 eV 4	1.7 4	B(M1) $\uparrow$ =0.011 3; B(E1) $\uparrow$ = 0.13×10^{-5} 3
3423	1 ⁺	0.0028 eV 5	2.8 5	B(M1) $\uparrow$ =0.018 3
3601	1	0.0064 eV 6	5.7 5	B(M1) $\uparrow$ =0.036 3; B(E1) $\uparrow$ = 0.39×10^{-5} 4
3641	1	0.0013 eV 4	1.1 3	B(M1) $\uparrow$ =0.007 2; B(E1) $\uparrow$ = 0.08×10^{-5} 2
3655	1	0.0042 eV 10	3.6 21	B(M1) $\uparrow$ =0.022 5; B(E1) $\uparrow$ = 0.25×10^{-5} 6
3732	1	0.0067 eV 7	5.5 5	B(M1) $\uparrow$ =0.033 3; B(E1) $\uparrow$ = 0.37×10^{-5} 4
3763	1	0.0024 eV 7	1.9 6	B(M1) $\uparrow$ =0.012 4; B(E1) $\uparrow$ = 0.13×10^{-5} 4
3782	1	0.0100 eV 14	8 3	B(M1) $\uparrow$ =0.048 7; B(E1) $\uparrow$ = 0.53×10^{-5} 7
3849	1	0.0086 eV 8	6.7 6	B(M1) $\uparrow$ =0.039 4; B(E1) $\uparrow$ = 0.43×10^{-5} 4
3876	1	0.0056 eV 7	4.3 5	B(M1) $\uparrow$ =0.025 3; B(E1) $\uparrow$ = 0.27×10^{-5} 3
3895	1	0.0186 eV 21	14 4	B(M1) $\uparrow$ =0.082 9; B(E1) $\uparrow$ = 0.90×10^{-5} 10
3976	1	0.0044 eV 7	3.2 5	B(M1) $\uparrow$ =0.018 3; B(E1) $\uparrow$ = 0.20×10^{-5} 3
3997	1	0.0022 eV 7	1.6 5	B(M1) $\uparrow$ =0.009 3; B(E1) $\uparrow$ = 0.10×10^{-5} 3
4027	1	0.0067 eV 9	4.7 6	B(M1) $\uparrow$ =0.027 4; B(E1) $\uparrow$ = 0.29×10^{-5} 4

† Γ_0 =ground state transition width.

‡ Integrated cross section.

 $\gamma(^{116}\text{Cd})$

POL=azimuthal asymmetry, negative value indicates electric and positive value magnetic nature of transition.

$E_i(\text{level})$	J_i^π	E_γ	$I_\gamma^\dagger$	E_f	J_f^π	Mult.	Comments
2478	1 ⁻	2478		0	0 ⁺	E1	POL=-0.07 4.
2488	1 ⁺	2488		0	0 ⁺	M1	POL=+0.03 6.
2659	1 ⁺	2659		0	0 ⁺	M1	POL=+0.11 7.
2762	1	2762		0	0 ⁺		
2829	1 ⁻	2316	40 4	513	2 ⁺		
		2829	100	0	0 ⁺	E1	POL=-0.05 3.

Continued on next page (footnotes at end of table)

$^{116}\text{Cd}(\gamma, \text{pol } \gamma')$ [2005Ko32](#) (continued) $\gamma(^{116}\text{Cd})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	$I_\gamma^\dagger$	E_f	J_f^π	Mult.	Comments
2845	1 ⁺	2332	194 37	513	2 ⁺		
		2845	100	0	0 ⁺	M1	POL=+0.29 13.
3068	1 ⁺	3068		0	0 ⁺	M1	POL=+0.04 3.
3156	1 ⁻	3156		0	0 ⁺	E1	POL=-0.10 7.
3282	1	3282		0	0 ⁺		
3401	1	3401		0	0 ⁺		
3423	1 ⁺	3423		0	0 ⁺	M1	POL=+0.11 27.
3601	1	3601		0	0 ⁺		
3641	1	3641		0	0 ⁺		
3655	1	3142	48 27	513	2 ⁺		
		3655	100	0	0 ⁺		
3732	1	3732		0	0 ⁺		
3763	1	3763		0	0 ⁺		
3782	1	3269	43 13	513	2 ⁺		
		3782	100	0	0 ⁺		
3849	1	3849		0	0 ⁺		
3876	1	3876		0	0 ⁺		
3895	1	3382	48 12	513	2 ⁺		
		3895	100	0	0 ⁺		
3976	1	3976		0	0 ⁺		
3997	1	3997		0	0 ⁺		
4027	1	4027		0	0 ⁺		

[†] Deduced (by compiler) from R_{exp} given in table IV of [2005Ko32](#).

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Level Scheme

Intensities: Relative photon branching from each level

