

Coulomb excitation 1991KrZR,1958Mc02,1972An28

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 1471 (2010)	1-May-2009

1991KrZR: $^{113}\text{Cd}(^{197}\text{Au}, ^{197}\text{Au}', \gamma)$ E=approximately 4.5 MeV/u.

Enriched ^{113}Cd target with thick lead-backing to stop the recoils 3 HPGe detectors at 0° , 54° , and 90° . γ -intensities, γ - γ -coincidences and angular distributions. Spins and multipole mixing ratios deduced from angular distributions.

1958Mc02: $^{113}\text{Cd}(p, p'\gamma)$ E=2.1– 3.3 MeV, scin. Measured E_γ , I_γ , $\gamma(\theta)$, linear pol.

1972An28: $^{113}\text{Cd}(\alpha, \alpha'\gamma)$ E=12.4 MeV. $^{113}\text{Cd}(^{12}\text{C}, ^{12}\text{C}'\gamma)$ E=35.3, 41.1 MeV, semi. Measured E_γ , I_γ .

Other: **1971GeZW.**

 ^{113}Cd Levels

E(level)	J^π †	$T_{1/2}$ ‡	Comments
0.0	$1/2^+$		
298.59 7	$3/2^+$	29 ps 9	$B(E2)\uparrow=0.13$ 2 (1972An28)
316.18 7	$5/2^+$	4.9 ns 7	$B(E2)\uparrow=0.0080$ 10 (1972An28)
583.95 7	$5/2^+$	6.9 ps 14	$B(E2)\uparrow=0.32$ 6 (1972An28)
680.41 8	$3/2^+$	<12 fs	$B(E2)\uparrow=0.070$ 15 (1972An28)
708.49 7	$5/2^+$		
897.49 9	$3/2^+$		
1006.88 12	$7/2^+$		
1313.77 9	$5/2^+$		
1450.81 13	$3/2^+$		
1513.05 12	$7/2^+$		

† As given by **1991KrZR**.

‡ From $B(E2)$.

 $\gamma(^{113}\text{Cd})$

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Mult.	δ	$a^\#$	Comments
17.7	3.1 4	316.18	$5/2^+$	298.59	$3/2^+$	M1		10.2 3	$B(M1)(W.u.)=0.019$ 5 I_γ : from 1972An28 .
96.2 1	147.2	680.41	$3/2^+$	583.95	$5/2^+$	[M1,E2]		1.1 6	
267.7 1	>0	583.95	$5/2^+$	316.18	$5/2^+$				
285.2 1	>0	583.95	$5/2^+$	298.59	$3/2^+$				
298.6 1	100	298.59	$3/2^+$	0.0	$1/2^+$	M1+E2	+0.30 +3-1	0.029 5	$B(M1)(W.u.)=0.025$ 8; $B(E2)(W.u.)=20$ 8 δ : from 1972An28 . $\delta=0.29$ (1958Mc02) from $\gamma(\theta)$ and linear polarization. $\delta=0.26$ +5-5 or -3.6 +6-10 (1991KrZR).
316.2 1	100	316.18	$5/2^+$	0.0	$1/2^+$	[E2]		0.0080 10	$B(E2)(W.u.)=0.83$ 13
364.3 1	30.2	680.41	$3/2^+$	316.18	$5/2^+$	M1+E2	-0.02 7		$B(M1)(W.u.)>2.5$ δ : from 1972An28 . $\delta=-0.17$ +7-6 or 2.7 +6-4 (1991KrZR).
382.0 1	26.6 4	680.41	$3/2^+$	298.59	$3/2^+$	M1+E2	+0.16 15		$B(M1)(W.u.)>1.7$ δ : from 1972An28 . $\delta=0.16$ +5-5 or -11 +7-5 (1991KrZR).
392.3 1	36.5	708.49	$5/2^+$	316.18	$5/2^+$	M1+E2			δ : $\delta=-0.17$ +12-17 or -2.7 +8-16 (1991KrZR).
409.9 1	4.9	708.49	$5/2^+$	298.59	$3/2^+$	M1+E2			δ : $\delta=+7$ +14-3 or -0.17 +17-20 (1991KrZR).

Continued on next page (footnotes at end of table)

Coulomb excitation [1991KrZR](#), [1958Mc02](#), [1972An28](#) (continued) $\gamma(^{113}\text{Cd})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	Comments
581.3	I	897.49	$3/2^+$	316.18	$5/2^+$			
583.9	I	583.95	$5/2^+$	0.0	$1/2^+$	E2		B(E2)(W.u.)=37.8
598.9	I	897.49	$3/2^+$	298.59	$3/2^+$	M1+E2		δ : $\delta=+5.9$ +87-18 or -0.09 +7-8 (1991KrZR).
680.6	100 23	680.41	$3/2^+$	0.0	$1/2^+$	M1+E2	+0.02 +2-6	B(M1)(W.u.)>1.2 δ : from 1972An28 . $\delta=0.15$ +5-6 or -2.4 +3-4 (1991KrZR).
690.7	I	1006.88	$7/2^+$	316.18	$5/2^+$	M1+E2	3.7 +63-17	δ : from 1991KrZR .
708.5	I	708.49	$5/2^+$	0.0	$1/2^+$	M1+E2		δ : $\delta=+0.29$ +9-9 or -4 +1-3 (1991KrZR).
729.8	I	1313.77	$5/2^+$	583.95	$5/2^+$	M1+E2	-0.18 +11-12	δ : from 1991KrZR .
770.4	I	1450.81	$3/2^+$	680.41	$3/2^+$	M1+E2		δ : $\delta=+0.01$ +25-25 or 4.1 -23 (1991KrZR).
929.1	I	1513.05	$7/2^+$	583.95	$5/2^+$	M1+E2	0.26 +10-10	δ : from 1991KrZR .
997.6	I	1313.77	$5/2^+$	316.18	$5/2^+$	M1+E2	1.6 +11-11	δ : from 1991KrZR .

† From [1991KrZR](#).‡ % photon branching from each level ([1991KrZR](#)).# Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Coulomb excitation 1991KrZR,1958Mc02,1972An28**Level Scheme**Intensities: Relative I_γ

Legend

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

