^{111}Cd(γ,γ') 2005Ko32,1988Ne04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 110, 1239 (2009)	1-Feb-2008

2005KO32:E=Bremsstrahlung beam with maximum energy of 4 MeV. Measured Eγ, Iγ, 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.

1988Ne04: Photoactivation by ^{60}Co source.

1991Vo05 were not able to calculate photoactivation because they concluded that available data are conflicting.

They suggest levels associated with the population of the 48 level isomeric state. They have deduced half-lives for three levels and propose J^{π} for the 736 and 1130 levels.

^{111}Cd Levels

E(level)	J^{π}	gΓ_0 [†]	$I_{S,0}$ eV b [‡]	Comments
0[#]	1/2$^+$[#]			
245[#]	5/2$^+$[#]			
342[#]	3/2$^+$[#]			
736	(5/2$^+$)	>1 ns		gΓ_0: From 1988Ne04.
1130.4	(5/2$^+$)	80 ps		
1330		1 ps		gΓ_0: From 1988Ne04.
2197		0.00459 eV *22*	3.7 *4*	B(M1)↑=0.037 *4*; B(E1)↑=0.41×10^{-5} *5*
2236		0.00214 eV *8*	1.6 *2*	B(M1)↑=0.017 *3*; B(E1)↑=0.18×10^{-5} *3*
2311		0.00416 eV *9*	3.0 *3*	B(M1)↑=0.029 *3*; B(E1)↑=0.32×10^{-5} *3*
2384		0.00060 eV *2*	0.4 *1*	B(M1)↑=0.004 *1*; B(E1)↑=0.04×10^{-5} *1*
2415		0.0029 eV *9*	1.9 *8*	B(M1)↑=0.018 *6*; B(E1)↑=0.19×10^{-5} *6*
2419		0.0094 eV *3*	6.2 *5*	B(M1)↑=0.057 *4*; B(E1)↑=0.63×10^{-5} *5*
2449		0.00083 eV *2*	0.5 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.05×10^{-5} *1*
2538		0.00157 eV *3*	0.9 *1*	B(M1)↑=0.008 *1*; B(E1)↑=0.09×10^{-5} *1*
2560		0.00472 eV *7*	2.8 *2*	B(M1)↑=0.024 *2*; B(E1)↑=0.27×10^{-5} *2*
2659		0.00137 eV *3*	0.7 *1*	B(M1)↑=0.006 *1*; B(E1)↑=0.07×10^{-5} *1*
2671		0.00394 eV *6*	2.1 *2*	B(M1)↑=0.018 *2*; B(E1)↑=0.20×10^{-5} *2*
2690		0.00170 eV *3*	0.9 *1*	B(M1)↑=0.008 *1*; B(E1)↑=0.08×10^{-5} *1*
2698		0.00174 eV *3*	0.9 *1*	B(M1)↑=0.008 *1*; B(E1)↑=0.08×10^{-5} *1*
2708		0.00343 eV *5*	1.8 *2*	B(M1)↑=0.015 *1*; B(E1)↑=0.16×10^{-5} *1*
2730		0.00171 eV *3*	0.9 *1*	B(M1)↑=0.007 *1*; B(E1)↑=0.08×10^{-5} *1*
2756		0.00148 eV *3*	0.7 *1*	B(M1)↑=0.006 *1*; B(E1)↑=0.07×10^{-5} *1*
2775		0.00300 eV *4*	1.5 *1*	B(M1)↑=0.012 *1*; B(E1)↑=0.13×10^{-5} *1*
2788		0.00082 eV *3*	0.4 *1*	B(M1)↑=0.003 *1*; B(E1)↑=0.04×10^{-5} *1*
2831		0.00127 eV *3*	0.6 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.05×10^{-5} *1*
2858		0.00621 eV *81*	2.9 *2*	B(M1)↑=0.023 *2*; B(E1)↑=0.25×10^{-5} *2*
3039		0.00581 eV *5*	2.4 *1*	B(M1)↑=0.018 *1*; B(E1)↑=0.20×10^{-5} *1*
3059		0.0030 eV *8*	1.2 *6*	B(M1)↑=0.009 *3*; B(E1)↑=0.10×10^{-5} *3*
3113		0.00129 eV *2*	0.5 *1*	B(M1)↑=0.004 *1*; B(E1)↑=0.04×10^{-5} *1*
3131		0.0112 eV *10*	4.4 *6*	B(M1)↑=0.032 *2*; B(E1)↑=0.35×10^{-5} *2*
3147		0.00177 eV *2*	0.7 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.05×10^{-5} *1*
3173		0.00490 eV *4*	1.9 *1*	B(M1)↑=0.013 *1*; B(E1)↑=0.15×10^{-5} *1*
3185		0.00211 eV *3*	0.8 *1*	B(M1)↑=0.006 *1*; B(E1)↑=0.06×10^{-5} *1*
3207		0.00284 eV *10*	1.1 *2*	B(M1)↑=0.007 *1*; B(E1)↑=0.08×10^{-5} *1*
3246		0.00215 eV *3*	0.8 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.06×10^{-5} *1*
3259		0.00196 eV *3*	0.7 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.05×10^{-5} *1*
3302		0.00511 eV *7*	1.8 *2*	B(M1)↑=0.012 *1*; B(E1)↑=0.14×10^{-5} *1*
3323		0.0036 eV *3*	1.3 *3*	B(M1)↑=0.009 *1*; B(E1)↑=0.09×10^{-5} *1*

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^{111}Cd(γ,γ') 2005Ko32,1988Ne04 (continued)

^{111}Cd Levels (continued)

E(level)	gΓ_0[†]	$I_{S,0}$ eV b[‡]	Comments
3351	0.0049 eV *46*	1.7 *13*	B(M1)↑=0.011 *6*; B(E1)↑=0.12×10^{-5} *7*
3362	0.00318 eV *3*	1.1 *1*	B(M1)↑=0.007 *1*; B(E1)↑=0.08×10^{-5} *1*
3384	0.00264 eV *3*	0.9 *1*	B(M1)↑=0.006 *1*; B(E1)↑=0.07×10^{-5} *1*
3394	0.00231 eV *3*	0.8 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.06×10^{-5} *1*
3455	0.00818 eV *16*	2.6 *2*	B(M1)↑=0.017 *1*; B(E1)↑=0.19×10^{-5} *2*
3467	0.0208 eV *19*	6.7 *8*	B(M1)↑=0.043 *2*; B(E1)↑=0.48×10^{-5} *2*
3483	0.0110 eV *8*	3.5 *5*	B(M1)↑=0.022 *2*; B(E1)↑=0.25×10^{-5} *2*
3498	0.00853 eV *8*	2.7 *2*	B(M1)↑=0.017 *1*; B(E1)↑=0.19×10^{-5} *1*
3526	0.0282 eV *25*	8.7 *9*	B(M1)↑=0.055 *5*; B(E1)↑=0.61×10^{-5} *6*
3542	0.00533 eV *5*	1.6 *1*	B(M1)↑=0.010 *1*; B(E1)↑=0.11×10^{-5} *1*
3553	0.00234 eV *4*	0.7 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.05×10^{-5} *1*
3566	0.00275 eV *4*	0.8 *1*	B(M1)↑=0.005 *1*; B(E1)↑=0.06×10^{-5} *1*
3573	0.00219 eV *4*	0.7 *1*	B(M1)↑=0.004 *1*; B(E1)↑=0.05×10^{-5} *1*
3671	0.00127 eV *4*	0.4 *1*	B(M1)↑=0.002 *1*; B(E1)↑=0.02×10^{-5} *1*
3691	0.00226 eV *5*	0.6 *1*	B(M1)↑=0.004 *1*; B(E1)↑=0.04×10^{-5} *1*
3702	0.00523 eV *8*	1.5 *2*	B(M1)↑=0.009 *1*; B(E1)↑=0.10×10^{-5} *1*
3710	0.00809 eV *13*	2.3 *2*	B(M1)↑=0.014 *1*; B(E1)↑=0.15×10^{-5} *1*
3715	0.00212 eV *7*	0.6 *1*	B(M1)↑=0.004 *1*; B(E1)↑=0.04×10^{-5} *1*
3733	0.00158 eV *7*	0.4 *1*	B(M1)↑=0.003 *1*; B(E1)↑=0.03×10^{-5} *1*
3740	0.00959 eV *18*	2.6 *2*	B(M1)↑=0.016 *1*; B(E1)↑=0.18×10^{-5} *1*
3756	0.00227 eV *8*	0.6 *1*	B(M1)↑=0.004 *1*; B(E1)↑=0.04×10^{-5} *1*
3781	0.00203 eV *7*	0.5 *1*	B(M1)↑=0.003 *1*; B(E1)↑=0.04×10^{-5} *1*
3801	0.00331 eV *10*	0.9 *2*	B(M1)↑=0.005 *1*; B(E1)↑=0.06×10^{-5} *1*
3828	0.0132 eV *16*	3.5 *7*	B(M1)↑=0.020 *3*; B(E1)↑=0.23×10^{-5} *3*
3856	0.018 eV *6*	4.7 *13*	B(M1)↑=0.028 *3*; B(E1)↑=0.31×10^{-5} *4*
3900	0.01091 eV *20*	2.8 *2*	B(M1)↑=0.016 *1*; B(E1)↑=0.18×10^{-5} *1*
3921	0.00311 eV *18*	0.8 *2*	B(M1)↑=0.004 *1*; B(E1)↑=0.05×10^{-5} *1*

[†] Γ_0=ground state transition width, g=statistical factor=(2J+1)/2, where J=spin of excited state, ground-state spin=1/2.
[‡] Integrated cross section.
[#] From ADOPTED LEVELS for ^{111}Cd.

$\gamma(^{111}Cd)$

E_i(level)	E_γ	I_γ[†]	E_f	J^π_f	E_i(level)	E_γ	I_γ[†]	E_f	J^π_f
2197	2197		0	1/2$^+$	2698	2356[‡]		342	3/2$^+$
2236	2236		0	1/2$^+$		2698		0	1/2$^+$
2311	2311		0	1/2$^+$	2708	2708		0	1/2$^+$
2384	2384		0	1/2$^+$	2730	2730		0	1/2$^+$
2415	2073[‡]		342	3/2$^+$	2756	2756		0	1/2$^+$
	2170	140 *44*	245	5/2$^+$	2775	2775		0	1/2$^+$
	2415	100	0	1/2$^+$	2788	2446[‡]		342	3/2$^+$
2419	2419		0	1/2$^+$		2788		0	1/2$^+$
2449	2449		0	1/2$^+$	2831	2489[‡]		342	3/2$^+$
2538	2538		0	1/2$^+$		2831		0	1/2$^+$
2560	2560		0	1/2$^+$	2858	2858		0	1/2$^+$
2659	2659		0	1/2$^+$	3039	3039		0	1/2$^+$
2671	2671		0	1/2$^+$	3059	2814	133 *56*	245	5/2$^+$
2690	2690		0	1/2$^+$		3059	100	0	1/2$^+$

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^{111}Cd(γ,γ') 2005Ko32,1988Ne04 (continued)

$\gamma(^{111}Cd)$ (continued)

E_i(level)	E_γ	I_γ †	E_f	J^π_f	E_i(level)	E_γ	I_γ †	E_f	J^π_f
3113	3113		0	$1/2^+$	3526	3281	378 *27*	245	$5/2^+$
3131	2886	31 *4*	245	$5/2^+$		3526	100	0	$1/2^+$
	3131	100	0	$1/2^+$	3542	3542		0	$1/2^+$
3147	3147		0	$1/2^+$	3553	3553		0	$1/2^+$
3173	3173		0	$1/2^+$	3566	3566		0	$1/2^+$
3185	3185		0	$1/2^+$	3573	3573		0	$1/2^+$
3207	3207		0	$1/2^+$	3671	3671		0	$1/2^+$
3246	3246		0	$1/2^+$	3691	3691		0	$1/2^+$
3259	3259		0	$1/2^+$	3702	3702		0	$1/2^+$
3302	3302		0	$1/2^+$	3710	3710		0	$1/2^+$
3323	3078	62.0 *16*	245	$5/2^+$	3715	3715		0	$1/2^+$
	3323	100	0	$1/2^+$	3733	3733		0	$1/2^+$
3351	3106	244 *17*	245	$5/2^+$	3740	3740		0	$1/2^+$
	3351	100	0	$1/2^+$	3756	3756		0	$1/2^+$
3362	3362		0	$1/2^+$	3781	3781		0	$1/2^+$
3384	3384		0	$1/2^+$	3801	3801		0	$1/2^+$
3394	3394		0	$1/2^+$	3828	3583	136 *20*	245	$5/2^+$
3455	3455		0	$1/2^+$		3828	100	0	$1/2^+$
3467	3222	21.7 *24*	245	$5/2^+$	3856	3514	101 *15*	342	$3/2^+$
	3467	100	0	$1/2^+$		3611	62 *12*	245	$5/2^+$
3483	3238	54 *7*	245	$5/2^+$		3856	100	0	$1/2^+$
	3483	100	0	$1/2^+$	3900	3900		0	$1/2^+$
3498	3498		0	$1/2^+$	3921	3921		0	$1/2^+$

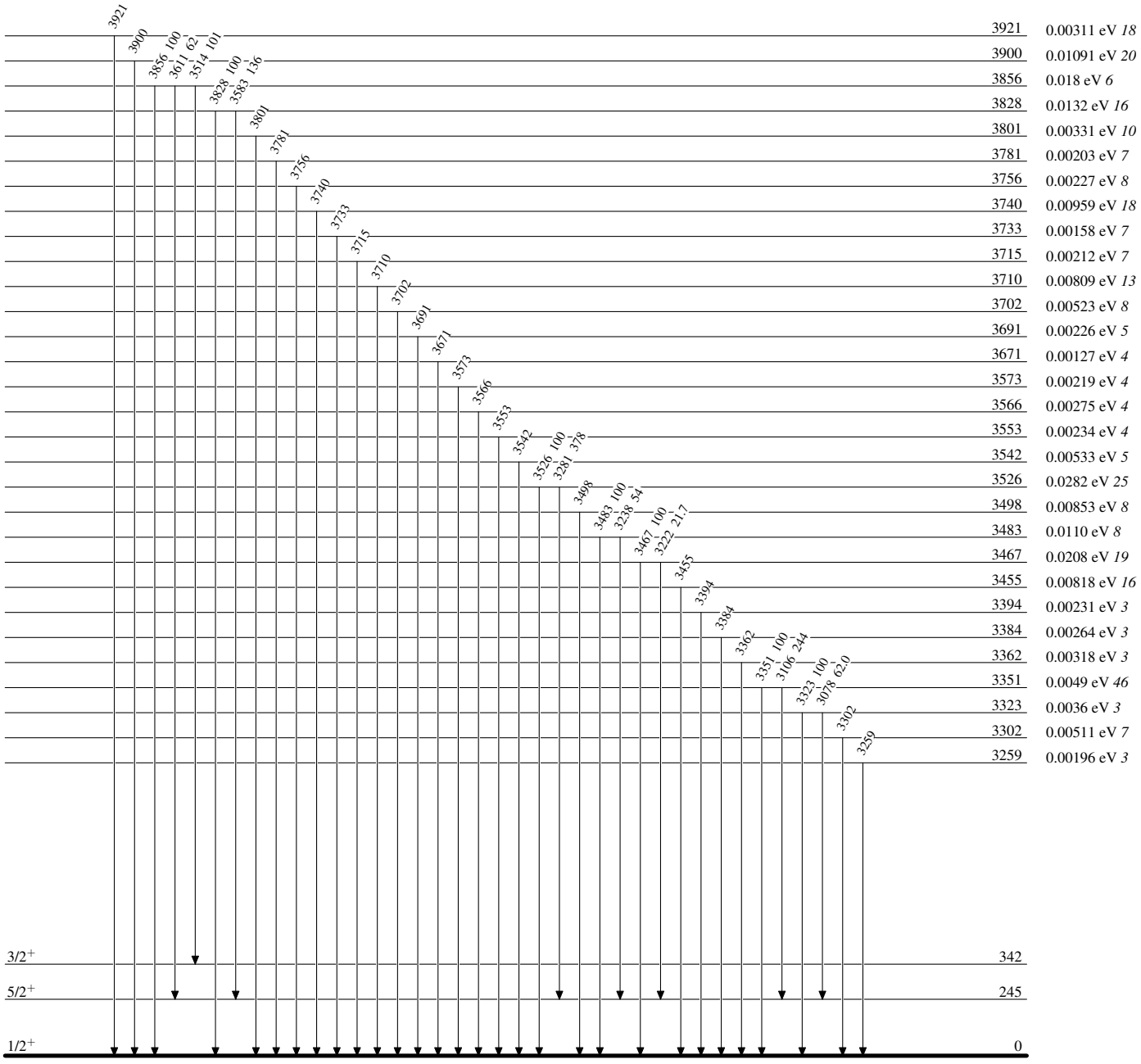
† Deduced from R_{exp} given in table IV of 2005Ko32.

‡ Placement of transition in the level scheme is uncertain.

^{111}Cd(γ,γ′) 2005Ko32,1988Ne04

Level Scheme

Intensities: Relative photon branching from each level



$^{111}_{48}Cd_{63}$

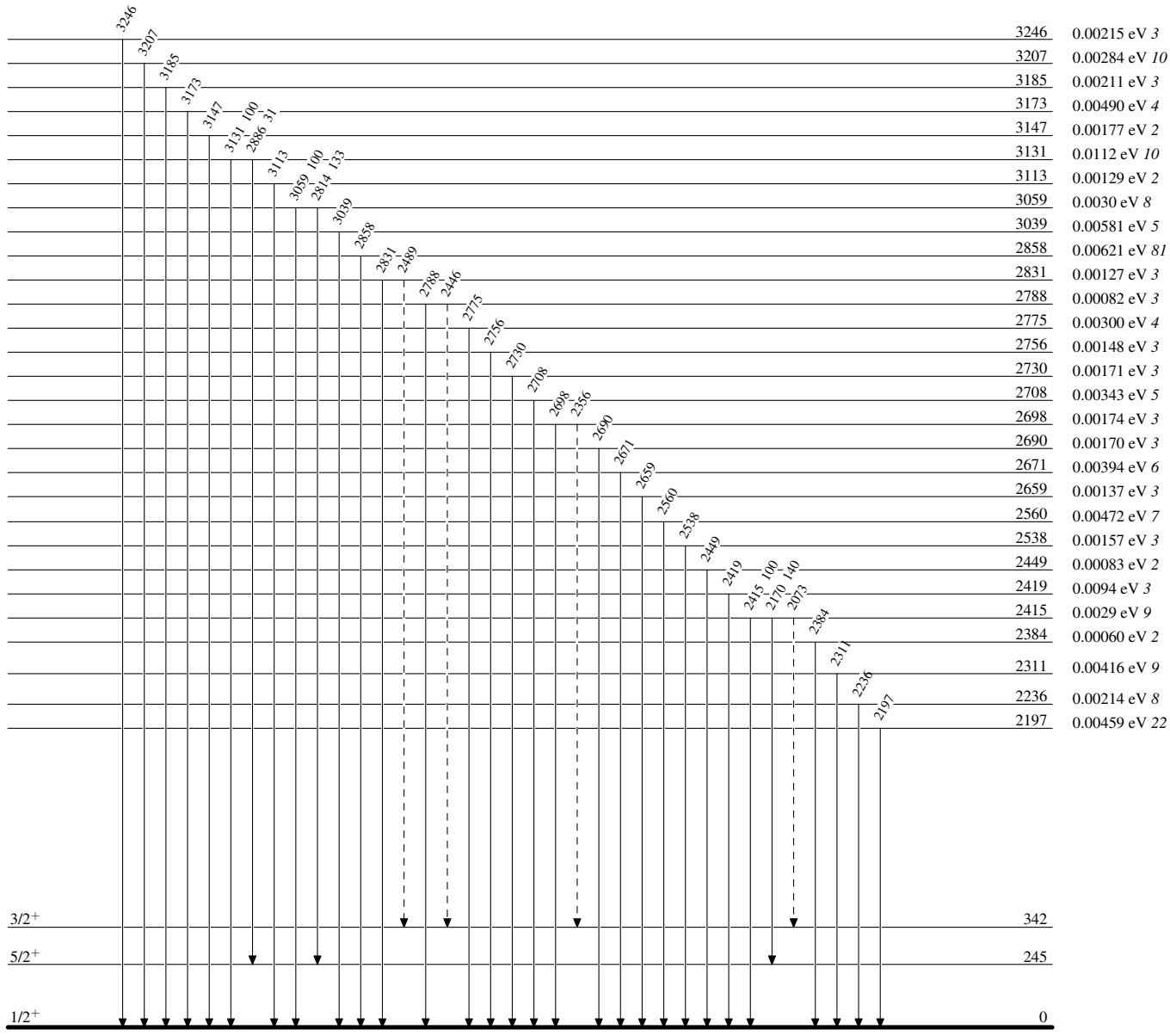
^{111}Cd(γ,γ') **2005Ko32,1988Ne04**

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{111}_{48}Cd_{63}$