^{107}Ag(p,nγ) 1990Vi07,1973Ny03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 109, 1383 (2008)	1-Mar-2008

1990Vi07: E(p)=6.8 MeV; measured Eγ, $\gamma\gamma$-coin.
1973Ny03: E(p)=3-12 MeV; measured Eγ, Iγ, I(ce), $\gamma\gamma$-coin, excit.
1974Ha41: E(p)=10 MeV; measured Eγ, Iγ of prominent transitions.
1974Be17: E(p)=7 MeV; measured $\gamma(\theta$,H,t), γ(t) pulsed p.
E(level): low-lying 1/2$^+$ states occur in ^{109}Cd, ^{111}Cd at 60, 0 keV, respectively. Corresponds with L=0 excitation at 457 keV, in (d,p). 1973Ny03 looked for this level but did not see it.

^{107}Cd Levels

Branching: Iγ(300γ)/Iγ(505γ)=0.020 (6-MeV p), 0.012 (11-MeV p).
1976Do01 propose band structure of s1/2 neutron coupled to ^{106}Cd core; E(levels) compared (exp vs theory).

E(level)†	J$^\pi$‡	$T_{1/2}$	Comments
0.0	5/2$^+$	6.50 h *2*	
204.92 *3*	7/2$^+$		
320.97 *3*	5/2$^+$		
365.2 *3*	3/2$^+$		
457.68 *6*	(1/2$^+$)		
505.43 *4*	7/2$^+$		
702.60 *6*	(3/2)$^+$		Branching: Iγ(381γ)/Iγ(702γ)=0.17 (6-MeV p), 0.18 (11-MeV p).
809.01 *5*	9/2$^+$		Branching: Iγ(303γ):Iγ(604γ):Iγ(809γ)=20:34:100 (6-MeV p), 14:37:100 (11-MeV p), 26:45:100 (10-MeV p).
840.2 *3*	(3/2)$^+$		Branching: Iγ(840γ)/Iγ(519γ)≈0.94 (6-MeV p),≈1.1 (11-MeV p).
845.51 *8*	11/2$^-$		$T_{1/2}$: for $T_{1/2}$ data of 1974Be17 see (α,xnγ).
905.59 *7*	1/2$^+$		Probably corresponds with L=0 (d,p) excitation at 911 keV. Branching: Iγ(905γ)/Iγ(540γ)=0.75 (6-MeV p), 0.82 (11-MeV p).
919.38 *8*	(5/2)$^+$		Branching: Iγ(554γ)/Iγ(414γ)=0.92 (6-MeV p), 0.84 (11-MeV p).
921.62 *7*	(9/2)$^+$		Branching: Iγ(922γ)/Iγ(416γ)=0.63 (6-MeV p), 0.95 (11-MeV p), 0.40 (10-MeV p). Deviation is attributed to γ-ray doublets.
932.96 *7*	11/2$^+$		
998.43 *7*	(5/2)$^+$		Branching: Iγ(678γ):Iγ(794γ):Iγ(999γ)=10:15:100 (6-MeV p), 14/16/100 (11-MeV p).
1059.49 *8*	(5/2)$^-$		Branching: Iγ(738γ)/Iγ(1059γ)=0.16 (6-MeV p), 0.14 (11-MeV p).
1158.45 *12*	(5/2$^+$)		Branching: Iγ(1158γ)/Iγ(954γ)=0.21 (6-MeV p), 0.39 (11-MeV p).
1213.52 *6*	(3/2$^+$,5/2$^+$)		
1236.08 *6*	(3/2,5/2,7/2)		
1244.59 *6*	3/2$^+$,5/2$^+$		
1268.40 *6*	7/2$^+$		
1278.95 *7*	(1/2,3/2,5/2)		
1319.55 *8*	(5/2,7/2)		
1377.6 *3*	7/2$^+$		Branching: Iγ(456γ)/Iγ(1377γ)=0.88 (6-MeV p), 0.91 (11-MeV p).
1420.45 *9*	(11/2$^+$)		Branching: Iγ(611γ)/Iγ(915γ)=0.37 (6-MeV p), 0.54 (11-MeV p).
1525.55 *10*	(3/2,5/2,7/2)		
1530.53 *10*			
1573.14 *8*	(3/2,5/2)		
1590.72 *8*	(3/2$^+$,5/2$^+$)		
1645.81 *10*			
1675.3 *3*			
1712.6 *3*			
1719.43 *8*	(3/2,5/2)		
1763.93 *10*			
1776.19 *13*	7/2$^+$		

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^{107}Ag(p,nγ) 1990Vi07,1973Ny03 (continued)

^{107}Cd Levels (continued)

E(level)†	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†
1780.8 *4*	1962.94 *21*		2209.97 *8*		2421.6 *4*
1869.87 *9*	2006.74 *21*	7/2+	2256.9 *3*		2447.62 *12*
1876.71 *10*	2082.20 *12*		2285.3 *4*	(7/2+)	2462.54 *11*
1885.32 *15*	2146.11 *9*		2304.69 *11*	(7/2+)	2583.95 *11*
1909.18 *11*	2158.68 *8*		2309.59 *11*		
1920.18 *21*	2204.06 *11*		2342.86 *11*		

† Level energy from least-squares adjustment.
‡ As given by 1990Vi07, 1991Vi07.

γ(^{107}Cd)

α(K)exp=ce(K)/Iγ, measured on-line at E(p)=11 MeV, are normalized to α(K)(205γ)=0.059 (M1 + 6% E2 theory). See 1973Ny03, 1973Jo06 for ce spectra.

E_i(level)	J^π_i	Eγ†	Iγ@	E_f	J^π_f	Mult.&	Comments
204.92	7/2+	204.95 *3*	100	0.0	5/2+	M1+E2	K/L=8.6 *7* via (p,nγ) includes anisotropy effects; compare K/L=7.9 *5* from chem separated ^{107}In activity (1973Jo06,1973Ny03).
320.97	5/2+	320.94 *4*	112 *6*	0.0	5/2+	M1(+E2)	α(K)exp=0.020 *2*
365.2	3/2+	365.29 *5*	153 *9*	0.0	5/2+	M1(+E2)	α(K)exp=0.0144 *12*
457.68	(1/2+)	92.7# *1*	26.5 *13*	365.2	3/2+		
		457.4# *3*	13.3 *11*	0.0	5/2+		Eγ: placed deexciting a level at 1159 by 1973Ny03. α(K)exp=0.0068 *8*.
505.43	7/2+	300.45 *15*	3.0 *3*	204.92	7/2+	M1(+E2)	α(K)exp=0.021 *4*
		505.51 *7*	82 *5*	0.0	5/2+	M1+E2	α(K)exp=0.0052 *7*
702.60	(3/2)+	197.6# *1*	1.0 *1*	505.43	7/2+		
		244.6# *2*	1.2 *2*	457.68	(1/2+)		
		381.5 *3*	7.1 *5*	320.97	5/2+	M1(+E2)	α(K)exp=0.011 *3*
		702.32 *12*	40.9 *25*	0.0	5/2+	M1,E2	α(K)exp=0.0024 *3*
809.01	9/2+	303.53 *7*	3.0 *2*	505.43	7/2+	M1(+E2)	α(K)exp=0.017 *3*
		604.03 *8*	10.1 *8*	204.92	7/2+	M1+E2	
		809.02 *8*	12.0 *9*	0.0	5/2+	E2	α(K)exp=0.0017 *3*
840.2	(3/2)+	475.0# *1*	3.5 *3*	365.2	3/2+		
		519.28 *15*	10.9 *7*	320.97	5/2+	M1,E2	α(K)exp=0.0061 *10*
		840.16 *15*	11.6 *9*	0.0	5/2+		Iγ: strong interference from other lines.
845.51	11/2−	(36.5 *1*)	1.0 *CA*	809.01	9/2+	E1	Eγ: from (α,2nγ) (1974Ha41). Iγ: from branching; Iγ(36γ)/Iγ(640γ)=0.11 *1* (α,2nγ) (1974Ha41). Mult.: from adopted gammas.
		640.58 *10*	8.7	204.92	7/2+	M2	α(K)exp=0.0112 *12*
905.59	1/2+	447.9# *1*	2.4 *3*	457.68	(1/2+)		
		540.4 *1*	9.5 *6*	365.2	3/2+	M1,E2	α(K)exp=0.0054 *10*
		905.5‡	12	0.0	5/2+		
919.38	(5/2)+	413.7 *4*	9.6 *6*	505.43	7/2+	M1(+E2)	α(K)exp=0.0094 *12*
		554.16 *15*	9.0 *6*	365.2	3/2+	M1,E2	α(K)exp=0.0045 *10*
		598.5# *2*	3.4 *3*	320.97	5/2+		
		714.1# *3*	1.1 *3*	204.92	7/2+		

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^{107}Ag(p,nγ) 1990Vi07,1973Ny03 (continued)

γ(^{107}Cd) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f	Mult.[&]	Comments
919.38	(5/2)$^+$	919.4[#] *1*	3.9 *3*	0.0	5/2$^+$		
921.62	(9/2)$^+$	416.42 *15*	9.2	505.43	7/2$^+$	M1(+E2)	α(K)exp=0.0081 *12*
		601.1[#] *2*	2.8 *3*	320.97	5/2$^+$		
		716.7[#] *3*	1.1 *3*	204.92	7/2$^+$		
		921.8 *4*	4.9 *4*	0.0	5/2$^+$	(E2)	
932.96	11/2$^+$	728.03 *6*	5.1 *4*	204.92	7/2$^+$	E2	α(K)exp=0.0025 *3*
998.43	(5/2)$^+$	632.9[#] *1*	4.9 *2*	365.2	3/2$^+$		
		677.7 *2*	2.4 *2*	320.97	5/2$^+$		
		793.6 *2*	2.3 *2*	204.92	7/2$^+$		
		998.75 *12*	19.4 *15*	0.0	5/2$^+$	M1,E2	α(K)exp=0.00097 *21*
1059.49	(5/2)$^-$	694.1 *2*	3.0 *10*	365.2	3/2$^+$		
		738.5[‡]	2.6 *2*	320.97	5/2$^+$		
		855.2[#] *2*	0.3 *2*	204.92	7/2$^+$		
		1059.5[‡]	20.2 *15*	0.0	5/2$^+$	E1	α(K)exp=0.00043 *12*
1158.45	(5/2$^+$)	837.3[#] *2*	2.2 *2*	320.97	5/2$^+$		
		953.9 *3*	9.8 *11*	204.92	7/2$^+$		
		1158.0 *7*	3.4 *3*	0.0	5/2$^+$		
1213.52	(3/2$^+$,5/2$^+$)	756.3[#] *1*	1.3 *2*	457.68	(1/2$^+$)		
		848.1[#] *1*	4.9 *4*	365.2	3/2$^+$		
		892.5[#] *1*	2.3 *2*	320.97	5/2$^+$		
		1008.4[#] *2*	1.7 *2*	204.92	7/2$^+$		
		1213.3[#] *1*	5.9 *4*	0.0	5/2$^+$		
1236.08	(3/2,5/2,7/2)	871.0[#] *1*	3.0 *3*	365.2	3/2$^+$		
		915.0[#] *1*	3.8 *3*	320.97	5/2$^+$		
		1031.2[#] *2*	0.4 *1*	204.92	7/2$^+$		
		1236.0[#] *1*	6.9 *6*	0.0	5/2$^+$		
1244.59	3/2$^+$,5/2$^+$	786.7[#] *1*	3.1 *3*	457.68	(1/2$^+$)		
		879.5[#] *1*	4.6 *3*	365.2	3/2$^+$		
		1039.6[#] *1*	2.6 *3*	204.92	7/2$^+$		
		1244.7[#] *1*	6.4 *6*	0.0	5/2$^+$		
1268.40	7/2$^+$	347.1[#] *1*	0.8 *1*	921.62	(9/2)$^+$		
		459.4[#] *3*	0.8 *2*	809.01	9/2$^+$		
		762.6[#] *2*	0.9 *3*	505.43	7/2$^+$		
		903.5[#] *4*	1.2 *4*	365.2	3/2$^+$		
		947.8[#] *5*	0.9 *5*	320.97	5/2$^+$		
		1063.3[#] *1*	2.7 *3*	204.92	7/2$^+$		
		1268.33 *8*	5.5 *4*	0.0	5/2$^+$		
1278.95	(1/2,3/2,5/2)	373.4[#] *1*	0.7 *2*	905.59	1/2$^+$		
		438.6[#] *1*	2.0 *1*	840.2	(3/2)$^+$		
		821.4[#] *1*	5.9 *5*	457.68	(1/2$^+$)		
		1279.0[#] *2*	0.8 *4*	0.0	5/2$^+$		
1319.55	(5/2,7/2)	397.8[#] *1*	1.2 *2*	921.62	(9/2)$^+$		
		617.1 *1*	1.0 *1*	702.60	(3/2)$^+$		
		814.0[#] *2*	1.0 *2*	505.43	7/2$^+$		
		1319.6[#] *2*	0.8 *2*	0.0	5/2$^+$		
1377.6	7/2$^+$	456.1 *2*	5.8	921.62	(9/2)$^+$	M1,E2	α(K)exp=0.0081 *10*
		1056.4[#] *1*	2.8 *3*	320.97	5/2$^+$		

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^{107}Ag(p,nγ) 1990Vi07,1973Ny03 (continued)

γ(^{107}Cd) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [@]	E_f	J_f^π
1377.6	7/2+	1173.1[#] *1*	0.7 *3*	204.92	7/2+
		1377.33 *10*	3.1 *3*	0.0	5/2+
1420.45	(11/2+)	611.38 *10*	2.2 *4*	809.01	9/2+
		915.10 *12*	4.1	505.43	7/2+
1525.55	(3/2,5/2,7/2)	1020.1[#] *2*	1.3 *2*	505.43	7/2+
		1160.3[#] *1*	3.4 *3*	365.2	3/2+
		1204.8[#] *5*	1.7 *3*	320.97	5/2+
1530.53		1025.1[#] *2*	0.4 *1*	505.43	7/2+
		1325.6 *1*	1.2 *2*	204.92	7/2+
1573.14	(3/2,5/2)	513.8[#] *1*	8.4 *3*	1059.49	(5/2)−
		667.6[#] *3*	0.6 *1*	905.59	1/2+
		1207.9[#] *2*	4.5 *3*	365.2	3/2+
		1252.0[#] *1*	2.3 *2*	320.97	5/2+
1590.72	(3/2+,5/2+)	432.3[#] *1*	0.8 *2*	1158.45	(5/2+)
		592.4[#] *2*	0.5 *2*	998.43	(5/2)+
		888.1[#] *1*	2.0 *2*	702.60	(3/2)+
		1132.7[#] *2*	0.7 *3*	457.68	(1/2+)
		1225.5[#] *2*	2.3 *2*	365.2	3/2+
		1590.8[#] *2*	2.8 *3*	0.0	5/2+
1645.81		724.2[#] *1*	0.4 *1*	921.62	(9/2)+
		1140.3[#] *3*	1.1 *2*	505.43	7/2+
		1645.8[#] *2*	0.7 *2*	0.0	5/2+
1675.3		834.3[#] *2*	2.5 *2*	840.2	(3/2)+
		1309.2[#] *2*	1.4 *2*	365.2	3/2+
		1674.7[#] *2*	1.3 *2*	0.0	5/2+
1712.6		1507.7[#] *3*	0.8 *4*	204.92	7/2+
1719.43	(3/2,5/2)	659.9[#] *1*	2.3 *2*	1059.49	(5/2)−
		1354.2[#] *1*	1.4 *2*	365.2	3/2+
		1719.5[#] *2*	7.8 *3*	0.0	5/2+
1763.93		1258.4[#] *1*	2.5 *2*	505.43	7/2+
		1764.3[#] *2*	1.0 *2*	0.0	5/2+
1776.19	7/2+	1410.9[#] *2*	1.1 *3*	365.2	3/2+
		1571.3[#] *3*	3.2 *3*	204.92	7/2+
		1776.2[#] *2*	0.8 *2*	0.0	5/2+
1780.8		1416.0[#] *2*	0.8 *1*	365.2	3/2+
		1460.6[#] *2*	6.9 *2*	320.97	5/2+
		1780.8[#] *2*	3.7 *4*	0.0	5/2+
1869.87		1549.5[#] *2*	1.4 *2*	320.97	5/2+
		1869.7[#] *1*	3.9 *3*	0.0	5/2+
1876.71		1067.6[#] *1*	2.3 *3*	809.01	9/2+
		1556.1[#] *2*	1.5 *1*	320.97	5/2+
1885.32		1427.6[#] *2*	1.0 *1*	457.68	(1/2+)
		1520.1[#] *2*	2.1 *1*	365.2	3/2+
1909.18		1403.7[#] *1*	1.0 *3*	505.43	7/2+
		1704.6[#] *3*	1.3 *2*	204.92	7/2+

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^{107}Ag(p,nγ) 1990Vi07,1973Ny03 (continued)

γ(^{107}Cd) (continued)

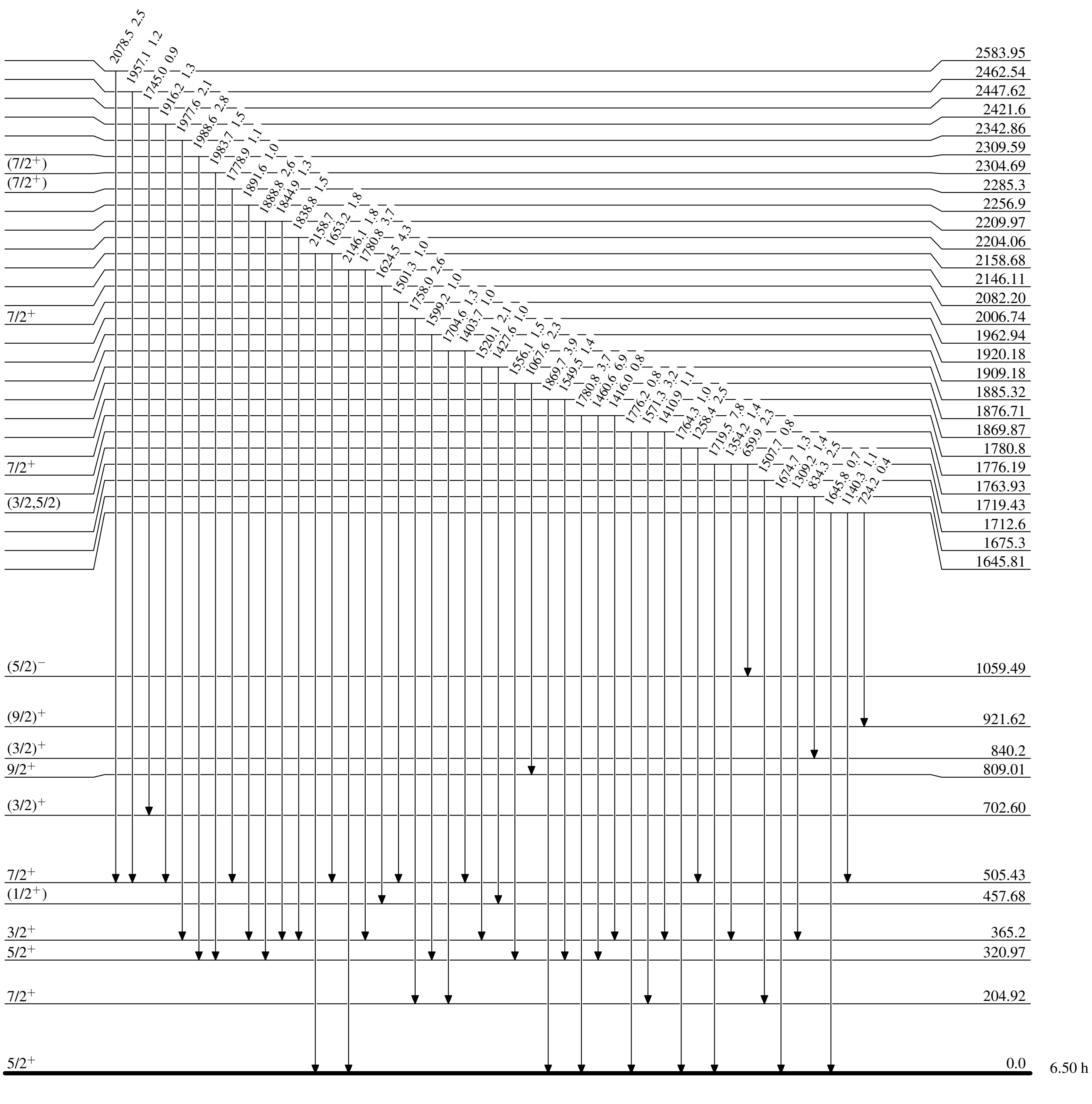
E_i(level)	J^π_i	E_γ †	I_γ @	E_f	J^π_f
1920.18		1599.2# *2*	1.0 *2*	320.97	5/2+
1962.94		1758.0# *2*	2.6 *2*	204.92	7/2+
2006.74	7/2+	1501.3# *2*	1.0 *1*	505.43	7/2+
2082.20		1624.5# *1*	4.3 *2*	457.68	(1/2+)
2146.11		1780.8# *2*	3.7 *4*	365.2	3/2+
		2146.1# *1*	1.8 *2*	0.0	5/2+
2158.68		1653.2# *1*	1.8 *2*	505.43	7/2+
		2158.7# *1*		0.0	5/2+
2204.06		1838.8# *1*	1.5 *1*	365.2	3/2+
2209.97		1844.9# *1*	1.3 *2*	365.2	3/2+
2209.97		1888.8# *1*	2.6 *3*	320.97	5/2+
2256.9		1891.6# *1*	1.0 *2*	365.2	3/2+
2285.3	(7/2+)	1778.9 *2*	1.1 *2*	505.43	7/2+
2304.69	(7/2+)	1983.7# *1*	1.5 *4*	320.97	5/2+
2309.59		1988.6# *1*	2.8 *2*	320.97	5/2+
2342.86		1977.6# *1*	2.1 *3*	365.2	3/2+
2421.6		1916.2# *4*	1.3 *2*	505.43	7/2+
2447.62		1745.0# *1*	0.9 *1*	702.60	(3/2)+
2462.54		1957.1# *1*	1.2 *2*	505.43	7/2+
2583.95		2078.5# *1*	2.5 *3*	505.43	7/2+

† From 1990Vi07. They agree with 1973Ny03 but many new gammas seen by 1990Vi07.
‡ Observed in (p,nγ), (d,pγ) reactions, not in ^{107}In decay (1973Ny03).
# Seen only by 1990Vi07.
@ From 1990Vi07 at 55°, agree with 1973Ny03 γ singles at 90°; others: 1973Ny03 (11-MeV p), 1974Ha41 (10-MeV p).
& Deduced from α(K)exp, except as noted. For additional evidence, see γ(θ) A_2 coef and α(K)exp via (α,2nγ).
x γ ray not placed in level scheme.

^{107}Ag(p,nγ) 1990Vi07,1973Ny03

Level Scheme

Intensities: Relative photon branching from each level

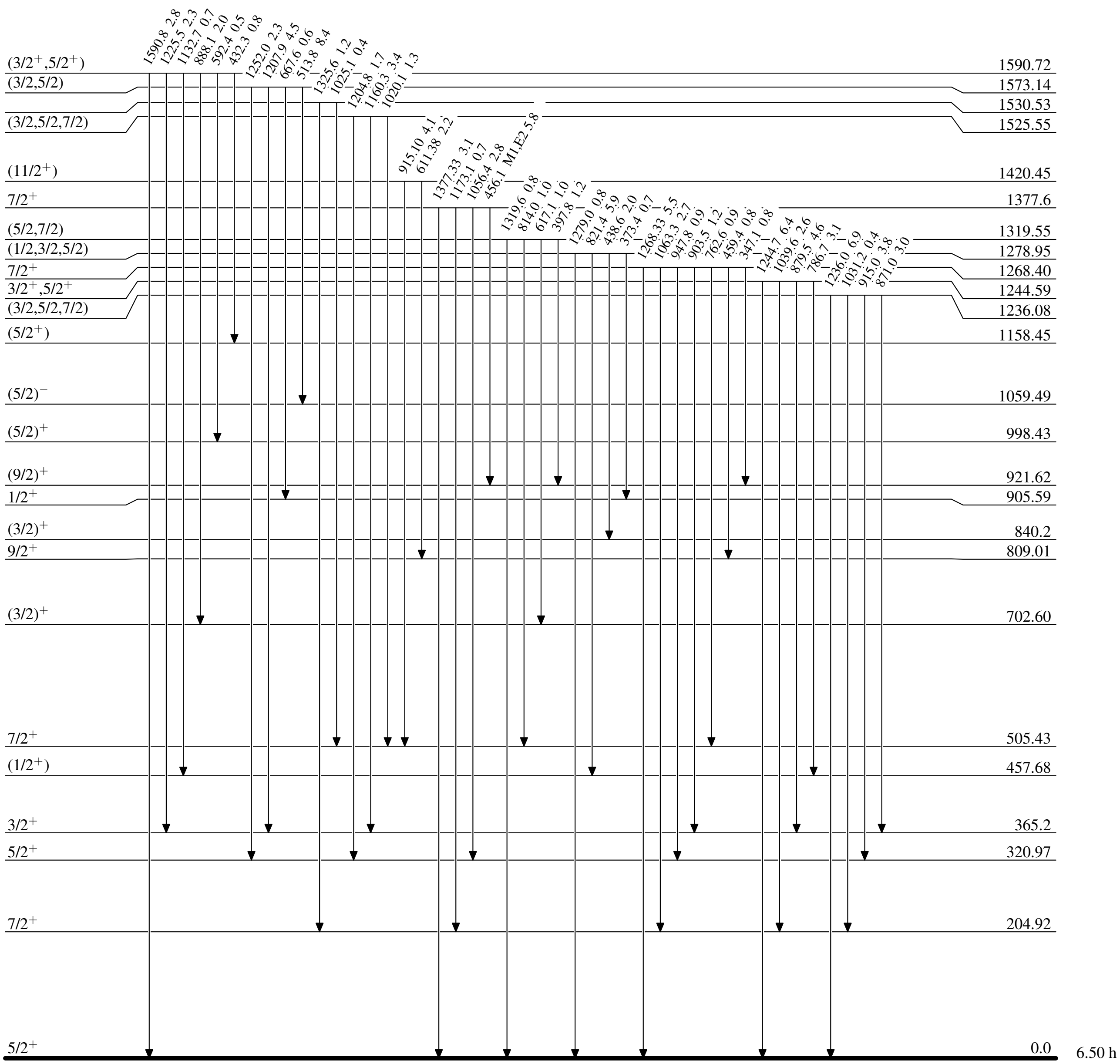


$^{107}_{48}Cd_{59}$

$^{107}Ag(p,n\gamma)$ 1990Vi07,1973Ny03

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{107}_{48}Cd_{59}$

$^{107}Ag(p,n\gamma)$ 1990Vi07,1973Ny03

Level Scheme (continued)

Intensities: Relative photon branching from each level