^{111}Cd(p,nγ) 1990Vi09,1976Di03

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

1990Vi09: E(p)=6.8 MeV.
Measured (semi) Eγ, Iγ, $\gamma\gamma$ (1990Vi09).
1976Di03: E(p)=6-11 MeV.
Measured (semi) Eγ, Iγ, $\gamma(\theta)$, E(ce), I(ce), excit (1976Di03).
Others: 1969Ki08 E(p)=4.2-5.4 MeV, 1974Ki02 E(p)=2.7-5.2 MeV, 1977Za03 EP=6 MeV; also 1988Ta01 report unpublished results in Table ii.
Some levels are also given in Table ii of 1988Ta01.
See drawings for 1976Di03 $\gamma\gamma$-coin results.

^{111}In Levels

E(level)	J$^{\pi}$[†]	T$_{1/2}$[‡]	Comments
0.0	9/2$^+$	2.83 d *1*	
536.76 *11*	1/2$^-$	7.7 min *2*	
802.96 *10*	3/2$^-$		
1102.00 *9*	5/2$^+$		J$^{\pi}$: based on E2 γ-decay to 9/2$^+$ g.s. and E1 to 3/2$^-$ state.
1152.86 *12*	(11/2)$^+$		J$^{\pi}$: member of ΔJ=1 sequence.
1187.50[#] *10*	1/2$^+$	0.14 ns *3*	T$_{1/2}$: 0.14 ns *3* (1971Ki14) 651γ(t) pulsed-proton beam.
1217.67[#] *11*	5/2$^+$		J$^{\pi}$: based on E2 γ-decay to 9/2$^+$ g.s. and E1 to 3/2$^-$ state.
1279.74 *13*	(5/2)$^-$	≤0.15 ns	J$^{\pi}$: 5/2 suggested by rel transition excit vs Iγ(743γ). T$_{1/2}$: ≤ 0.15 ns (1974Ki02) 743γ(t) pulsed beam.
1344.76[#] *12*	3/2$^+$		J$^{\pi}$: based on γ-decays to 1/2$^+$,1/2$^-$,5/2$^+$ states.
1401.21 *20*			
1461.7 *4*			
1500.58 *14*	7/2$^+$,9/2$^+$		
1542.3 *3*	(7/2,9/2)		J$^{\pi}$: (11/2$^+$,13/2$^+$) suggested in ^{111}Sn decay studies. Branching: Iγ(1543γ)/Iγ(441γ)=9 (1974Ki02), 13 *4* (1977Za03).
1610.3 *3*	(9/2)$^+$		
1671.59 *21*	(1/2$^-$,3/2$^-$,5/2$^-$)		
1845.82 *21*			
1849.71 *22*	1/2$^-$,3/2$^-$	<0.2 ns	T$_{1/2}$: < 0.2 ns (1971Ki14) 662γ(t) pulsed-proton beam.
1867.32 *13*	1/2$^+$,3/2$^+$,5/2$^+$		
1917.62 *20*	(7/2$^+$,9/2$^+$)		
1934.85 *24*	$^-$		
1970.2 *5*	$^-$		
2002.76 *12*			
2034.6 *3*	5/2$^-$,7/2$^-$		
2067.08 *13*			
2082.72 *10*			
2090.01 *12*			
2106.30 *21*			
2142.16 *11*			
2179.39 *11*			
2201.19 *14*			
2238.55 *24*			
2259.22 *13*			
2264.6 *5*			
2271.95 *13*			
2287.23 *17*			
2290.63 *14*			
2297.64 *12*			
2311.18 *13*			

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^{111}Cd(p,nγ) 1990Vi09,1976Di03 (continued)

^{111}In Levels (continued)

E(level)	E(level)	E(level)	E(level)
2322.73 *10*	2659.70 *13*	2861.16 *17*	3129.7 *3*
2340.65 *12*	2675.6 *4*	2926.4 *4*	3164.4 *4*
2364.67 *19*	2697.3 *4*	2935.18 *14*	3177.96 *24*
2479.77 *13*	2724.3 *5*	2997.8 *4*	3199.19 *14*
2529.86 *14*	2760.12 *22*	3041.33 *21*	3222.0 *4*
2568.2 *11*	2767.71 *25*	3062.8 *10*	3266.5 *4*
2620.66 *20*	2802.49 *25*	3071.22 *22*	3405.4 *4*
2647.5 *4*	2841.0 *5*	3104.60 *23*	

† Based on γ-decay properties, excit, and syst.
‡ From Adopted Levels, otherwise noted.
# Band(A): 1/2(431) band; decoupling factor=+2.9, inertial parameter=13.4 keV. 1975Di12 present syst of proposed K=1/2$^+$ rotational bands in ^{107}In-^{119}In and calc E(levels).

γ(^{111}In)

I(ce(K)) (1976Di03), normalized to α(K)(266γ)=0.0315 (M1 theory).

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
x115.5 *3*	0.2 *1*						
127.0 *3*	0.3	1344.76	3/2$^+$	1217.67	5/2$^+$		E_γ,I_γ: Iγ from γγ (1976Di03).
x127.1 *2*	5.9 *2*						E_γ,I_γ: 1990Vi09 report Iγ/Iγ(242γ)=6.6 *2*/40 *2*. The component from the 1344 level has 0.7/40 according to γγ (1976Di03).
157.1 *1*	2.0 *5*	1344.76	3/2$^+$	1187.50	1/2$^+$	E2(+M1)	α(K)exp=0.0015 *8*
192.2# *2*	0.3 *1*	2259.22		2067.08			
204.9# *1*	7.0 *3*	2271.95		2067.08			
215.4# *1*	1.3 *1*	2082.72		1867.32	1/2$^+$,3/2$^+$,5/2$^+$		
242.7 *2*	40 *2*	1344.76	3/2$^+$	1102.00	5/2$^+$	M1(+E2)	α(K)exp=0.031 *6*
256.5# *3*	0.3 *1*	2259.22		2002.76			
266.3 *2*	100	802.96	3/2$^-$	536.76	1/2$^-$	M1	α(K)exp=0.03 (1977Za06)
299.1 *1*	3.9 *2*	1102.00	5/2$^+$	802.96	3/2$^-$	E1	α(K)exp=0.011 *4*
352.5# *2*	1.0 *2*	2287.23		1934.85	$^-$		
374.3 *5*	3.1 *2*	1917.62	(7/2$^+$,9/2$^+$)	1542.3	(7/2,9/2)		
384.6 *2*	0.3 *1*	1187.50	1/2$^+$	802.96	3/2$^-$	[E1]	
398.4 *2*	0.9 *1*	1500.58	7/2$^+$,9/2$^+$	1102.00	5/2$^+$	E2,M1	α(K)exp=0.017 *10*
404.6# *2*	0.7 *1*	2271.95		1867.32	1/2$^+$,3/2$^+$,5/2$^+$		
412.6# *3*	0.9 *1*	2479.77		2067.08			
414.5 *1*	4.3 *2*	1217.67	5/2$^+$	802.96	3/2$^-$	E1	α(K)exp=0.0022 *13*
441	2.2 *6*	1542.3	(7/2,9/2)	1102.00	5/2$^+$		E_γ: from 1974Ki02. Other: 438 *1* (1977Za03). I_γ: from Iγ-branching (1977Za03).
457.1 *3*	2.2 *1*	1610.3	(9/2)$^+$	1152.86	(11/2)$^+$	M1(+E2)	α(K)exp=0.0067 *12*
476.7 *2*	2.8 *2*	1279.74	(5/2)$^-$	802.96	3/2$^-$	E2,M1	α(K)exp=0.008 *3*
529.9# *4*	5.2 *3*	2201.19		1671.59	(1/2$^-$,3/2$^-$,5/2$^-$)		
534.7 *3*	11.3 *6*	2034.6	5/2$^-$,7/2$^-$	1500.58	7/2$^+$,9/2$^+$		
536.9 *2*		536.76	1/2$^-$	0.0	9/2$^+$	M4	E_γ: other: 536.6 *5* (1977Za03).

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^{111}Cd(p,nγ) 1990Vi09,1976Di03 (continued)

γ(^{111}In) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
							α(K)exp=0.13 (1977Za06) from I(ce(K))/Iγ (1977Za03).
540.0# *3*	4.6 *2*	2082.72		1542.3	(7/2,9/2)		
563.9# *3*	0.9 *1*	2106.30		1542.3	(7/2,9/2)		
566.2 *1*	2.3 *1*	1845.82		1279.74	$(5/2)^-$		
582.5# *2*	3.1 *2*	2082.72		1500.58	$7/2^+,9/2^+$		
634.0# *2*	0.5 *2*	2479.77		1845.82			
637.2# *1*	1.0 *1*	2179.39		1542.3	(7/2,9/2)		
649.0 *2*	6.8 *3*	1867.32	$1/2^+,3/2^+,5/2^+$	1217.67	$5/2^+$		
650.7 *1*	48 *2*	1187.50	$1/2^+$	536.76	$1/2^-$	E1	α(K)exp=0.0013 *2*
661.7 *1*	4.3 *2*	1849.71	$1/2^-,3/2^-$	1187.50	$1/2^+$	E1	α(K)exp=0.0011 *4*
679.2 *1*	2.6 *1*	1867.32	$1/2^+,3/2^+,5/2^+$	1187.50	$1/2^+$	E2,M1	α(K)exp=0.0025 *8*
716.9# *1*	2.2 *1*	2259.22		1542.3	(7/2,9/2)		
[x]729.3 *3*	4.3 *5*					(E1)	α(K)exp=0.0012 *4*
742.9 *1*	20 *1*	1279.74	$(5/2)^-$	536.76	$1/2^-$	E2	α(K)exp=0.0020 *2*
744.6 *3*	0.8 *1*	1845.82		1102.00	$5/2^+$		
748.5# *2*	0.2 *1*	2290.63		1542.3	(7/2,9/2)		
765.0 *1*	8.2 *3*	1917.62	$(7/2^+,9/2^+)$	1152.86	$(11/2)^+$	E2(+M1)	α(K)exp=0.0024 *7*
770.9# *1*	1.2 *1*	2620.66		1849.71	$1/2^-,3/2^-$		
797.0# *2*	1.1 *1*	2142.16		1344.76	$3/2^+$		
808.0 *1*	1.7 *2*	1344.76	$3/2^+$	536.76	$1/2^-$	E1	α(K)exp=0.0009 *4*
815.3 *1*	6.3 *3*	1917.62	$(7/2^+,9/2^+)$	1102.00	$5/2^+$	E2(+M1)	α(K)exp=0.0022 *5*
840.3# *4*	1.6 *2*	2340.65		1500.58	$7/2^+,9/2^+$		
864.2# *2*	1.6 *2*	2364.67		1500.58	$7/2^+,9/2^+$		
865.6# *3*	1.5 *1*	2082.72		1217.67	$5/2^+$		
868.3 *1*	10.4 *5*	1671.59	$(1/2^-,3/2^-,5/2^-)$	802.96	$3/2^-$	E2(+M1)	α(K)exp=0.0017 *4*
896.0#		2082.72		1187.50	$1/2^+$		
900.8# *1*	1.8 *1*	2002.76		1102.00	$5/2^+$		
902.6# *1*	2.3 *1*	2090.01		1187.50	$1/2^+$		
924.3# *2*	0.3 *1*	2142.16		1217.67	$5/2^+$		
953.4# *5*	0.4 *1*	2106.30		1152.86	$(11/2)^+$		
954.9# *5*	0.7 *1*	2142.16		1187.50	$1/2^+$		
958.8# *2*	0.5 *1*	2238.55		1279.74	$(5/2)^-$		
978.9# *2*	0.5 *1*	2479.77		1500.58	$7/2^+,9/2^+$		
980.7# *1*	1.0 *1*	2082.72		1102.00	$5/2^+$		
987.7# *2*	0.5 *1*	2529.86		1542.3	(7/2,9/2)		
991.8# *1*	1.1 *1*	2179.39		1187.50	$1/2^+$		
[x]995.8 *3*	6 *1*						α(K)exp=0.0008 *3*
996.1# *1*	2.8 *1*	2340.65		1344.76	$3/2^+$		
1026.5# *1*	0.9 *1*	2179.39		1152.86	$(11/2)^+$		
1031.4# *1*	0.7 *1*	2311.18		1279.74	$(5/2)^-$		
1040.3# *1*	5.1 *2*	2142.16		1102.00	$5/2^+$		
1043.2 *1*	5.1 *2*	1845.82		802.96	$3/2^-$		
1054.1# *2*	0.6 *1*	2271.95		1217.67	$5/2^+$		
1063.7 *1*	3.2 *2*	1867.32	$1/2^+,3/2^+,5/2^+$	802.96	$3/2^-$		
1080.0# *2*	1.1 *1*	2297.64		1217.67	$5/2^+$		
1084.1# *6*	0.2 *1*	2271.95		1187.50	$1/2^+$		
1094.0# *4*	1.1 *1*	2311.18		1217.67	$5/2^+$		

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^{111}Cd(p,nγ) 1990Vi09,1976Di03 (continued)

γ(^{111}In) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ	Comments
1101.9 *1*	98 *4*	1102.00	5/2$^+$	0.0	9/2$^+$	E2		α(K)exp=0.00085 *9*
1110.2[#] *1*	2.3 *1*	2297.64		1187.50	1/2$^+$			
1131.6 *1*	7.8 *3*	1934.85	$^-$	802.96	3/2$^-$	E2,M1		α(K)exp=0.0009 *3*
1134.6[#] *2*	5.9 *2*	2479.77		1344.76	3/2$^+$			
1137.8[#] *3*	0.7 *1*	2290.63		1152.86	(11/2)$^+$			
1146.9[#] *3*	0.7 *1*	2364.67		1217.67	5/2$^+$			
1152.9 *1*	11.7 *4*	1152.86	(11/2)$^+$	0.0	9/2$^+$	E2+M1	+0.4 *1*	α(K)exp=0.00085 *15* δ=+0.4 *1* from a_2=0.27 *3* (1978He10) via (α,2nγ).
1166.7 *1*	5.3 *2*	1970.2	$^-$	802.96	3/2$^-$	E2(+M1)		α(K)exp=0.0009 *3*
1167.0[#]		2568.2		1401.21				
1170.2[#] *2*	3.8 *2*	2271.95		1102.00	5/2$^+$			
1185.2[#] *2*	0.7 *1*	2287.23		1102.00	5/2$^+$			
1195.3[#] *2*	0.8 *1*	2297.64		1102.00	5/2$^+$			
1200.5[#] *2*	1.1 *1*	2479.77		1279.74	(5/2)$^-$			
1209.4[#] *2*	1.0 *1*	2311.18		1102.00	5/2$^+$			
1217.4 *1*	47 *2*	1217.67	5/2$^+$	0.0	9/2$^+$	E2		α(K)exp=0.00063 *11*
1231.5 *1*	4.5 *2*	2034.6	5/2$^-$,7/2$^-$	802.96	3/2$^-$	E2(+M1)		α(K)exp=0.0009 *3*
1238.4[#] *1*	1.6 *1*	2340.65		1102.00	5/2$^+$			
1262.2[#] *3*	0.9 *1*	2479.77		1217.67	5/2$^+$			
1263.9 *1*	2.9 *2*	2067.08		802.96	3/2$^-$			
1279.6[#] *2*	1.1 *1*	2082.72		802.96	3/2$^-$			
1287.2[#] *2*	0.9 *1*	2090.01		802.96	3/2$^-$			
1318.8[#] *2*	0.9 *1*	2861.16		1542.3	(7/2,9/2)			
1384.1[#] *3*	1.0 *1*	2926.4		1542.3	(7/2,9/2)			
1398.2[#] *1*	2.8 *1*	2201.19		802.96	3/2$^-$			
1401.2[#] *2*	1.8 *2*	1401.21		0.0	9/2$^+$			
1403.4[#] *3*	1.0 *2*	2620.66		1217.67	5/2$^+$			
1417.7[#] *5*	1.4 *1*	2697.3		1279.74	(5/2)$^-$			
1427.9[#] *3*	0.5 *1*	2529.86		1102.00	5/2$^+$			
1429.8[#] *3*	0.5 *1*	2647.5		1217.67	5/2$^+$			
1441.9[#] *3*	1.0 *1*	2659.70		1217.67	5/2$^+$			
1444.6[#] *4*	0.6 *1*	2724.3		1279.74	(5/2)$^-$			
1461.6 *4*	1.0 *1*	1461.7		0.0	9/2$^+$			
1461.6[#] *4*	1.0 *1*	2264.6		802.96	3/2$^-$			
1468.7[#] *4*	0.4 *1*	2271.95		802.96	3/2$^-$			
1500.4 *1*	16 *1*	1500.58	7/2$^+$,9/2$^+$	0.0	9/2$^+$			
1508.0[#] *2*	2.6 *1*	2311.18		802.96	3/2$^-$			
[x]1508.6 *4*	5 *1*							
1530.0 *1*	6.3 *2*	2067.08		536.76	1/2$^-$			
1542.3 *1*	19 *1*	1542.3	(7/2,9/2)	0.0	9/2$^+$			
1552.6[#] *2*	0.7 *1*	2090.01		536.76	1/2$^-$			
1557.7[#] *1*	1.3 *1*	2659.70		1102.00	5/2$^+$			
1573.6[#] *3*	0.9 *1*	2675.6		1102.00	5/2$^+$			
1580.4[#] *3*	0.8 *1*	2767.71		1187.50	1/2$^+$			
1605.4[#] *2*	1.4 *1*	2142.16		536.76	1/2$^-$			
1610.0 *1*	7.9 *5*	1610.3	(9/2)$^+$	0.0	9/2$^+$			
1658.1[#] *2*	0.6 *1*	2760.12		1102.00	5/2$^+$			

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^{111}Cd(p,nγ) 1990Vi09,1976Di03 (continued)

γ(^{111}In) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π
1677.3# *4*	1.9 *1*	2479.77		802.96	$3/2^-$	2090.2# *3*	0.5 *1*	2090.01		0.0	$9/2^+$
1696.5# *2*	2.4 *1*	3041.33		1344.76	$3/2^+$	2106.4# *3*	0.6 *1*	2106.30		0.0	$9/2^+$
1726.9# *2*	2.4 *1*	2529.86		802.96	$3/2^-$	2125.6# *3*	0.8 *1*	3405.4		1279.74	$(5/2)^-$
1810.3# *3*	0.8 *1*	2997.8		1187.50	$1/2^+$	2132.2# *1*	4.9 *2*	2935.18		802.96	$3/2^-$
1817.4# *4*	0.7 *1*	2620.66		802.96	$3/2^-$	2160.5# *4*	1.9 *1*	2697.3		536.76	$1/2^-$
1827.6# *4*	0.6 *1*	2364.67		536.76	$1/2^-$	2287.0# *3*	1.0 *1*	2287.23		0.0	$9/2^+$
1845.8 *1*	4.5 *2*	1845.82		0.0	$9/2^+$	2290.4# *2*	1.2 *1*	2290.63		0.0	$9/2^+$
1875.3#		3062.8		1187.50	$1/2^+$	2301.5# *3*	0.5 *1*	3104.60		802.96	$3/2^-$
1898.2# *2*	0.7 *1*	3177.96		1279.74	$(5/2)^-$	2322.7# *1*	3.2 *2*	2322.73		0.0	$9/2^+$
1917.2# *3*	0.9 *1*	3104.60		1187.50	$1/2^+$	2327.8# *15*		3129.7		802.96	$3/2^-$
1921.7# *3*	0.8 *1*	3266.5		1344.76	$3/2^+$	2396.2# *1*	2.7 *1*	3199.19		802.96	$3/2^-$
1969.2# *2*	1.4 *1*	3071.22		1102.00	$5/2^+$	2529.4# *3*	0.8 *1*	2529.86		0.0	$9/2^+$
1999.2# *3*	1.2 *1*	2802.49		802.96	$3/2^-$	2592.8# *3*	0.7 *1*	3129.7		536.76	$1/2^-$
2002.4# *3*	3.5 *2*	2002.76		0.0	$9/2^+$	2620.4# *3*	0.8 *1*	2620.66		0.0	$9/2^+$
2034.5# *3*	0.6 *1*	3222.0		1187.50	$1/2^+$	2767.3# *4*	0.5 *1*	2767.71		0.0	$9/2^+$
2038.0# *5*	0.9 *1*	2841.0		802.96	$3/2^-$	2803.0# *4*	0.9 *1*	2802.49		0.0	$9/2^+$
2057.9# *4*	0.5 *1*	2861.16		802.96	$3/2^-$	2861.4# *3*	1.0 *1*	2861.16		0.0	$9/2^+$
2062.4# *3*	0.8 *1*	3164.4		1102.00	$5/2^+$	3041.5# *4*	0.4 *1*	3041.33		0.0	$9/2^+$
2082.1 *3*	0.4 *1*	2082.72		0.0	$9/2^+$						

† From 1990Vi09, except as noted.
‡ Based on α(K)exp and/or A_2 coef; α(K)exp indicates E1 or M1,E2 and dominant dipole or quadrupole character is from A_2 coef.
# Only seen by 1990Vi09.
x γ ray not placed in level scheme.

^{111}Cd(p,nγ) 1990Vi09,1976Di03

Level Scheme

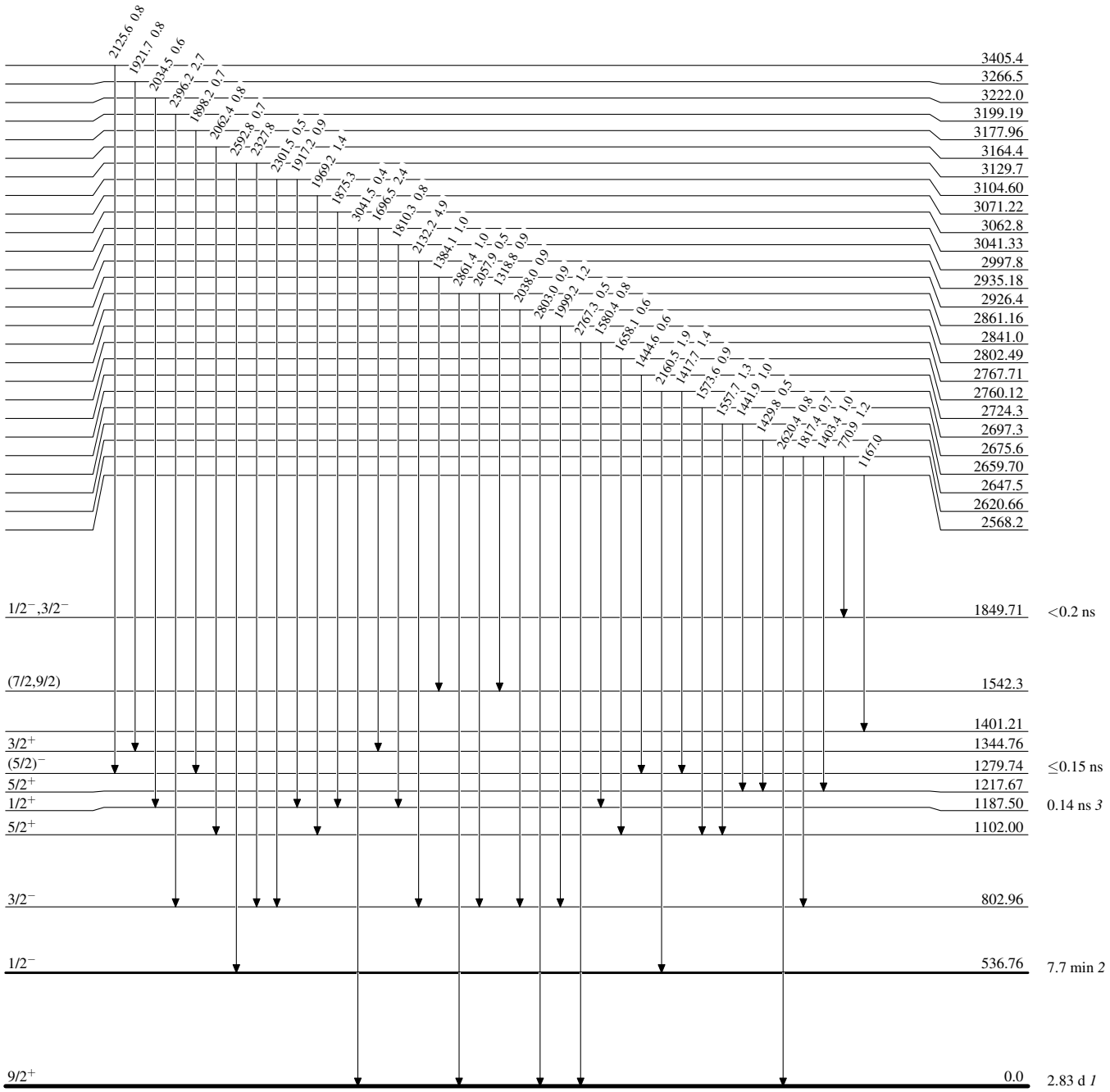
Intensities: Type not specified

Legend

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

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

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

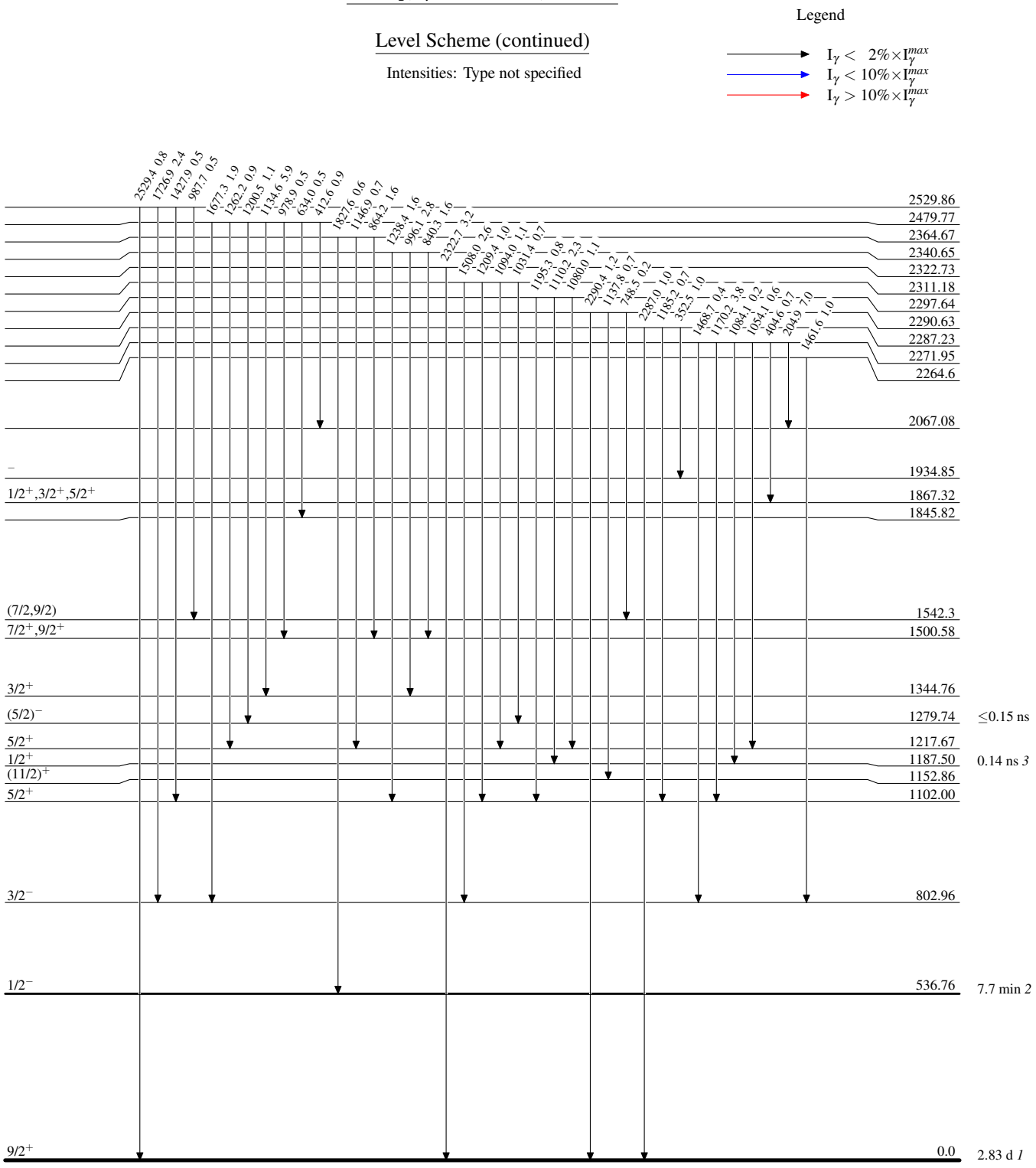


$^{111}_{49}In_{62}$

^{111}Cd(p,nγ) 1990Vi09,1976Di03

Level Scheme (continued)

Intensities: Type not specified



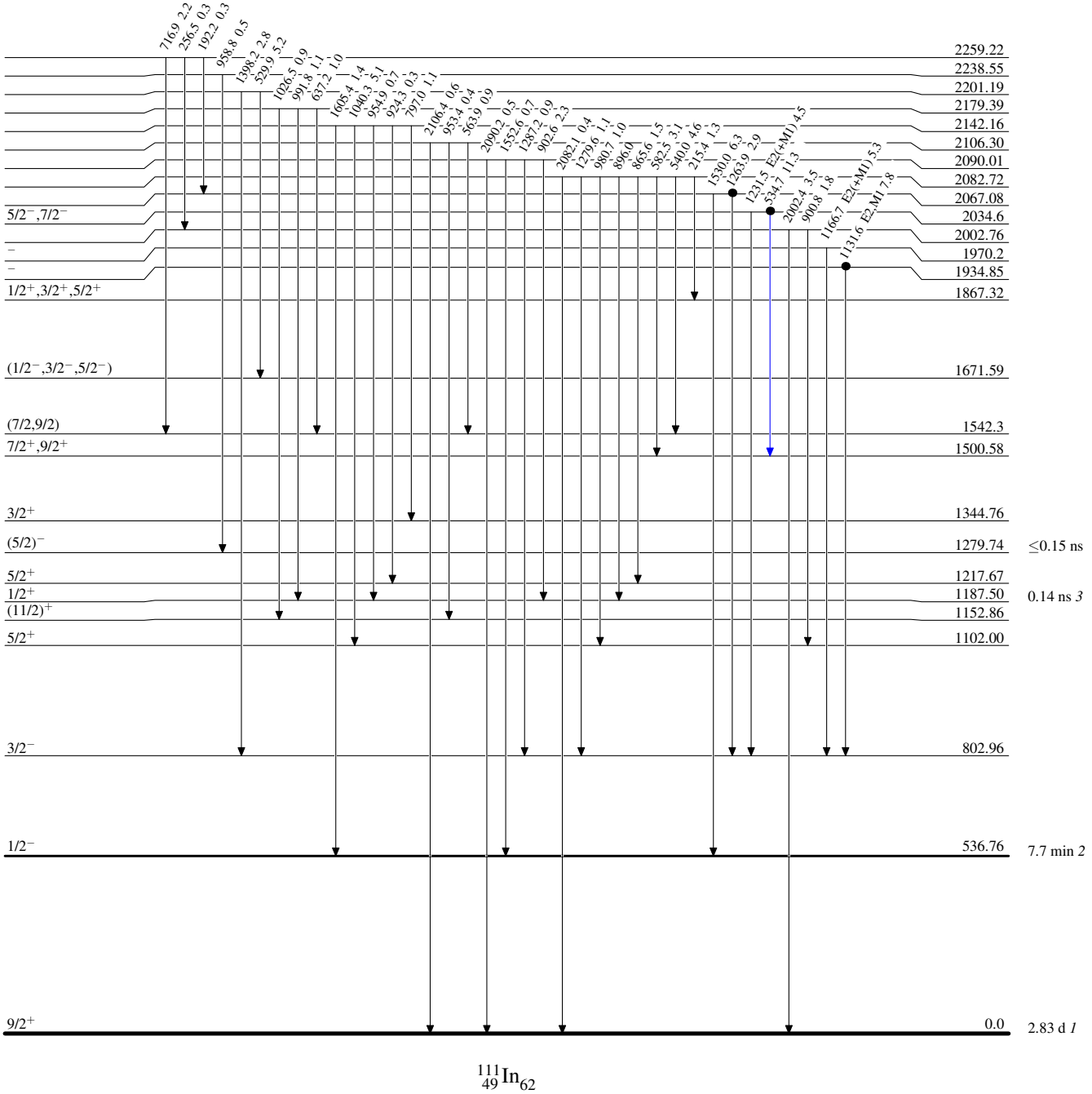
$^{111}_{49}In_{62}$

^{111}Cd(p,nγ) 1990Vi09,1976Di03

Level Scheme (continued)

Intensities: Type not specified

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



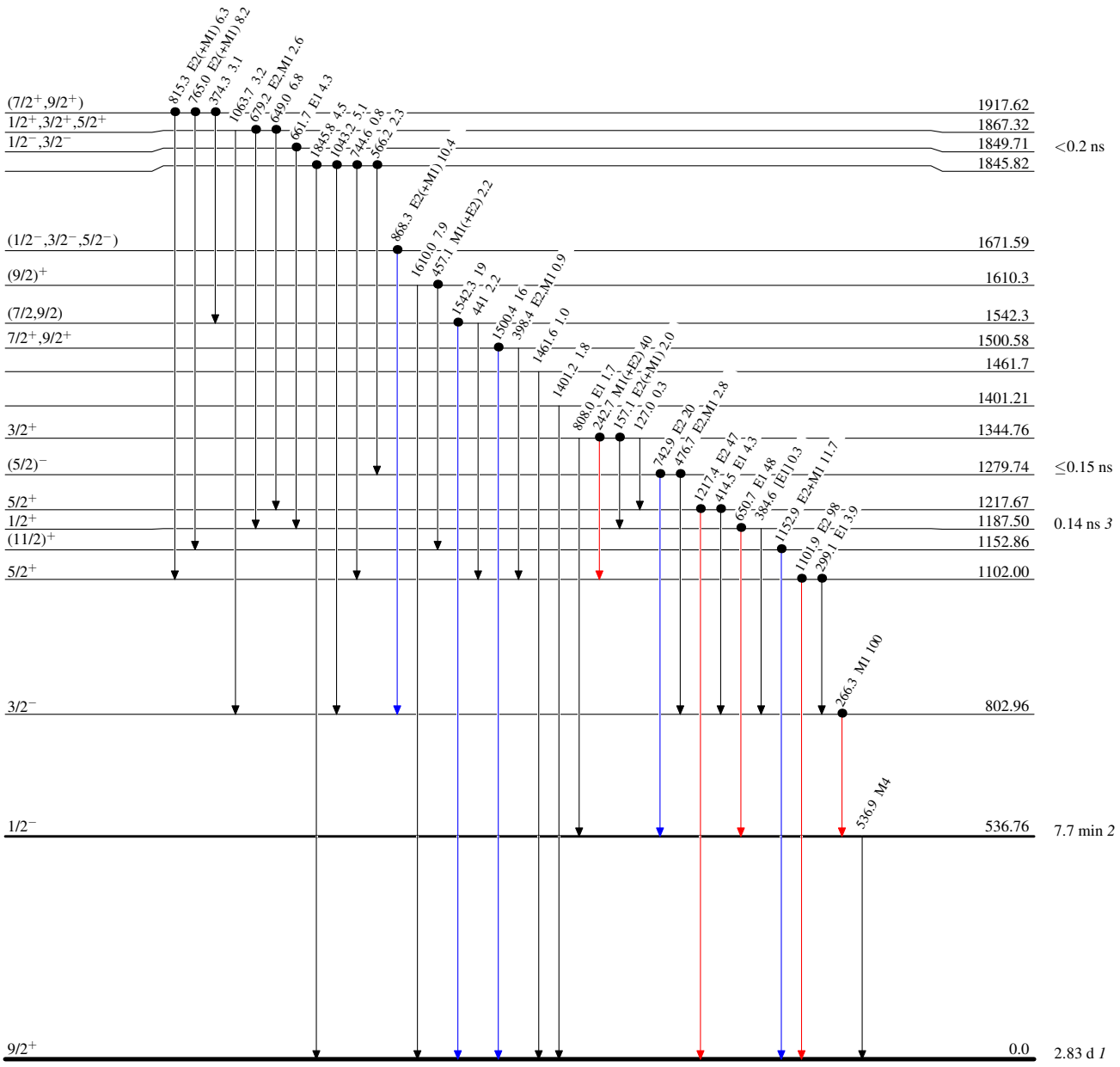
$^{111}_{49}In_{62}$

^{111}Cd(p,nγ) 1990Vi09,1976Di03

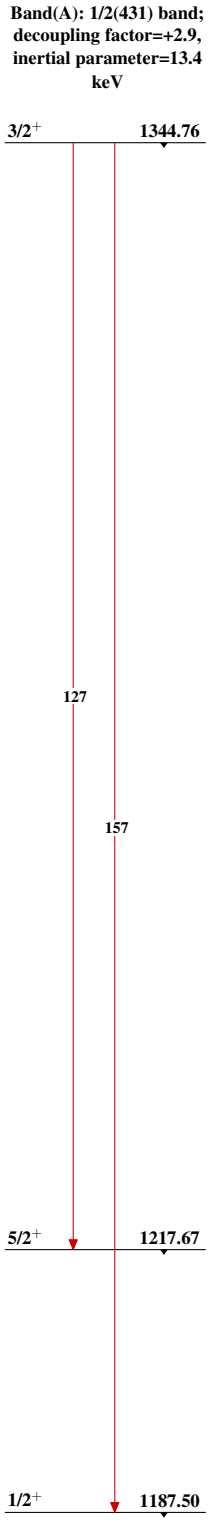
Level Scheme (continued)

Intensities: Type not specified

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



^{111}Cd(p,nγ) 1990Vi09,1976Di03



$^{111}_{49}In_{62}$