^{114}Cd(p,nγ) 1986Ti01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 113, 515 (2012)	1-Jan-2012

E(p)=4.8,5.3,7.0 MeV, enriched target.
Measured: Eγ, Iγ, ce, Ge(Li), Ge.

^{114}In Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	1^+	641.33 *15*	(7^+)	969.56 *21*	(3,4,5,6)	1073.78 *18*	(2,3)
190.29 *13*	5^+	687.11 *15*	$(8^+,7^+)$	1003.32 *18*	$4^+,5^+,6^+$	1111.51 *14*	$(3^-,4^-,5^-)$
220.91 *13*	(4^+)	693.44 *20*	$1^-,2^-$	1006.21 *24*	$(3,4,5)^-$	1155.27 *13*	$(3^+,4^+)$
287.69 *10*	$(2)^+$	696.32 *13*	$(5)^-$	1018.69 *16*	3,4,5,6	1163.20 *17*	$(^+)$
496.96 *14*	$(5)^+$	724.83 *14*	$(2,3)^+$	1019.22 *20*	$(5^+,6^+)$	1169.36 *14*	$(3^+,4^+,5^+)$
501.96 *13*	8^-	728.41 *15*	$(4)^+$	1031.90 *14*	$(3)^-$	1198.76 *14*	(3,4,5)
536.27 *13*	$(7)^-$	775.20 *13*	$(4)^+$	1037.16 *20*	(3,4,5)	1201.20 *16*	$(3^-,4^-)$
574.40 *13*	$(6)^-$	825.05 *13*	$(1^+,2^+,3^+)$	1043.81 *20*	$(7^+,6^+,5^+)$	1311# *1*	
600.40 *18*	$(3^-,2^-,1^-)$	835.52 *13*	$(4)^-$	1059.4 *3*	$(0,1,2,3)^+$		
627.91 *12*	$(3)^+$	909.51 *15*	$(7^+,6^+)$	1062.50 *13*	$(3,4)^+$		

† Authors propose and discuss levels up to 1201 only. Some of the unplaced transitions might correspond to higher levels proposed in (n,γ).
‡ As given by 1986Ti01 based on gamma multipolarity and theoretical calculations.
# Proposed by evaluator on the basis of agreement of Iγ between (n,γ) and (p,nγ). Another level at 1431 could also be proposed.

γ(^{114}In)

Eγ†	Iγ#	Ei(level)	Jiπ	Ef	Jfπ	Mult.‡	Comments
30.73 *2*		220.91	(4^+)	190.29	5^+		Eγ: from 1975Ra07 in (n,γ).
34.32 *2*		536.27	$(7)^-$	501.96	8^-		Eγ: from 1975Ra07 in (n,γ).
38.13 *2*		574.40	$(6)^-$	536.27	$(7)^-$		Eγ: from 1975Ra07 in (n,γ).
45.78 *2*		687.11	$(8^+,7^+)$	641.33	(7^+)		
66.73& *13*	@	641.33	(7^+)	574.40	$(6)^-$		
87.27& *4*	@	1198.76	(3,4,5)	1111.51	$(3^-,4^-,5^-)$		
92.76 *5*	2.4 *5*	1155.27	$(3^+,4^+)$	1062.50	$(3,4)^+$		
93.95& *15*	@	1003.32	$4^+,5^+,6^+$	909.51	$(7^+,6^+)$		
x101.71 *22*	0.3 *6*						
105.33& *23*	@	641.33	(7^+)	536.27	$(7)^-$		
121.97 *5*	155 *31*	696.32	$(5)^-$	574.40	$(6)^-$	M1	α(K)exp=0.25 *8*; α(L)exp=0.038 *9*
125.8 *3*	@	1169.36	$(3^+,4^+,5^+)$	1043.81	$(7^+,6^+,5^+)$		
139.29 *5*	147 *30*	835.52	$(4)^-$	696.32	$(5)^-$	M1	α(K)exp=0.14 *4*; α(L)exp=0.024 *4* Eγ: double placement.
x146.32 *8*	0.3 *6*						
147.33 *8*	27 *6*	775.20	$(4)^+$	627.91	$(3)^+$	M1	α(K)exp=0.15 *3*
x150.46 *6*	14 *3*					M1	α(K)exp=0.126 *25*; α(L)exp=0.012 *3*
156.44 *8*	3.0 *6*	1311		1155.27	$(3^+,4^+)$		
x158.04 *8*	3.4 *7*						
166.86 *18*	1.4 *3*	1198.76	(3,4,5)	1031.90	$(3)^-$		
183.39 *20*	1.0 *2*	1018.69	3,4,5,6	835.52	$(4)^-$		
190.29		190.29	5^+	0.0	1^+	E4	K/L=1.36 *23* Eγ: not seen in photon spectrum. Eγ is rounded value from adopted γ's.

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^{114}Cd(p,nγ) 1986Ti01 (continued)

γ(^{114}In) (continued)

E_γ †	I_γ #	E_i(level)	J_i^π	E_f	J_f^π	Mult. ‡	Comments
195.1 *3*	@	969.56	(3,4,5,6)	775.20	$(4)^+$		
196.45 *7*	84 *17*	1031.90	$(3)^-$	835.52	$(4)^-$	M1	α(K)exp=0.070 *8*; α(L)exp=0.013 *3*
200.29 *22*	0.6 *2*	1169.36	$(3^+,4^+,5^+)$	969.56	(3,4,5,6)		
x205.72 *12*	2.2 *8*						
222.28 *9*	9.0 *18*	909.51	$(7^+,6^+)$	687.11	$(8^+,7^+)$	M1	α(K)exp=0.042 *14*
231.37 *10*	2.4 *5*	728.41	$(4)^+$	496.96	$(5)^+$	M1	α(K)exp=0.045 *10*
237.49 *10*	4.2 *8*	1062.50	$(3,4)^+$	825.05	$(1^+,2^+,3^+)$		
243.47& *20*	<1.7	1018.69	3,4,5,6	775.20	$(4)^+$		
x253.17 *17*	1.1 *2*						
256.50 *12*	2.3 *2*	1031.90	$(3)^-$	775.20	$(4)^+$		
260.99 *11*	<12	835.52	$(4)^-$	574.40	$(6)^-$		
261.91 *16*	1.9 *16*	1037.16	(3,4,5)	775.20	$(4)^+$		
276.13e *11*	14.6e *18*	496.96	$(5)^+$	220.91	(4^+)		I_γ: from Iγ(276γ)/Iγ(306γ)=0.60 *7* in (n,γ).
276.13e *11*	15.3e *22*	1111.51	$(3^-,4^-,5^-)$	835.52	$(4)^-$		I_γ: from Iγ=29.9 *12* for doubly placed transition and Iγ=14.6 *18* deduced for placement from 497 level.
287.73 *11*	848 *32*	287.69	$(2)^+$	0.0	1^+	M1	α(K)exp=0.025 *2*
x296.52 *15*	1.7 *7*						
306.91 *12*	24.4 *10*	496.96	$(5)^+$	190.29	5^+	M1	α(K)exp=0.017 *5*
311.82 *12*	215 *9*	501.96	8^-	190.29	5^+	E3	Mult.: from adopted γ's.
312.71 *15*	174 *7*	600.40	$(3^-,2^-,1^-)$	287.69	$(2)^+$	(E1)	α(K)exp≤0.018
x314.05 *12*	16.6 *8*					M1,E2	α(K)exp=0.022 *4*
319.1 *3*	0.8 *3*	1155.27	$(3^+,4^+)$	835.52	$(4)^-$		
322.26 *15*	6.0 *3*	1018.69	3,4,5,6	696.32	$(5)^-$		
333.80d *18*	3.3da *4*	1062.50	$(3,4)^+$	728.41	$(4)^+$		
333.80d *18*	3.3da *4*	1169.36	$(3^+,4^+,5^+)$	835.52	$(4)^-$		
336.41 *14*	<13	1111.51	$(3^-,4^-,5^-)$	775.20	$(4)^+$		
337.95 *16*	2.9 *4*	1163.20	$(^+)$	825.05	$(1^+,2^+,3^+)$		
340.26 *13*	148 *6*	627.91	$(3)^+$	287.69	$(2)^+$	M1,(E2)	α(K)exp=0.017 *2*
344.26 *15*	4.2 *6*	1169.36	$(3^+,4^+,5^+)$	825.05	$(1^+,2^+,3^+)$	M1,E2	α(K)exp=0.019 *8*
x351.86 *16*	2.6 *4*						
356.83 *25*	1.3 *3*	1043.81	$(7^+,6^+,5^+)$	687.11	$(8^+,7^+)$		
363.27 *19*	5 *3*	1198.76	(3,4,5)	835.52	$(4)^-$		
365.68 *14*	5.8 *4*	1201.20	$(3^-,4^-)$	835.52	$(4)^-$	(M1)	α(K)exp=0.010 *5*
x373.74 *14*	2.20 *10*					M1,(E2)	α(K)exp=0.012 *2*
377.7 *3*	6.2 *4*	1019.22	$(5^+,6^+)$	641.33	(7^+)		
384.31 *22*	4.4 *4*	574.40	$(6)^-$	190.29	5^+		
391.35 *18*	6.1 *4*	1019.22	$(5^+,6^+)$	627.91	$(3)^+$		
x397.12 *16*	2.9 *3*						
x399.46 *15*	14.6 *7*					M1,E2	α(K)exp=0.011 *2*
405.81 *16*	33.6 *14*	1006.21	$(3,4,5)^-$	600.40	$(3^-,2^-,1^-)$	M1,E2	α(K)exp=0.011 *4* E_γ: this γ was also placed as deexciting the 693 level in (n,γ).
413.12 *16*	13 *7*	909.51	$(7^+,6^+)$	496.96	$(5)^+$		
427.0c *4*	0.5 *5*	1155.27	$(3^+,4^+)$	728.41	$(4)^+$		
427.0c *4*	0.5 *5*	1201.20	$(3^-,4^-)$	775.20	$(4)^+$		
x429.66 *19*	2.3 *2*						
434.79 *16*	21.6 *11*	1062.50	$(3,4)^+$	627.91	$(3)^+$	M1,E2	α(K)exp=0.011 *2*
437.23 *17*	24.8 *15*	724.83	$(2,3)^+$	287.69	$(2)^+$	M1,E2	α(K)exp=0.007 *2*
444.57 *19*	5.5 *4*	1169.36	$(3^+,4^+,5^+)$	724.83	$(2,3)^+$		
x447.58 *22*	4.3 *4*						
451.1 *3*	3.9 *4*	641.33	(7^+)	190.29	5^+		
x452.96 *18*	2.9 *5*						
x468.49 *18*	18.9 *20*					M1,E2	α(K)exp=0.007 *1*

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^{114}Cd(p,nγ) 1986Ti01 (continued)

γ(^{114}In) (continued)

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
							E_γ: a 468γ in (n,γ) is placed from a level at 1304.
472.9[d] *4*	<12[d]	969.56	(3,4,5,6)	496.96	$(5)^+$		
472.9[d] *4*	<12[d]	1169.36	$(3^+,4^+,5^+)$	696.32	$(5)^-$		
474.0 *4*	<12	1198.76	(3,4,5)	724.83	$(2,3)^+$		I_γ: from branching in (n,γ), one expects Iγ≈4 for placement from the 1198 level.
476.65 *19*	3.1 *6*	1311		835.52	$(4)^-$		
487.40 *19*	3.3 *3*	775.20	$(4)^+$	287.69	$(2)^+$		
502.07 *21*	5.2 *5*	1198.76	(3,4,5)	696.32	$(5)^-$		
503.88 *19*	88 *4*	724.83	$(2,3)^+$	220.91	(4^+)	M1,E2	α(K)exp=0.006 *1*
506.14 *24*	1.9[b] *12*	696.32	$(5)^-$	190.29	5^+		
506.14 *24*	<2[b]	1003.32	$4^+,5^+,6^+$	496.96	$(5)^+$		
507.51 *19*	16.2 *9*	1201.20	$(3^-,4^-)$	693.44	$1^-,2^-$	M1,E2	α(K)exp=0.008 *3*
522.31 *22*	11 *5*	1163.20	$(^+)$	641.33	(7^+)	M1,E2	α(K)exp=0.005 *1*
527.42 *20*	6.1 *4*	1155.27	$(3^+,4^+)$	627.91	$(3)^+$		
[x]533.34 *25*	4.6 *4*					M1,E2	α(K)exp=0.007 *3*
537.15 *21*	30.6 *16*	825.05	$(1^+,2^+,3^+)$	287.69	$(2)^+$		
538.21 *21*	30.1 *16*	728.41	$(4)^+$	190.29	5^+		
540.6 *3*	12.6 *11*	1169.36	$(3^+,4^+,5^+)$	627.91	$(3)^+$	M1,E2	α(K)exp=0.006 *2*
[x]543.68 *21*	1.73 *8*						
546.88 *25*	5.0 *5*	1043.81	$(7^+,6^+,5^+)$	496.96	$(5)^+$		
565.4 *4*	1.7 *11*	1062.50	$(3,4)^+$	496.96	$(5)^+$		
570.55 *22*	11.0 *24*	1198.76	(3,4,5)	627.91	$(3)^+$		
[x]577.2 *3*	20 *3*						
583.2 *3*	3.3 *20*	1311		728.41	$(4)^+$		
[x]591.86 *25*	11.8 *8*					M1,(E2)	α(K)exp=0.0049 *7*
[x]600.1 *3*	7.3 *24*						
[x]616.92 *24*	13.5 *8*					M1,E2	α(K)exp=0.0046 *12*
618.25 *24*	13.5 *8*	1311		693.44	$1^-,2^-$		
[x]626.0 *3*	1.5 *3*						
[x]628.21 *25*	<3.4						
[x]631.96 *24*	3.5 *4*						
[x]634.35 *24*	65 *5*					E1	α(K)exp=0.0013 *5*
[x]643.39 *25*	10.8 *6*					M1,E2	α(K)exp=0.0040 *9*
[x]646.59 *25*	9.0 *6*					M1,E2	α(K)exp=0.0037 *23*
[x]648.29 *25*	3.6 *5*						
658.6 *3*	7 *1*	1155.27	$(3^+,4^+)$	496.96	$(5)^+$		
666.1 *3*	4.9 *12*	1163.20	$(^+)$	496.96	$(5)^+$		
[x]669.8 *3*	9.2 *13*						
672.6 *5*	3.4 *11*	1169.36	$(3^+,4^+,5^+)$	496.96	$(5)^+$		
[x]677.2 *4*	6.2 *11*						
[x]680.4 *3*	2.3 *8*						
684.85 *24*	3.0 *4*	1311		627.91	$(3)^+$		
692.8 *3*	221 *12*	693.44	$1^-,2^-$	0.0	1^+	E1	α(K)exp=0.0010 *1*
[x]708.0 *3*	3.4 *7*						
719.3 *3*	3.9 *8*	909.51	$(7^+,6^+)$	190.29	5^+		
724.8 *3*	<14	724.83	$(2,3)^+$	0.0	1^+		
[x]728.4 *3*	2.9 *14*						
737.5 *4*	4.4 *4*	1311		574.40	$(6)^-$		
[x]740.6 *3*	4.8 *4*						
[x]749.0 *3*	4.9 *15*						
771.7 *3*	15.4 *9*	1059.4	$(0,1,2,3)^+$	287.69	$(2)^+$		
774.6 *3*	45.4 *22*	1062.50	$(3,4)^+$	287.69	$(2)^+$	E2,(M1)	α(K)exp=0.0018 *3*
782.8 *4*	1.3 *6*	1003.32	$4^+,5^+,6^+$	220.91	(4^+)		
786.20 *21*	15.4 *9*	1073.78	(2,3)	287.69	$(2)^+$		

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^{114}Cd(p,nγ) 1986Ti01 (continued)

γ(^{114}In) (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
x792.3 3	3.5 7						
798.7 8	3.2 7	1019.22	(5+,6+)	220.91	(4+)		I_γ: evaluator assumes authors′ uncertainty in 3.2 27 is a misprint.
x807.9 4	3.0 7						
812.7 3	26.0 15	1003.32	4+,5+,6+	190.29	5+	M1,E2	α(K)exp=0.0023 7 I_γ: from branching in (n,γ) one expects Iγ≈4 for placement from the 1019 level.
816.7 5	3.0 9	1037.16	(3,4,5)	220.91	(4+)		
824.9 4	77 18	825.05	(1+,2+,3+)	0.0	1+	M1,E2	α(K)exp=0.0018 5
x826.3 3	16.8 16						
x830.9 3	2.6 4						
841.3 4	32.2 15	1062.50	(3,4)+	220.91	(4+)		
852.71 [&] 23	5.1 4	1073.78	(2,3)	220.91	(4+)		
x856.9 3	13.8 9						
868.1 3	2.1 3	1155.27	(3+,4+)	287.69	(2)+		
872.1 4	3.5 5	1062.50	(3,4)+	190.29	5+		
x873.6 4	20.5 10					M1,E2	α(K)exp=0.0020 6
875.5 8	0.6 3	1163.20	(+)	287.69	(2)+		
890.4 3	25.4 12	1111.51	(3−,4−,5−)	220.91	(4+)	E1	α(K)exp=0.0008 3
x905.9 4	47.8 24					E1	α(K)exp=0.0005 1
913.6 4	16.9 20	1201.20	(3−,4−)	287.69	(2)+		
x917.6 4	43 4						
920.3 [&] 6	[@]	1111.51	(3−,4−,5−)	190.29	5+		
x928.0 4	3.2 3						
933.7 4	4.3 6	1155.27	(3+,4+)	220.91	(4+)		
x940.3 4	20.4 18					M1	α(K)exp=0.0018 5
948.2 6	[@]	1169.36	(3+,4+,5+)	220.91	(4+)		
x961.8 4	4.3 7						
x968.8 4	2.7 3						
979.1 4	2.9 7	1169.36	(3+,4+,5+)	190.29	5+		
x986.1 4	3.4 5						
x994.7 6	9.4 8						
x1017.5 6	11.6 6						
x1026.0 6	<3.3						
x1031.8 6	1.4 3						
x1034.0 6	1.5 4						
x1047.6 6	<7.6						
1059.5 6	55 3	1059.4	(0,1,2,3)+	0.0	1+		
x1068.7 6	2.0 13						
1074.0 6	42.0 20	1073.78	(2,3)	0.0	1+		
x1083.1 6	15.1 19						
x1089.6 6	2.1 3						
x1100.5 6	<4.3						
x1102.9 6	6 3						
x1114.8 6	<1.1						
x1119.8 6	6.0 25						
1156.9 7	8 4	1155.27	(3+,4+)	0.0	1+		
x1174.1 7	<0.9						
x1182.7 8	1.3 4						
x1196.3 6	3.5 3						
x1204.82 20	4.8 7						
x1226.2 7	41 2						
x1234.1 7	3.5 6						
x1240.2 7	11.0 14						
x1267.6 7	5.9 3						
x1313.7 7							

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^{114}Cd(p,nγ) 1986Ti01 (continued)

γ(^{114}In) (continued)

E_γ †	I_γ #	E_i(level)	E_γ †	I_γ #	E_i(level)	E_γ †	I_γ #	E_i(level)
x1318.5 *7*	4.0 *4*		x1356.2 *7*	10.4 *6*		x1384.2 *8*	16.8 *9*	
x1333.3 *7*	10.8 *7*		x1364.6 *7*	<1.6		x1408.4 *9*	2.3 *3*	
x1343.7 *7*	12.0 *7*		x1371.6 *8*	<4.0				

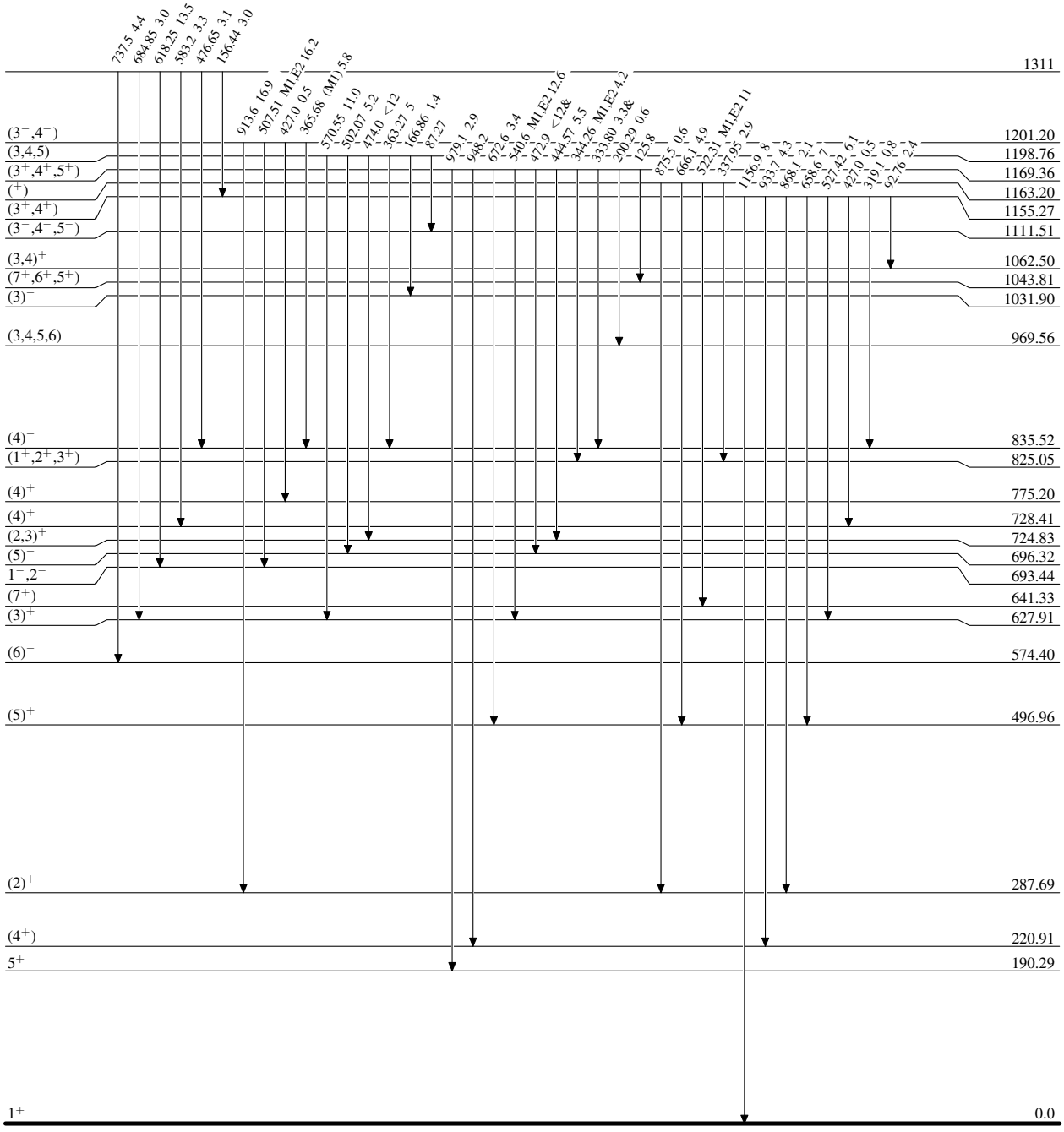
† Authors propose and discuss levels up to 1201 only. Some of the unplaced transitions might correspond to higher levels proposed in (n,γ).
‡ From experimental conversion coefficients.
# For E(p)=5.3 MeV.
@ Weak.
& Assignment to ^{114}In or existence of transition is uncertain.
a Comparison with branching in (n,γ) suggests that essentially all of the 334γ intensity belongs with the 1062 level.
b Iγ=2.6 *5* for the doubly placed 506γ. From branching in (n,γ) one expects Iγ=1.9 *12* for placement from the 696 level, leaving 0.7 *13* for placement from the 1003 level.
c Multiply placed.
d Multiply placed with undivided intensity.
e Multiply placed with intensity suitably divided.
x γ ray not placed in level scheme.

^{114}Cd(p,nγ) **1986Ti01**

Level Scheme

Intensities: Type not specified
& Multiply placed: undivided intensity given

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



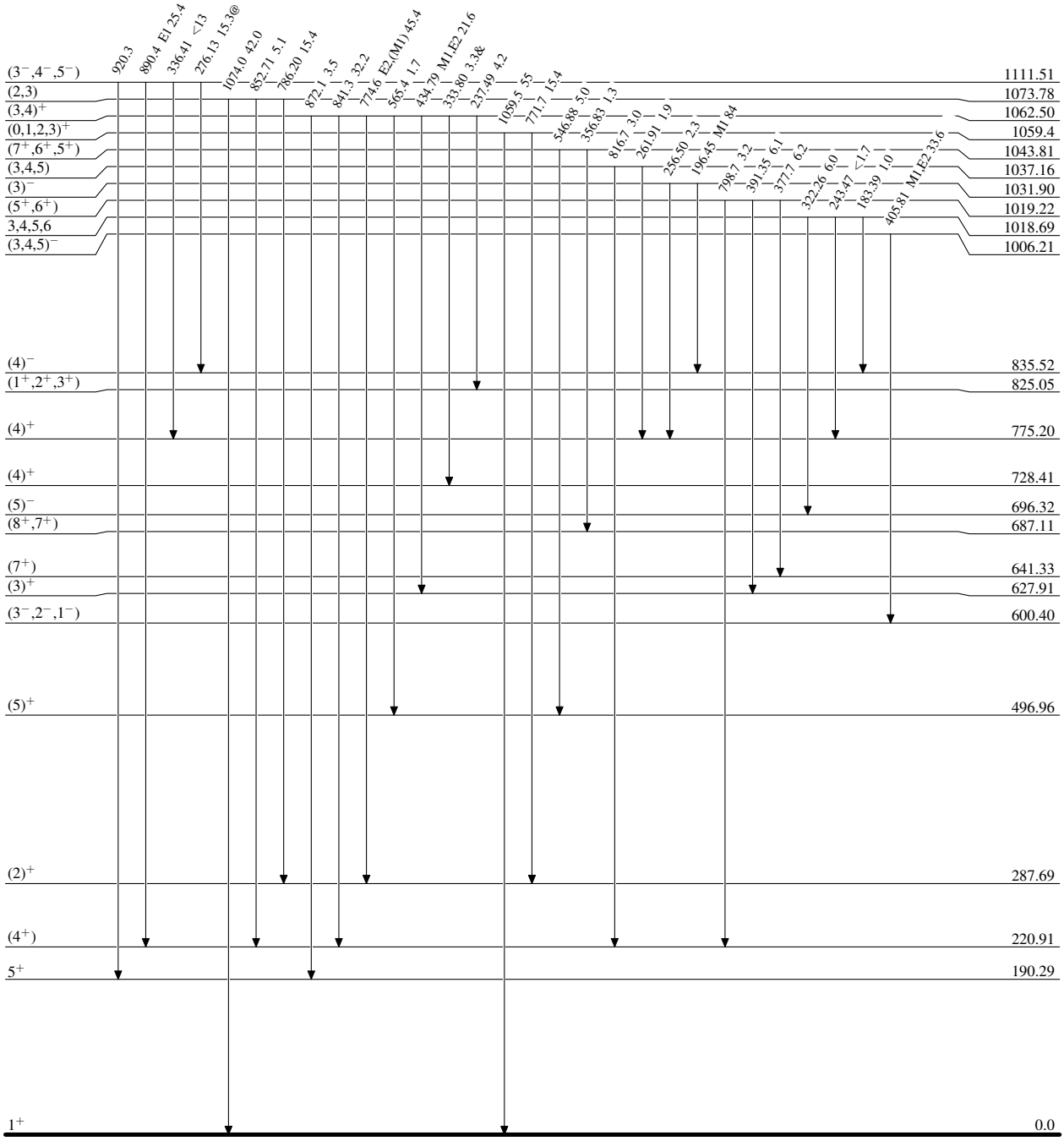
$^{114}_{49}In_{65}$

^{114}Cd(p,nγ) 1986Ti01

Level Scheme (continued)

Intensities: Type not specified
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

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



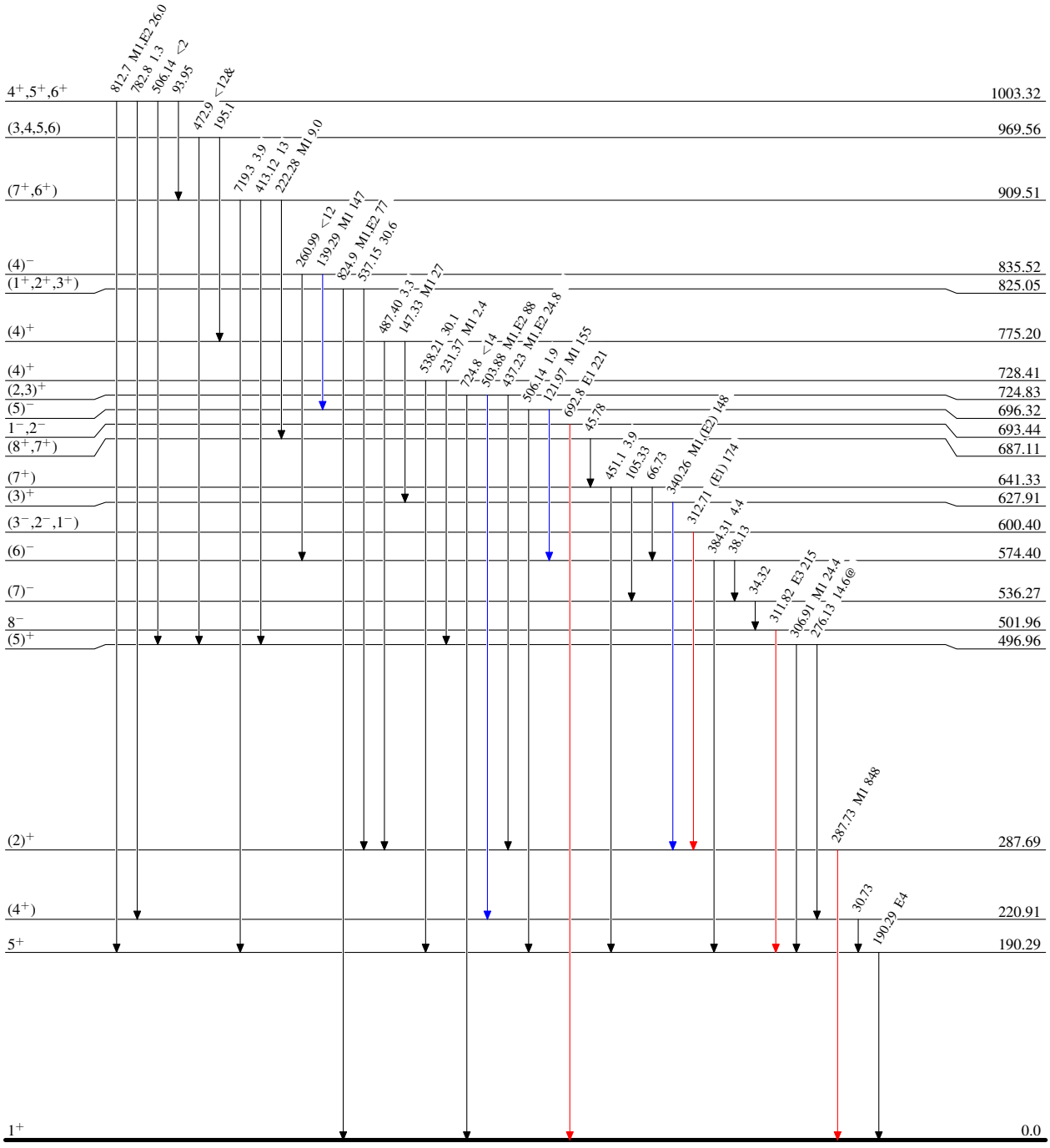
$^{114}_{49}In_{65}$

^{114}Cd(p,nγ) 1986Ti01

Level Scheme (continued)

Intensities: Type not specified
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

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



$^{114}_{49}In_{65}$