103 In ε decay

History									
Туре	Author	Citation	Literature Cutoff Date						
Full Evaluation	D. De Frenne	NDS 110, 2081 (2009)	1-Mar-2009						

Parent: ¹⁰³In: E=0.0; $J^{\pi}=(9/2)^+$; $T_{1/2}=60$ s 1; Q(ε)=6050 20; $\%\varepsilon+\%\beta^+$ decay=100.0

1998Ka42: ¹⁰³In source from ⁵⁰Cr(⁵⁸Ni,xpyn). Measured: E γ , I γ . Deduced: β -intensity, β -strength distributions. 1997Sz04: mass-separated activity produced in ⁵⁰Cr(⁵⁸Ni,3p2n) measured: E γ , I γ , $\gamma\gamma$. Deduced: ¹⁰³Cd levels, J^{π} . 1984Ve01: measured E γ , I γ , $\gamma\gamma$ -coin. Deduced: T_{1/2}, ¹⁰³Cd levels, J^{π} .

1983Wo04: measured Ey, Iy, E β +, β y-coin.

1988Bo28: measured E β +, Q(ε).

1978Lh01: measured $E\gamma$, $I\gamma$, $\alpha(K)exp$.

Others: 1981BeZD, 1981CeZX, 1978Lh01.

As $Q\varepsilon = 6050$ keV and the highest Ey is less than 4 MeV it might be possible that a significant fraction of the y strength is unobserved Therefore the decay scheme should be considered as tentative.

¹⁰³Cd Levels

E(level) [†]	$J^{\pi \ddagger}$	T _{1/2}	Comments							
0.0	(5/2)+	7.3 min <i>1</i>	T _{1/2} : from decay-curves: $β^+$, 1080γ, 1449γ, 1463γ (1969Ha03). Other: 7.70 min <i>17</i> (1980Ka05).							
187.90 <i>13</i> 201.75 <i>12</i> 391.8 5 569.5 <i>4</i> 726.29 8	$(7/2)^+$ $(5/2)^+$									
739.9 <i>4</i> 907.8 <i>5</i> 916.9 <i>6</i> 1073.0? 1079.0 <i>8</i> 1100.5?	(9/2) ⁺ (11/2) ⁺									
1104.7 6 1107.6 4 1134.5? 10 1138.1? 10 1293.8? 10 1307.9 12 1326.9 8 1347.3 8	(7/2,9/2,11/2) ⁺ (7/2,9/2) ⁺									
1368.8 6 1480.8 6 1512.6 7 1542.1? 10 1598.2 6 1604.9 8 1662.0 8 1744.8 8 1779.9 11 1790.1 8 1826.6? 11 1853.4? 1864.9? 10 1902.6 11 1919.9 7 1927.4? 8	(7/2,9/2) ⁺ (9/2,11/2) ⁺									
1972.2 <i>5</i> 1996.9 <i>8</i>	+									

¹⁰³Cd Levels (continued)

E(level) [†]	$J^{\pi \ddagger}$	E(level) [†]	J ^{π‡}	E(level) [†]	$J^{\pi \ddagger}$	E(level) [†]	J ^{π‡}
2052.9 8	+	2296.3 10		2781.3 11	+	3492.9 8	+
2086.4 11		2342.6 12	+	2794.7 12	+	3570.9 8	+
2161.1 12		2574.2?		2823.0 11	+	3830.3 8	+
2195.1?		2612.4?		2854.7?			
2238.8?		2640.7?		2981.3?			

[†] Level scheme taken from 1997Sz04. [‡] From Adopted Levels.

ε, β^+ radiations

 $I(\varepsilon)/[I(\varepsilon+I\beta^+)]=0.445\ 20\ (1998Ka42).$

 γ -ray multiplicity for ε : 3.0-3.2 (1998Ka42) γ -ray multiplicity for β^+ : 2.5 (1998Ka42).

Total experimental Gamow-Teller strength: 2.47 25 (1998Ka42). Total theoretical full-space shell-model calculation: 12.7 10.

E(decay)	E(level)	$I\beta^+$	$I\varepsilon^{\ddagger}$	Log <i>ft</i>	$I(\varepsilon + \beta^+)^{\dagger \ddagger}$	Comments
(2220 20)	3830.3	0.07 9	0.2 3	5.5 6	0.3 4	av E β =534 9; ε K=0.662 9; ε L=0.0845 11; ε M+=0.0211 3
(2479 20)	3570.9	0.18 2	0.31 3	5.45 5	0.49 5	av E\beta=649 9; EK=0.548 9; EL=0.0698 12; EM+=0.0174 3
(2557 20)	3492.9	1.23 11	1.80 15	4.71 4	3.03 25	av E\beta=684 9; EK=0.514 9; EL=0.0654 12; EM+=0.0163 3
(3227 20)	2823.0	1.50 17	0.70 8	5.32 6	2.20 25	av E β =989 10; ε K=0.276 6; ε L=0.0351 7; ε M+=0.00874
						17
(3255 20)	2794.7	0.41 9	0.18 4	5.91 10	0.59 13	av E β =1002 10; ε K=0.269 6; ε L=0.0341 7; ε M+=0.00851
(3269 20)	2781.3	1.32 14	0.58 6	5.41 5	1.90 20	av E β =1008 10; ε K=0.266 5; ε L=0.0337 7; ε M+=0.00840
						17
(3707 20)	2342.6	1.36 16	0.35 4	5.75 6	1.71 20	av E β =1211 10; ε K=0.177 4; ε L=0.0224 4; ε M+=0.00559
(3754 20)	2296.3	0.51 10	0.13 3	6.20 9	0.64 13	av E β =1233 10; ε K=0.170 3; ε L=0.0215 4; ε M+=0.00536
(3889 20)	2161.1	0.10 5	0.021 10	7.01 22	0.12 6	av $E\beta$ =1296 10; ε K=0.151 3; ε L=0.0191 4; ε M+=0.00476
(3964 20)	2086.4	0.69 13	0.14 2	6.22 8	0.83 15	av $E\beta$ =1331 10; εK =0.1414 25; εL =0.0179 4; εM +=0.00446 8
(3997 20)	2052.9	2.9 3	0.54 5	5.62 4	3.4 3	av $E\beta$ =1347 10; ε K=0.1374 24; ε L=0.0174 3; ε M+=0.00433 8
$(4053 \ 20)$	1996 9	1 06 14	0 19 3	6 09 6	1 25 17	av $F\beta = 1373 \ 10^{\circ} \ c K = 0 \ 1310 \ 23^{\circ} \ c L = 0 \ 0166 \ 3^{\circ}$
(1055 20)	1770.7	1.00 17	0.17 5	0.07 0	1.25 17	$\epsilon M += 0.00413$ 7
(4078 20)	1972.2	4.7 3	0.82 6	5.46 4	5.5 4	av $E\beta = 1384$ 10; $\varepsilon K = 0.1283$ 22; $\varepsilon L = 0.0162$ 3; $\varepsilon M = 0.00404$ 7.
(4130.20)	1010.0	1 58 78	0.26.3	5 07 6	181 21	EWI+=0.00404 / av $ER=1400$ 10; $eK=0.1220$ 21; $eI=0.0155$ 3;
(4130 20)	1919.9	1.30 10	0.20 5	5.97 0	1.04 21	$\varepsilon M += 0.00387 7$
(4147 20)	1902.6	1.01 13	0.164 21	6.17 6	1.17 15	av Eβ=1417 10; εK=0.1211 21; εL=0.0153 3; εM+=0.00382 7
(4260 20)	1790.1	0.98 12	0.143 18	6.26 6	1.12 14	av E β =1470 10; ε K=0.1105 18; ε L=0.01396 23; ε M+=0.00348 6
(4270 20)	1779.9	1.24 13	0.180 19	6.16 5	1.42 15	av E β =1475 10; ε K=0.1096 18; ε L=0.01385 23;
						$\varepsilon M += 0.00345 6$
(4305 20)	1744.8	1.29 11	0.181 16	6.16 4	1.47 13	av Eβ=1491 10; εK=0.1065 18; εL=0.01346 22; εM+=0.00336 6
(4388 20)	1662.0	1.80 17	0.235 22	6.07 5	2.03 19	av Eβ=1530 10; εK=0.0998 16; εL=0.01261 20; εM+=0.00314 5

ϵ, β^+ radiations (continued)

E(decay)	E(level)	Iβ+ ‡	Ιε [‡]	Log ft	$I(\varepsilon + \beta^+)^{\dagger\ddagger}$	Comments
(4445 20)	1604.9	1.10 12	0.137 15	6.31 5	1.24 13	av $E\beta$ =1557 10; ε K=0.0954 15; ε L=0.01205 19; ε M+=0.00300 5
(4452 20)	1598.2	2.5 3	0.31 3	5.96 5	2.8 3	av $E\beta$ =1560 <i>10</i> ; ε K=0.0949 <i>15</i> ; ε L=0.01199 <i>19</i> ; ε M+=0.00299 <i>5</i>
(4537 20)	1512.6	2.2 3	0.25 3	6.07 6	2.4 3	av E β =1601 10; ε K=0.0889 14; ε L=0.01123 18; ε M+=0.00280 5
(4569 20)	1480.8	3.3 3	0.37 3	5.90 4	3.7 3	av Eβ=1616 10; εK=0.0868 14; εL=0.01096 17; εM+=0.00273 5
(4681 20)	1368.8	3.6 4	0.37 4	5.93 5	4.0 4	av Eβ=1669 10; εK=0.0798 12; εL=0.01008 15; εM+=0.00251 4
(4703 20)	1347.3	0.76 8	0.076 8	6.62 5	0.84 9	av E β =1679 10; ε K=0.0786 12; ε L=0.00992 15; ε M+=0.00247 4
(4723 20)	1326.9	1.08 7	0.107 7	6.47 4	1.19 8	av E β =1689 <i>10</i> ; ε K=0.0774 <i>12</i> ; ε L=0.00977 <i>15</i> ; ε M+=0.00244 <i>4</i>
(4742 20)	1307.9	0.20 4	0.019 4	7.22 8	0.22 4	av E β =1698 10; ε K=0.0763 12; ε L=0.00964 15; ε M+=0.00240 4
(4942 20)	1107.6	7.0 6	0.58 5	5.78 4	7.6 6	av E β =1793 10; ε K=0.0662 10; ε L=0.00835 12; ε M+=0.00208 3
(4945 20)	1104.7	7.79	0.63 8	5.74 6	8.3 10	av E β =1794 10; ε K=0.0660 10; ε L=0.00833 12; ε M+=0.00208 3
(4971 20)	1079.0	0.51 7	0.041 6	6.93 7	0.55 8	av Eβ=1806 10; εK=0.0649 9; εL=0.00818 12; εM+=0.00204 3
(4977 20)	1073.0?	2.1 10	0.17 8	6.31 <i>21</i>	2.3 11	av E β =1809 10; ε K=0.0646 9; ε L=0.00815 12; ε M+=0.00203 3
(5142 20)	907.8	8.0 5	0.57 3	5.82 3	8.6 5	av E β =1888 10; ε K=0.0577 8; ε L=0.00728 10; ε M+=0.001815 25
(5310 20)	739.9	7.3 19	0.47 12	5.94 12	7.8 20	av E β =1968 <i>10</i> ; ε K=0.0517 7; ε L=0.00652 9; ε M+=0.001624 22
(5324 20)	726.29	2.2 10	0.14 7	6.47 21	2.3 11	av Eβ=1974 10; εK=0.0512 7; εL=0.00646 9; εM+=0.001610 21
(5481 20)	569.5	2.9 6	0.17 3	6.41 9	3.1 6	av E β =2049 10; ε K=0.0464 6; ε L=0.00584 8; ε M+=0.001456 19
(5848 20)	201.75	0.8 9	0.03 4	7.2 5	0.8 9	av E β =2225 10; ϵ K=0.0371 5; ϵ L=0.00468 6; ϵ M+=0.001165 14
(5862 20)	187.90	12.8 11	0.57 5	5.93 4	13.4 11	av Eβ=2232 10; εK=0.0368 5; εL=0.00464 6; εM+=0.001156 14

[†] Calculated by evaluator from I(γ +ce) imbalance at each level. [‡] Absolute intensity per 100 decays.

 $\gamma(^{103}\text{Cd})$

Iy normalization: calculated from $\Sigma I(\gamma+ce)=100\%$ to g.s., assuming no β -feeding to the g.s. (as g.s.-to-g.s. transition has $\Delta J=2$ $\Delta \pi = \text{no}$).

 α (K)exp from 1978Lh01.

$E_{\gamma}^{\dagger \#}$	$I_{\gamma}^{\dagger \# @}$	E_i (level)	\mathbf{J}_i^{π}	$\mathbf{E}_f \mathbf{J}_f^{\pi}$	Mult. [‡]	α ^{&}	Comments
156.7	0.35 4	726.29		569.5			
168.0	0.25 <i>3</i>	907.8	$(11/2)^+$	739.9 (9/2)+			
177.8	0.54 9	569.5		391.8			
187.91 <i>14</i>	100	187.90	$(7/2)^+$	$0.0 (5/2)^+$	M1	0.0814 12	α (K)=0.0706 <i>10</i> α (K)exp=0.065 <i>11</i> (1978Lh01)

$\gamma(^{103}\text{Cd})$ (continued)

$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$E_{\gamma}^{\dagger \#}$	Ι _γ †#@	E _i (level)	${ m J}^{\pi}_i$	E_f	J_f^π	Mult. [‡]	α &	Comments
	190.8	0.03 1	1107.6	$(7/2, 9/2)^+$	916.9				
20181 /2 17.3 /3 201.75 (5/2)* 0.0 (5/2)* E2(+M1) 0.1254 $a(K)=0.10$ a(K)=xp=0.13 4 (1978Lb01) 2363.3 0.28 3 2365.3 1.12 /1 3373.6 0.07 / 3373.6 0.07 / 3474.0 0.26 3 367.7 0.77 /3 1107.6 (7/2.9/2)* 739.9 9/2)* 378.6 0.48 /1 1104.7 (7/2.9/2.11/2)* 726.29 391.7 5.6 391.8 0.0 (5/2)* 490.7 0.57 /0 1598.2 1107.6 (7/2.9/2)* 515.6 0.194 907.8 (11/2)* 391.8 524.3 1.13 /2 726.29 217.5 (5/2)* 535.1 0.47 7 1104.7 (7/2.9/2.11/2)* 569.5 538.1 0.47 7 104.7 (7/2.9/2.11/2)* 569.5 538.1 0.47 7 105.7 (7/2.9/2.1 1104.7 (7/2.9/2.11/2)* 57.2 9 0.48 50 0.21 0 72.6 (7/2.9/2)* 187.90 (7/2)* 55.2 0.0 0 (5/2)* 57.2 9 0.88 10 1480.8 (9/2.11/2)* (5/2)* 57.2 0.3 1107.6 (7/2.9/2)* 391.8 71.9 72.6 (11/2)* (11/2)* 57.2 0.3 1107.6 (7/2.9/2)* 391.8 71.9 74.0 (2.2 3 1480.8 (9/2.11/2)* (37.9.9 (9/2)* 73.4 4.4 5 1480.8 (9/2.11/2)* (37.9.9 (9/2)* 73.4 4.4 5 1480.8 (9/2.11/2)* (37.9.9 (9/2)* 73.4 4.4 5 1480.8 (9/2.11/2)* (37.9.9 (9/2)* 74.4 4.5 151.6 (7/2.9/2)* 391.8 71.9 7.0 (3.4) (13.07.9 (2.11/2)* (37.9.9 (9/2)* 73.4 (4.4 5 1480.8 (9/2.11/2)* (37.9.9 (9/2)* 74.4 (3.5 6 107.30) 21.0 7.3 (5/2)* 73.9 (9/2)* 74.4 (3.5 6 107.30) 21.0 7.3 (5/2)* 74.4 4.5 1480.8 (9/2.11/2)* (37.9.9 (9/2)* 74.4 (3.5 6 107.30) 21.0 7.3 (5/2)* 75.4 (4.4 5 1480.8 (9/2.11/2)* (37.9.9 (9/2)* 75.4 (4.4 5 1480.8 (9/2.11/2)* (37.9.9 (7/2)* 75.9 (9/2)* 75.1 (3.6 107.30) 21.0 7.3 (5/2)* 75.1 (3.6 107.30) 21.0 7.3 (5/2)	191.0	0.54 9	916.9		726.29				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	201.81 12	17.3 13	201.75	$(5/2)^+$	0.0	$(5/2)^+$	E2(+M1)	0.1254	$\alpha(K)=0.10$ $\alpha(K)=0.13 4 (1978Lh01)$
	^x 236.3	0.28 3							
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	^x 265.3	1.12 11							
	^x 332.5	0.07 1							
367.57.67.6509.5201.75 $(5/2)^*$ 378.60.48 /11104.7 $(7/2,9/2)^*$ 739.9 $(9/2)^*$ 381.70.518569.5916.9391.00.46 & 1307.9916.9407.00.471919.91512.6407.00.471919.91512.6515.60.97199.755.6515.60.97109.7515.60.97101.76522.00.47916.9253.10.47710.677.92/2)*59.5538.10.471107.677.92/2)*59.5538.10.87 /1739.999.21157.6543.30.87 /1759.990.72)*551.12.43739.990.21*5644.555670.0572.90.88 /0766.9101.7677.92/2)*59.5572.90.88 /0103.14125.6710151.2572.90.88 /0104.47191.9205.9117.19715.22.03107.6(72.9/2)*715.22.03107.6(72.9/2)*72.984.9739.990.21*740.42.23148.08(92.11/2)*739.9(92)*743.01.35 23*754.44.45148.1106.49739.9(92)*743.01.35 2	^x 334.0	0.26 3							
361.70.77107.6 $(7/2,9/2,11/2)^*$ 739.9 $(9/2)^*$ 381.70.518569.5187.90 $(7/2)^*$ 391.00.468137.9916.9391.75.66391.80.0 $(5/2)^*$ 407.00.4471919.91512.6515.60.19.4907.8(11/2)*391.8524.31.13.12726.29201.75 $(5/2)^*$ 535.10.47.71104.7 $(7/2,9/2)^+$ 569.5538.10.87.17739.9 $(9/2)^*$ 201.75552.12.4.3739.9 $(9/2)^*$ 107.70552.12.4.3739.9 $(9/2)^*$ 117.9552.12.4.3739.9 $(9/2)^+$ 187.90644.70.76.101512.6907.8 $(11/2)^+$ 645.50.36.7117.1797.80 $(7/2)^+$ 572.90.88.101480.8 $(9/2,11/2)^+$ 907.8 $(11/2)^+$ 644.50.76.101512.6907.8 $(11/2)^+$ 645.50.33.4136.9201.75 $(5/2)^+$ 715.22.0.3107.6 $(7/2,9/2)^+$ 31.8719.934907.8 $(11/2)^+$ $(12)^+$ 739.833.4739.9 $(9/2)^+$ $(3/2)^+$ 743.01.35.23 $(7/2,9/2)^+$ $(7/2,9/2)^+$ 744.44.51480.8 $(9/2,11/2)^+$ 754.44.4.51480.8 $(9/2,11/2)^+$ 754.44.4.51480.8 $(9/2,11/2)^+$ <td>367.5</td> <td>7.6 8</td> <td>569.5</td> <td></td> <td>201.75</td> <td>$(5/2)^+$</td> <td></td> <td></td> <td></td>	367.5	7.6 8	569.5		201.75	$(5/2)^+$			
378.0 0.48 $1/104.7$ $(7/2.9/2.11/2)$ 726.29 391.0 0.46 1307.9 916.9 391.0 0.46 1307.9 916.9 407.0 0.447 1919.9 1512.6 407.0 0.447 1919.9 1512.6 407.0 0.447 919.9 1512.6 515.6 0.194 907.8 $(11/2)^*$ 391.8 0.0 $5/21^*$ 523.1 1.172 726.29 201.75 523.0 0.47 916.9 391.8 535.1 0.47 71104.7 $(7/2.9/2.11/2)^*$ 569.5 538.1 0.47 $7104.79.92.9^*$ 538.0 1.43 1107.6 $(7/2.9/2.11/2)^*$ 552.1 2.43 739.9 $(9/2)^*$ 552.1 2.43 739.9 $(9/2)^*$ 553.8 $0.871.1$ 739.9 $(9/2)^*$ 554.4 4.55 569.5 0.0 572.9 $0.881.0$ 1480.8 $(9/2.11/2)^*$ 907.8 $(11/2)^*$ $117.99.9$ 644.7 $0.76.10$ 1512.6 907.8 $(11/2)^*$ 157.90 719.9 4907.8 $(11/2)^*$ 719.9 4907.8 $(11/2)^*$ 729.9 $90.97.8$ 719.4 49.5 1512.6 739.9 $(9/2)^*$ 714.4 1450.8 $(9/2.11/2)^*$ 739.9 724.4 9.5 1512.6 739.9 771.9 726.29 771.9 726.2	367.7	0.// 13	1107.6	$(1/2,9/2)^{+}$	/39.9	(9/2)*			
381.7 0.31 a 305.3 167.20 391.0 0.46 8 1307.9 916.9 407.0 0.47 7 191.9 151.2.6 490.7 0.57 10 1598.2 1107.6 (72.9/2) ⁺ 515.6 0.19 4 907.8 (11/2) ⁺ 391.8 523.1 0.47 7 1104.7 (72.9/2) ⁺ 569.5 538.1 0.87 11 739.9 (9/2) ⁺ 107.50 552.1 2.4 3 739.9 (9/2) ⁺ 107.70 552.1 2.4 3 739.9 (9/2) ⁺ 117.90 572.9 0.88 10 1480.8 (9/2,11/2) ⁺ 907.8 (11/2) ⁺ 566.7 1.03 14 136.9 739.9 (9/2) ⁺ 117.90 739.9 (9/2) ⁺ 648.5 0.36 140.8 (9/2,11/2) ⁺ 907.8 (11/2) ⁺ 648.5 1480.8 (9/2,11/2) ⁺ 110.1 152.6 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2	3/8.0 291 7	0.48 11	560.5	$(1/2,9/2,11/2)^{-1}$	120.29	$(7/2)^{+}$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	301.7	0.31 8	309.3 1307.0		016.0	(1/2)			
	391.0	566	391.8		0.0	$(5/2)^+$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	407.0	0.44 7	1919.9		1512.6	(3/2)			
515.6 0.194 907.8 $(11/2)^+$ 391.8 524.3 1.13 12 726.29 201.75 $(5/2)^+$ 525.0 0.47 8 916.9 391.8 535.1 0.47 7 1107.6 $(7/2.9/2.11/2)^+$ 569.5 538.0 14.3 1107.6 $(7/2.9/2)^+$ 201.75 $(5/2)^+$ 538.3 0.92 107.6 $(7/2.9/2)^+$ 201.75 $(5/2)^+$ 538.3 0.92 107.6 $(7/2.9/2)^+$ 201.75 $(5/2)^+$ 569.4 $4.5.5$ 569.5 0.0 $(5/2)^+$ 569.4 $4.5.5$ 569.5 0.0 $(5/2)^+$ 572.9 0.88 $10/480.8$ $(9/2.11/2)^+$ 97.8 $(11/2)^+$ 586.7 1.03 14 1326.9 97.99 $(9/2)^+$ 644.7 0.76 10 1512.6 907.8 $(11/2)^+$ 715.2 20.3 1107.6 $(7/2.9/2)^+$ 391.8 719.9 34 907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.29 $81.7.71.9$ 726.29 0.0 $(5/2)^+$ 734.4 4.5 1480.8 $(9/2.11/2)^+$ 739.9 $(9/2)^+$ 743.0 $1.35.23$ 173.02 217.5 $(5/2)^+$ 754.4 $4.4.5$ 1480.8 $(9/2.11/2)^+$ 739.9 $(9/2)^+$ 864.3 $1.81.22$ 100.52 726.29 77.4 $4.9.5$ 107.00 201.75 $(5/2)^+$ 871.0 $0.35.6$ 1073.00 <td>490.7</td> <td>0.57 10</td> <td>1598.2</td> <td></td> <td>1107.6</td> <td>$(7/2,9/2)^+$</td> <td></td> <td></td> <td></td>	490.7	0.57 10	1598.2		1107.6	$(7/2,9/2)^+$			
524.31.1312726.29201.75 $(5/2)^+$ 525.00.478916.9391.8535.10.4771104.7 $(7/2.9/2.11/2)^+$ 569.5538.01.4.31107.6 $(7/2.9/2.11/2)^+$ 569.5538.10.8711739.9 $(9/2)^+$ 201.75538.30.9210726.29187.90 $(7/2)^+$ 552.12.4.3739.9 $(9/2)^+$ 187.90 $(7/2)^+$ 572.90.88101480.8 $(9/2.11/2)^+$ 907.8 $(11/2)^+$ 566.71.0314326.9201.75 $(5/2)^+$ 572.90.88101480.8 $(9/2.11/2)^+$ 907.8 $(11/2)^+$ 604.70.76101512.6907.8 $(11/2)^+$ 648.50.2412216.11512.6907.8 $(11/2)^+$ 715.22.0.31107.6 $(7/2.9/2)^+$ 391.8 $(7/2)^+$ 715.22.0.31107.6 $(7/2.9/2)^+$ 39.18 $(7/2)^+$ 726.29817.719726.290.0 $(5/2)^+$ 740.42.2.31480.8 $(9/2.11/2)^+$ 739.9 $(9/2)^+$ 744.44.51480.8 $(9/2.11/2)^+$ 726.29772.44.9.51512.6739.9 $(9/2)^+$ 784.44.18122160.49739.9 $(9/2)^+$ 871.00.3561073.07201.75 $(5/2)^+$ 871.11.3141598.2726.29871.10<	515.6	0.19 4	907.8	$(11/2)^+$	391.8				
525.0 $0.47 \ 8$ 916.9 391.8 535.1 $0.47 \ 7$ 1104.7 $(7/2.9/2.11/2)^+$ 569.5 538.0 $0.14.3$ 1107.6 $(7/2.9/2.1^+)^2$ 201.75 538.1 $0.87 \ 1/1$ 739.9 $(9/2)^+$ 201.75 552.1 $2.4.3$ 739.9 $(9/2)^+$ 187.90 $(7/2)^+$ 569.4 $4.5.5$ 569.5 0.0 $(5/2)^+$ 572.9 $0.88 \ 10$ 1480.8 $(9/2.11/2)^+$ 907.8 $(11/2)^+$ 586.7 $1.03 \ 144$ 1326.9 739.9 $(9/2)^+$ 644.7 $0.76 \ 1/0$ $151.2.6$ 907.8 $(11/2)^+$ 648.5 $0.24 \ 1/2$ 2161.1 1512.6 714.8 $1.06 \ 1/4$ 916.9 201.75 $(5/2)^+$ 715.2 $2.0.3$ 1107.6 $(7/2.9/2)^+$ 391.8 719.9 34 907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.29 $817.7 \ 197$ 726.29 0.0 $(5/2)^+$ 739.8 33.4 739.9 $(9/2)^+$ 739.9 $(9/2)^+$ 74.4 4.5 1480.8 $(9/2.11/2)^+$ 726.29 772.4 4.95 1512.6 739.9 $(9/2)^+$ 871.0 $0.34 \ 4$ 4.5 1073.07 201.75 871.0 $0.34 \ 4$ 596.9 1104.7 $(7/2.9/2.1/2.9/2.1)^+$ 871.0 0.356 1073.07 201.75 $(5/2)^+$ 871.0 0.413 1079.0 187.90 $(7/2)^+$ 892.3 0	524.3	1.13 12	726.29		201.75	$(5/2)^+$			
535.1 0.477 1104.7 $(7/2,9/2,11/2)^+$ 569.5 538.0 1.43 1107.6 $(7/2,9/2)^+$ 569.5 538.1 0.8711 739.9 $(9/2)^+$ 201.75 538.3 0.9210 726.29 187.90 $(7/2)^+$ 569.4 4.55 569.5 0.0 $(5/2)^+$ 572.9 0.8810 1480.8 $(9/2,11/2)^+$ 907.8 $(11/2)^+$ 586.7 10.314 1326.9 907.8 $(11/2)^+$ 604.7 0.7610 1512.6 907.8 $(11/2)^+$ 648.5 0.2412 2161.1 1512.6 907.8 719.9 34 907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.29 8 17.719 726.29 0.0 $(5/2)^+$ 739.8 33.4 739.9 $(9/2)^+$ 0.0 $(5/2)^+$ 740.4 2.23 1480.8 $(9/2,11/2)^+$ 726.29 772.4 $4.4.55$ 1480.8 $(9/2,11/2)^+$ 726.29 774.4 $4.4.5$ 1480.8 $(9/2,11/2)^+$ 726.29 774.4 $0.34.4$ 864.3 1.8122 1079.0 201.75 871.7 $10.31/4$ 1598.2 726.29 877.0 0.4910 1079.0 201.75 $(5/2)^+$ 891.3 0.6413 1079.0 187.90 $(7/2)^+$ 891.3 0.6413 1079.0 187.90 $(7/2)^+$ 995.7 1.2116 1107.6 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 99	525.0	0.47 8	916.9		391.8				
538.0 $1.4.3$ 1107.6 $(7/2.9/2)^{+}$ 569.5538.1 $0.87 1I$ 739.9 $(9/2)^{+}$ 201.75 $(5/2)^{+}$ 538.3 $0.92 10$ 726.29 187.90 $(7/2)^{+}$ 552.1 $2.4.3$ 739.9 $(9/2)^{+}$ 187.90 $(7/2)^{+}$ 572.9 $0.88 10$ 1480.8 $(9/2,11/2)^{+}$ 907.8 $(11/2)^{+}$ 586.7 $1.03 14$ 1326.9 739.9 $(9/2)^{+}$ 648.5 $0.24 12$ 2161.1 1512.6 907.8 $(11/2)^{+}$ 715.2 $2.0.3$ 1107.6 $(7/2.9/2)^{+}$ 391.8 719.9 34 907.8 $(11/2)^{+}$ 187.90 $(7/2)^{+}$ 726.29 $81.7.19$ $9(2)^{+}$ 0.0 $(5/2)^{+}$ 739.8 33.4 739.9 $(9/2,11/2)^{+}$ 739.9 $(9/2)^{+}$ $^{*}743.0$ $1.35 23$ 754.4 $4.4.5$ 1480.8 $(9/2,11/2)^{+}$ 739.9 $(9/2)^{+}$ $^{*}743.4$ $1.81 22$ 1972.2 $+$ 1107.6 $(7/2.9/2)^{+}$ 864.8 $1.81 22$ 1073.02 201.75 $(5/2)^{+}$ 871.7 0.344 1598.2 726.29 726.29 739.9 $(9/2)^{+}$ 871.6^{04} 0.431 1079.0 187.90 $(7/2)^{+}$ 871.6^{64} 0.413 1079.0 187.90 $(7/2)^{+}$ 891.3 0.6413 1079.0 187.90 $(7/2)^{+}$ 891.3 0.6413 1079.0 187.90 $(7/2)^{+}$ </td <td>535.1</td> <td>0.47 7</td> <td>1104.7</td> <td>$(7/2, 9/2, 11/2)^+$</td> <td>569.5</td> <td></td> <td></td> <td></td> <td></td>	535.1	0.47 7	1104.7	$(7/2, 9/2, 11/2)^+$	569.5				
538.1 0.8717 739.9 $(9/2)^{+}$ 201.75 $(5/2)^{+}$ 538.3 0.9210 726.29 187.90 $(7/2)^{+}$ 552.1 2.43 739.9 $(9/2)^{+}$ 187.90 $(7/2)^{+}$ 569.4 4.55 569.5 0.0 $(5/2)^{+}$ 572.9 0.8810 1480.8 $(9/2,11/2)^{+}$ 907.8 $(11/2)^{+}$ 586.7 1.0314 1326.9 739.9 $(9/2)^{+}$ 604.7 0.7610 1512.6 907.8 $(11/2)^{+}$ 648.5 0.2412 2161.1 1512.6 $11(2)^{+}$ 715.2 2.03 1107.6 $(7/2.9/2)^{+}$ 391.8 719.9 34 907.8 $(11/2)^{+}$ 187.90 $(7/2)^{+}$ 726.29 817.719 726.29 0.0 $(5/2)^{+}$ 739.8 33.4 739.9 $(9/2)^{+}$ 0.0 $(5/2)^{+}$ 740.4 $2.2.3$ 1480.8 $(9/2,11/2)^{+}$ 726.29 772.4 $4.9.5$ 1512.6 739.9 $(9/2)^{+}$ *807.4 0.344 864.3 1.8122 1972.2 $*$ 864.3 1.8122 1073.07 201.75 $(5/2)^{+}$ 871.7 0.344 1598.2 726.29 877.0 0.4910 1079.0 201.75 891.3 0.6413 1079.0 201.75 891.3 0.6413 1079.0 201.75 891.3 0.6413 1079.0 1004.7 892.4 1046 $(72.9/2)^{+}$	538.0	1.4 3	1107.6	$(7/2,9/2)^+$	569.5	(5/2)+			
538.3 0.9210 726.29 187.90 $(7/2)^+$ 552.1 2.43 739.9 $(9/2)^+$ 187.90 $(7/2)^+$ 569.4 4.55 569.5 0.0 $(5/2)^+$ 572.9 0.8810 1480.8 $(9/2,11/2)^+$ 907.8 $(11/2)^+$ 604.7 0.7610 1512.6 907.8 $(11/2)^+$ 648.5 0.2412 2161.1 1512.6 907.8 $(11/2)^+$ 714.8 10614 916.9 201.75 $(5/2)^+$ 715.2 2.03 1107.6 $(7/2.9/2)^+$ 391.8 719.9 34 907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.29 17.719 726.29 0.0 $(5/2)^+$ 739.8 33.4 739.9 $(9/2,11/2)^+$ 739.9 $(9/2)^+$ *74.0 1.3523 1.3523 772.4 4.95 1512.6 739.9 772.4 4.95 1512.6 739.9 $(9/2)^+$ 871.6 0.356 $073.0?$ 201.75 $(5/2)^+$ 871.7 10.314 1598.2 726.29 871.7 10.314 1598.2 726.29 871.7 10.314 1598.2 726.29 871.7 10.314 1099.0 201.75 891.3 $0.641.31$ 1079.0 201.75 891.3 $0.641.81$ 1079.0 201.75 892.3 $0.961.81$ 1996.9 1104.7 905.7 $1.21.16$ 107.6 $(72.9/2)^+$ 916.7 182.19 104	538.1	0.87 11	739.9	(9/2)	201.75	$(5/2)^+$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	550.5 552.1	$0.92\ 10$	720.29	$(0/2)^+$	187.90	$(1/2)^{+}$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	569.4	2.4 J 4 5 5	569.5	(9/2)	107.90	(7/2) $(5/2)^+$			
586.71.03 141326.9739.9 $(9/2)^+$ 604.70.76 101512.6907.8 $(11/2)^+$ 648.50.24 122161.11512.6907.8 $(11/2)^+$ 714.81.06 14916.9201.75 $(5/2)^+$ 715.22.0.31107.6 $(7/2,9/2)^+$ 391.8719.934907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.29 817.7 19726.29 90.0 $(5/2)^+$ 739.833 4739.9 $(9/2,11/2)^+$ 739.9 $(9/2)^+$ *743.01.35 237754.44.4 51480.8 $(9/2,11/2)^+$ 726.29772.44.9 51512.6739.9 $(9/2)^+$ *807.40.34 48864.31.81 221972.2+1107.671.0 ⁴ 0.35 61073.0?201.75 $(5/2)^+$ 871.0 ⁴ 0.35 61073.0?201.75891.30.64 131079.0187.90892.30.96 181996.91104.791.75521.41010.5?201.75905.71.21 161107.6 $(7/2,9/2)^+$ 916.7182.191104.7 $(7/2,9/2,11/2)^+$ 918.85.3 61107.6 $(7/2,9/2,11/2)^+$ 919.85.3 61107.6 $(7/2,9/2,11/2)^+$ 916.7182.191104.7 $(7/2,9/2,11/2)^+$ 916.71.21 161107.6 $(7/2,9/2,11/2)^+$ 916.71.21 761107.6 $(7/2,9/2,11/2)^+$ 916.7<	572.9	0.88 10	1480.8	$(9/2.11/2)^+$	907.8	$(11/2)^+$			
604.7 $0.76\ 10$ 1512.6 907.8 $(11/2)^+$ 648.5 $0.24\ 12$ 2161.1 1512.6 714.8 $1.06\ 14$ 916.9 201.75 $(5/2)^+$ 715.2 $2.0\ 3$ 1107.6 $(7/2.9/2)^+$ 391.8 719.9 34 907.8 $(11/2)^+$ 187.90 $(7/2)^+$ $726.29\ 8$ $17.7\ 19$ 726.29 0.0 $(5/2)^+$ 740.4 $2.2\ 3$ 1480.8 $(9/2,11/2)^+$ 739.9 $(9/2)^+$ 740.4 $2.2\ 3$ 1480.8 $(9/2,11/2)^+$ 726.29 772.4 $4.9\ 5$ 1512.6 739.9 $(9/2)^+$ 754.4 $4.4\ 5$ 1480.8 $(9/2,11/2)^+$ 726.29 772.4 $4.9\ 5$ 1512.6 739.9 $(9/2)^+$ 864.3 $1.81\ 22$ 1972.2 $+$ $1107.6\ (7/2.9/2)^+$ 864.8 $1.81\ 22$ 1604.9 $739.9\ (9/2)^+$ 871.0^a $0.35\ 6$ 1073.02 $201.75\ (5/2)^+$ 871.0^a $0.35\ 6$ 1073.02 $201.75\ (5/2)^+$ $871.0\ 0\ 491\ 10\ 1079.0$ $187.90\ (7/2)^+$ $892.3\ 0.96\ 18\ 1996.9$ $1104.7\ (7/2.9/2,11/2)^+$ 898.5^a $1.68\ 21\ 1100.57$ $201.75\ (5/2)^+$ $905.7\ 1.21\ 16\ 1107.6\ (7/2.9/2,11/2)^+\ 187.90\ (7/2)^+$ $918.8\ 5.3\ 6\ 1076\ (7/2.9/2)^+\ 187.90\ (7/2)^+$ $919.8\ 5.3\ 6\ 1076\ (7/2.9/2)^+\ 187.90\ (7/2)^+$ 946.6^a $0.64\ 10\ 1134.57\ 186.8\ (7/2.9/2)^+\ 391.8\ 90.72)^+$ $994.8\ 2.4\ 3\ 1902.6\ 907.8\ (11/2)^+$ <td>586.7</td> <td>1.03 14</td> <td>1326.9</td> <td>(),=,=,=)</td> <td>739.9</td> <td>$(9/2)^+$</td> <td></td> <td></td> <td></td>	586.7	1.03 14	1326.9	(),=,=,=)	739.9	$(9/2)^+$			
648.5 $0.24 \ I2$ 2161.1 1512.6 714.8 $1.06 \ I4$ 916.9 201.75 $(5/2)^+$ 715.2 $2.0 \ 3$ 1107.6 $(7/2.9/2)^+$ 391.8 719.9 34 907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.29 8 $17.7 \ 19$ 726.29 0.0 $(5/2)^+$ 740.4 $2.2 \ 3$ 1480.8 $(9/2)^+$ 0.0 $(5/2)^+$ $^{*743.0}$ $1.35 \ 23$ 732.4 $4.5 \ 512.6$ 739.9 $(9/2)^+$ $^{*807.4}$ $0.34 \ 4$ 864.3 $1.81 \ 22$ 1972.2 $^+$ 1107.6 $(7/2.9/2)^+$ 864.3 $1.81 \ 22$ 1972.2 $^+$ 1107.6 $(7/2.9/2)^+$ 871.0^a $0.35 \ 6$ $1073.0?$ $201.75 \ (5/2)^+$ 871.0^a $0.35 \ 6$ 1079.0 $201.75 \ (5/2)^+$ 891.3 $0.64 \ 13$ 1079.0 $201.75 \ (5/2)^+$ 892.3 $0.96 \ 18$ 1996.9 $1104.7 \ (7/2.9/2.11/2)^+$ 995.7 $1.21 \ 16 \ 1107.6 \ (7/2.9/2.11/2)^+$ $187.90 \ (7/2)^+$ $919.8 \ 5.3 \ 6 \ 1007.6 \ (7/2.9/2.11/2)^+$ $187.90 \ (7/2)^+$ 916.6^a $0.64 \ 10 \ 1134.5?$ $187.90 \ (7/2)^+$ 946.6^a $0.64 \ 10 \ 1134.5?$ $187.90 \ (7/2)^+$ $997.0 \ 1.43 \ 17 \ 138.1?$ $187.90 \ (7/2)^+$ $977.0 \ 1.43 \ 17 \ 138.1?$ $187.90 \ (7/2)^+$ $994.8 \ 2.4 \ 3 \ 1902.6$ $907.8 \ (11/2)^+$	604.7	0.76 10	1512.6		907.8	$(11/2)^+$			
714.81.061/4916.9201.75 $(5/2)^+$ 715.22.0.31107.6 $(7/2,9/2)^+$ 391.8719.934907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.29817.719726.290.0 $(5/2)^+$ 739.833.4739.9 $(9/2)^+$ 0.0 $(5/2)^+$ 740.42.2.31480.8 $(9/2,11/2)^+$ 739.9 $(9/2)^+$ *743.01.3523754.44.4.51480.8 $(9/2,11/2)^+$ 754.44.4.51480.8 $(9/2,11/2)^+$ 726.29772.44.9.51512.6739.9 $(9/2)^+$ *807.40.34.4**864.31.81.221604.9739.9 $(9/2)^+$ 871.0 ^a 0.35.61073.0?201.75 $(5/2)^+$ 871.71.03.141598.2726.29877.00.49.101079.0187.90 $(7/2)^+$ 891.30.64.131079.0187.90 $(7/2)^+$ 891.30.64.131079.0187.90 $(7/2)^+$ 895.6 ^a 1.68.211100.5?201.75 $(5/2)^+$ 905.71.21.161107.6 $(7/2,9/2)^+$ 201.75 $(5/2)^+$ 916.71.82.191104.7 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 918.85.3.61107.6 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 916.71.82.191104.7?187.90 $(7/2)^+$ 916.6 ^a 0.64.101134.5?187.90 $(7/2)^+$ <td>648.5</td> <td>0.24 12</td> <td>2161.1</td> <td></td> <td>1512.6</td> <td></td> <td></td> <td></td> <td></td>	648.5	0.24 12	2161.1		1512.6				
715.22.0.31107.6 $(7/2.9/2)^+$ 391.8719.934907.8 $(11/2)^+$ 187.90 $(7/2)^+$ 726.290.0 $(5/2)^+$ 739.833.4739.9 $(9/2)^+$ 0.0 $(5/2)^+$ 740.42.2.31480.8 $(9/2,11/2)^+$ 739.9 $(9/2)^+$ *743.01.35.237777772.44.9.51512.6739.9 $(9/2)^+$ *807.40.34 488 $(9/2,11/2)^+$ 726.29*807.40.34 47739.9 $(9/2)^+$ 864.81.81 221972.2+1107.6 $(7/2,9/2)^+$ 864.81.81 221604.9739.9 $(9/2)^+$ 871.0°0.35.61073.0?201.75 $(5/2)^+$ 871.71.03.141598.2726.29877.00.49.101079.0201.75 $(5/2)^+$ 891.30.64.131079.0187.90 $(7/2)^+$ 898.5°1.68.211100.5?201.75 $(5/2)^+$ 905.71.21.161107.6 $(7/2,9/2)^+$ 201.75 $(5/2)^+$ 916.7182.191104.7? $(7/2,9/2)^+$ 201.75 $(5/2)^+$ 916.71.82.191104.7? $(7/2,9/2)^+$ 201.75 $(5/2)^+$ 916.71.82.191104.7? $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 919.85.3.61107.6 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 946.6°0.64.101134.5?187.90 $(7/2)^+$ <td< td=""><td>714.8</td><td>1.06 14</td><td>916.9</td><td></td><td>201.75</td><td>$(5/2)^+$</td><td></td><td></td><td></td></td<>	714.8	1.06 14	916.9		201.75	$(5/2)^+$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	715.2	2.0 3	1107.6	$(7/2,9/2)^+$	391.8				
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	719.9	34	907.8	$(11/2)^+$	187.90	$(7/2)^+$			
739.5 739.7 $(7/2)^{+}$ 739.9 $(9/2)^{+}$ $^{740.4}$ $2.2.3$ 1480.8 $(9/2,11/2)^{+}$ 739.9 $(9/2)^{+}$ $^{772.4}$ $4.9.5$ 1512.6 739.9 $(9/2)^{+}$ $^{807.4}$ $0.34.4$ 864.3 $1.81.22$ 1972.2 $+$ 1107.6 $(7/2,9/2)^{+}$ 864.8 $1.81.22$ 1972.2 $+$ 1107.6 $(7/2,9/2)^{+}$ 864.8 $1.81.22$ 1604.9 739.9 $(9/2)^{+}$ 871.0^{a} $0.35.6$ $1073.0?$ 201.75 $(5/2)^{+}$ 871.7 $1.03.14$ 1598.2 726.29 877.0 $0.49.10$ 1079.0 201.75 $(5/2)^{+}$ 891.3 $0.64.13$ 1079.0 187.90 $(7/2)^{+}$ 898.5^{a} $1.68.21$ $1100.5?$ 201.75 $(5/2)^{+}$ 905.7 $1.21.16$ 1107.6 $(7/2,9/2,11/2)^{+}$ 187.90 $(7/2)^{+}$ 916.7 182.19 1104.7 $(7/2,9/2,11/2)^{+}$ 187.90 $(7/2)^{+}$ <tr< td=""><td>726.29 8</td><td>17.7 19</td><td>726.29</td><td>$(0/2)^{+}$</td><td>0.0</td><td>$(5/2)^+$</td><td></td><td></td><td></td></tr<>	726.29 8	17.7 19	726.29	$(0/2)^{+}$	0.0	$(5/2)^+$			
743.0 $1.35.23$ 140.3 $(0/2,11/2)^{+}$ 125.9 $(0/2)^{+}$ 754.4 $4.4.5$ 1480.8 $(9/2,11/2)^{+}$ 726.29 772.4 $4.9.5$ 1512.6 739.9 $(9/2)^{+}$ $^{*}807.4$ $0.34.4$ * * 864.3 $1.81.22$ 1972.2 $^{+}$ 1107.6 $(7/2,9/2)^{+}$ 864.8 $1.81.22$ 1972.2 $^{+}$ 1107.6 $(7/2,9/2)^{+}$ 871.0^{a} $0.35.6$ $1073.0?$ 201.75 $(5/2)^{+}$ 871.7 $1.03.14$ 1598.2 726.29 877.0 $0.49.10$ 1079.0 201.75 $(5/2)^{+}$ 891.3 $0.64.13$ 1079.0 187.90 $(7/2)^{+}$ 892.3 $0.96.18$ 1996.9 1104.7 $(7/2,9/2,11/2)^{+}$ 898.5^{a} $1.68.21$ $1100.5?$ 201.75 $(5/2)^{+}$ 916.7 $18.2.19$ 1104.7 $(7/2,9/2,11/2)^{+}$ 187.90 $(7/2)^{+}$ 919.8 $5.3.6$ 1107.6 $(7/2,9/2)^{+}$ 187.90 $(7/2)^{+}$ 919.8 $5.3.6$ 1107.6 $(7/2,9/2)^{+}$ 187.90 $(7/2)^{+}$ 977.0 $1.43.17$ 138.88 $(7/2,9/2)^{+}$ 391.8 994.8 $2.4.3$ 1902.6 907.8 $(11/2)^{+}$	739.8 740.4	554 223	1480.8	(9/2) $(9/2 \ 11/2)^+$	739.9	(3/2) $(9/2)^+$			
754.444.51480.8 $(9/2,11/2)^+$ 726.29772.44.9 51512.6739.9 $(9/2)^+$ *807.40.34 4	x743.0	1 35 23	1400.0	(9/2,11/2)	139.9	(9/2)			
772.4 4.95 1512.6 739.9 $(9/2)^+$ *807.4 $0.34.4$ 864.3 $1.81.22$ 1972.2 + 1107.6 $(7/2,9/2)^+$ 864.8 $1.81.22$ 1604.9 739.9 $(9/2)^+$ 871.0 ^a $0.35.6$ $1073.0?$ 201.75 $(5/2)^+$ 871.7 $1.03.14$ 1598.2 726.29 877.0 $0.49.10$ 1079.0 201.75 $(5/2)^+$ 891.3 $0.64.13$ 1079.0 187.90 $(7/2)^+$ 892.3 $0.96.18$ 1996.9 1104.7 $(7/2,9/2,11/2)^+$ 898.5 ^a $1.68.21$ $1100.5?$ 201.75 $(5/2)^+$ 905.7 $1.21.16$ 1107.6 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 919.8 $5.3.6$ 1107.6 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 919.8 $5.3.6$ 1107.6 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 950.2 ^{al} $1.36.17$ $1138.1?$ 187.90 $(7/2)^+$ 977.0 $1.43.17$ 1368.8 $(7/2,9/2)^+$ 391.8 994.8 $2.4.3$ 1902.6 907.8 $(11/2)^+$	754.4	4.4.5	1480.8	$(9/2.11/2)^+$	726.29				
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	772.4	4.9 5	1512.6	(-1-,1-)	739.9	$(9/2)^+$			
864.3 $1.81\ 22$ $1972.2\ ^+$ $1107.6\ (7/2,9/2)^+$ 864.8 $1.81\ 22$ 1604.9 $739.9\ (9/2)^+$ 871.0^a $0.35\ 6$ $1073.0?$ $201.75\ (5/2)^+$ 871.7 $1.03\ 14$ 1598.2 726.29 877.0 $0.49\ 10$ 1079.0 $201.75\ (5/2)^+$ 891.3 $0.64\ 13$ 1079.0 $187.90\ (7/2)^+$ 892.3 $0.96\ 18$ 1996.9 $1104.7\ (7/2,9/2,11/2)^+$ 898.5^a $1.68\ 21\ 1100.5?$ $201.75\ (5/2)^+$ 905.7 $1.21\ 16\ 1107.6\ (7/2,9/2,11/2)^+$ $187.90\ (7/2)^+$ 916.7 $18.2\ 19\ 1104.7\ (7/2,9/2,11/2)^+$ $187.90\ (7/2)^+$ $919.8\ 5.3\ 6\ 1107.6\ (7/2,9/2,11/2)^+$ $187.90\ (7/2)^+$ $946.6^a\ 0.64\ 10\ 1134.5?$ $187.90\ (7/2)^+$ $950.2^a\ 1.36\ 17\ 1138.1?$ $187.90\ (7/2)^+$ $977.0\ 1.43\ 17\ 1368.8\ (7/2,9/2)^+$ $391.8\ 994.8\ 2.4\ 3\ 1902.6\ 907.8\ (11/2)^+$	^x 807.4	0.34 4							
864.8 1.81 22 1604.9 739.9 $9/2$) ⁺ 871.0 ^a 0.35 6 1073.0? 201.75 $(5/2)^+$ 871.7 1.03 14 1598.2 726.29 877.0 0.49 10 1079.0 201.75 $(5/2)^+$ 891.3 0.64 13 1079.0 187.90 $(7/2)^+$ 892.3 0.96 18 1996.9 1104.7 $(7/2,9/2,11/2)^+$ 898.5 ^a 1.68 21 1100.5? 201.75 $(5/2)^+$ 905.7 1.21 16 1107.6 $(7/2,9/2)^+$ 201.75 $(5/2)^+$ 916.7 18.2 19 1104.7 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 919.8 5.3 6 1107.6 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 919.8 5.3 6 1107.6 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 950.2 ^a 1.36 17 1138.1? 187.90 $(7/2)^+$ 977.0 1.43 17 1368.8 $(7/2,9/2)^+$ 391.8 994.8 2.4 3 1902.6 907.8 $(11/2)^+$	864.3	1.81 22	1972.2	+	1107.6	$(7/2, 9/2)^+$			
871.0^{4} $0.35\ 6$ $1073.0?$ $201.75\ (5/2)^{+}$ 871.7 $1.03\ 14$ 1598.2 726.29 877.0 $0.49\ 10$ 1079.0 $201.75\ (5/2)^{+}$ 891.3 $0.64\ 13$ 1079.0 $201.75\ (5/2)^{+}$ 892.3 $0.96\ 18$ 1996.9 $1104.7\ (7/2.9/2.11/2)^{+}$ 898.5^{4} $1.68\ 21\ 1100.5?$ $201.75\ (5/2)^{+}$ $905.7\ 1.21\ 16\ 1107.6\ (7/2.9/2.11/2)^{+}$ $201.75\ (5/2)^{+}$ $916.7\ 18.2\ 19\ 1104.7\ (7/2.9/2.11/2)^{+}$ $187.90\ (7/2)^{+}$ $919.8\ 5.3\ 6\ 1107.6\ (7/2.9/2.11/2)^{+}$ $187.90\ (7/2)^{+}$ $919.8\ 5.3\ 6\ 1107.6\ (7/2.9/2.)^{+}\ 187.90\ (7/2)^{+}$ $946.6^{4}\ 0.64\ 10\ 1134.5?$ $187.90\ (7/2)^{+}$ $977.0\ 1.43\ 17\ 1368.8\ (7/2.9/2)^{+}\ 391.8$ $994.8\ 2.4\ 3\ 1902.6\ 907.8\ (11/2)^{+}$	864.8	1.81 22	1604.9		739.9	$(9/2)^+$			
$8/1.7$ $1.03\ 14$ 1598.2 $7/26.29$ 877.0 $0.49\ 10$ 1079.0 $201.75\ (5/2)^+$ 891.3 $0.64\ 13$ 1079.0 $187.90\ (7/2)^+$ 892.3 $0.96\ 18$ 1996.9 $1104.7\ (7/2,9/2,11/2)^+$ 898.5^a $1.68\ 21\ 1100.5?$ $201.75\ (5/2)^+$ $905.7\ 1.21\ 16\ 1107.6\ (7/2,9/2)^+$ $201.75\ (5/2)^+$ $916.7\ 18.2\ 19\ 1104.7\ (7/2,9/2,11/2)^+$ $187.90\ (7/2)^+$ $919.8\ 5.3\ 6\ 1107.6\ (7/2,9/2,11/2)^+$ $187.90\ (7/2)^+$ $946.6^a\ 0.64\ 10\ 1134.5?$ $187.90\ (7/2)^+$ $950.2^a\ 1.36\ 17\ 1138.1?$ $187.90\ (7/2)^+$ $977.0\ 1.43\ 17\ 1368.8\ (7/2,9/2)^+$ $391.8\ 994.8\ 2.4\ 3\ 1902.6\ 907.8\ (11/2)^+$	871.0 ^{<i>u</i>}	0.35 6	1073.0?		201.75	$(5/2)^+$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	871.7	1.03 14	1598.2		726.29	(5/2)+			
891.3 0.04413 1079.0 187.90 $(7/2)$ 892.3 0.9618 1996.9 1104.7 $(7/2,9/2,11/2)^+$ 898.5^a 1.6821 $1100.5?$ 201.75 $(5/2)^+$ 905.7 1.2116 1107.6 $(7/2,9/2,11/2)^+$ 201.75 $(5/2)^+$ 916.7 18.219 1104.7 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 919.8 5.36 1107.6 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 946.6^a 0.6410 $1134.5?$ 187.90 $(7/2)^+$ 950.2^a 1.3617 $1138.1?$ 187.90 $(7/2)^+$ 977.0 1.4317 1368.8 $(7/2,9/2)^+$ 391.8 994.8 2.43 1902.6 907.8 $(11/2)^+$	8/7.0	0.49 10	1079.0		201.75	$(3/2)^+$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	897.3	0.04 13	1079.0		107.90	(7/2) $(7/2) 9/2 11/2)^+$			
905.7 1.21 16 1107.6 $(7/2,9/2)^+$ 201.75 $(5/2)^+$ 916.7 18.2 19 1104.7 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 919.8 5.3 6 1107.6 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 946.6 ^a 0.64 10 1134.5? 187.90 $(7/2)^+$ 950.2 ^a 1.36 17 1138.1? 187.90 $(7/2)^+$ 977.0 1.43 17 1368.8 $(7/2,9/2)^+$ 391.8 994.8 2.4 3 1902.6 907.8 $(11/2)^+$	898 5 ^a	1 68 21	1100.5		201.75	(7/2, 7/2, 11/2) $(5/2)^+$			
916.7 18.2 19 1104.7 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 919.8 5.3 6 1107.6 $(7/2,9/2,11/2)^+$ 187.90 $(7/2)^+$ 946.6 ^a 0.64 10 1134.5? 187.90 $(7/2)^+$ 950.2 ^a 1.36 17 1138.1? 187.90 $(7/2)^+$ 977.0 1.43 17 1368.8 $(7/2,9/2)^+$ 391.8 994.8 2.4 3 1902.6 907.8 $(11/2)^+$	905.7	1.21 16	1107.6	$(7/2.9/2)^+$	201.75	$(5/2)^+$			
919.8 $5.3.6$ 1107.6 $(7/2,9/2)^+$ 187.90 $(7/2)^+$ 946.6 ^a $0.64.10$ $1134.5?$ 187.90 $(7/2)^+$ 950.2 ^a $1.36.17$ $1138.1?$ 187.90 $(7/2)^+$ 977.0 $1.43.17$ 1368.8 $(7/2,9/2)^+$ 391.8 994.8 $2.4.3$ 1902.6 907.8 $(11/2)^+$	916.7	18.2 19	1104.7	$(7/2,9/2,11/2)^+$	187.90	$(7/2)^+$			
946.6^a $0.64 \ 10$ $1134.5?$ 187.90 $(7/2)^+$ 950.2^a $1.36 \ 17$ $1138.1?$ 187.90 $(7/2)^+$ 977.0 $1.43 \ 17$ 1368.8 $(7/2,9/2)^+$ 391.8 994.8 $2.4 \ 3$ 1902.6 907.8 $(11/2)^+$	919.8	5.3 6	1107.6	$(7/2,9/2)^+$	187.90	$(7/2)^+$			
950.2^a $1.36\ 17$ $1138.1?$ $187.90\ (7/2)^+$ 977.0 $1.43\ 17$ $1368.8\ (7/2,9/2)^+$ 391.8 994.8 $2.4\ 3$ 1902.6 $907.8\ (11/2)^+$	946.6 ^a	0.64 10	1134.5?		187.90	$(7/2)^+$			
977.0 1.43 17 1368.8 $(7/2,9/2)^+$ 391.8 994.8 2.4 3 1902.6 907.8 $(11/2)^+$	950.2 ^a	1.36 17	1138.1?		187.90	$(7/2)^+$			
994.8 2.4 3 1902.6 907.8 $(11/2)^+$	977.0	1.43 17	1368.8	$(7/2,9/2)^+$	391.8				
	994.8	2.4 3	1902.6		907.8	$(11/2)^+$			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1005.0	1.50 <i>18</i> 1.51 <i>17</i>	1/44.8 17// 9		139.9 726 20	(9/2)			

$\gamma(^{103}\text{Cd})$ (continued)

$E_{\gamma}^{\dagger \#}$	$I_{\gamma}^{\dagger \# @}$	E _i (level)	\mathbf{J}_i^{π}	E_f	J_f^π
1040.0	2.9.3	1779.9		739.9	$(9/2)^+$
1050.1	1 00 14	1790.1		739.9	$(9/2)^+$
1064.0	1.30.23	1790.1		726.29	()/2)
1085.9^{a}	148	1826.62		739.9	$(9/2)^+$
1089.1	163	1996.9		907.8	$(11/2)^+$
1002.1	0.82.17	1293.82		201.75	$(5/2)^+$
1107.3	738	1203.01	$(7/2 0/2)^+$	201.75	$(5/2)^+$
1107.5	1.41.6	1326.0	(1/2, 7/2)	201.75	$(5/2)^+$
1124.7	213	2052.9	+	201.75 907.8	$(3/2)^+$
1145.6	0.43.8	1347.3		201.75	(11/2) $(5/2)^+$
1159.3	1 30 15	1347.3		187.90	$(3/2)^+$
1167.1	1.01 12	1368.8	$(7/2 \ 9/2)^+$	201.75	$(7/2)^+$
1178.6	1.0112 173	2086.4	(1/2,)/2)	201.75 907.8	$(11/2)^+$
1180.3	254	1919.9		730.0	$(9/2)^+$
1181.0	406	1368.8	$(7/2 \ 9/2)^+$	187.90	$(7/2)^+$
1188 1 ^{<i>a</i>}	1.00	1027 42	(1/2, 5/2)	730.0	$(1/2)^{+}$
x1219.5	0.50.5	1/27.4.		157.7	(j/2)
1212.0	1 34 25	1972.2	+	730 0	$(9/2)^+$
x1292.6	0.41.4	1972.2		139.9	(9/2)
1326.8	485	2052.9	+	726 29	
1320.0	7.05	2032.9		907.8	$(11/2)^+$
1340.3^{a}	0.60.10	1542 12		201.75	(11/2) $(5/2)^+$
x1347.6	1 63 18	1342.11		201.75	(3/2)
x1368 5	1.81.20				
1368.8	1.01 20	1368.8	$(7/2 \ 9/2)^+$	0.0	$(5/2)^+$
x1307.8	1.01 20	1500.0	(1/2,)/2)	0.0	(3/2)
1402.3	0.62.13	1972 2	+	569 5	
1402.6	0.02 13	1604.9		201.75	$(5/2)^+$
1410.5	4.1.5	1598.2		187.90	$(7/2)^+$
^x 1416.9	1.42 15				(-1-)
1425.7	3.5 4	2342.6	+	916.9	
1460.1	1.85 24	1662.0		201.75	$(5/2)^+$
1474.1	2.3 3	1662.0		187.90	$(7/2)^+$
1570.0	1.32 25	2296.3		726.29	
1580.8	0.90 14	1972.2	+	391.8	
1591.2 ^a	1.14 6	1779.9		187.90	$(7/2)^+$
^x 1597.7	1.48 5				
1661.3 ^a	0.97 12	1662.0		0.0	$(5/2)^+$
1665.5 <mark>4</mark>	0.89 13	1853.4?		187.90	$(7/2)^+$
1677.0 <mark>a</mark>	1.30 16	1864.9?		187.90	$(7/2)^+$
1690.0	1.20 25	2794.7	+	1104.7	$(7/2, 9/2, 11/2)^+$
1732.0	0.83 13	1919.9		187.90	$(7/2)^+$
1770.7 ^a	0.60 13	1972.2	+	201.75	$(5/2)^+$
1783.9	1.59 19	1972.2	+	187.90	$(7/2)^+$
1915.2	4.5 5	2823.0	+	907.8	$(11/2)^+$
^x 1943.1	0.48 5				
1947.0 <mark>a</mark>	1.46 19	2854.7?		907.8	$(11/2)^+$
^x 1972.0	5.1 6				
1972.0	5.16	1972.2	+	0.0	$(5/2)^+$
2007.2 ^a	1.52 20	2195.1?		187.90	$(7/2)^+$
^x 2054.5	0.78 8				
2073.6 ^a	0.53 9	2981.3?		907.8	$(11/2)^+$
^x 2082.6	0.83 9				
2089.8 ^a	1.27 16	3570.9	+	1480.8	$(9/2, 11/2)^+$
2211.7	3.9 4	2781.3	+	569.5	

$\gamma(^{103}\text{Cd})$ (continued)

$E_{\gamma}^{\dagger \#}$	$I_{\gamma}^{\dagger \# @}$	E _i (level)	\mathbf{J}_i^{π}	E_f	${ m J}_f^\pi$	$E_{\gamma}^{\dagger \#}$	Ι _γ † #@	E _i (level)	\mathbf{J}_i^{π}	E_f	J_f^π
^x 2347.0	1.03 11					3570.9	0.31 4	3570.9	+	0.0	$(5/2)^+$
2386.3 ^a	2.3 3	2574.2?		187.90	$(7/2)^+$	x3585.8	0.42 4				
2424.6 ^a	1.16 13	2612.4?		187.90	$(7/2)^+$	3642.4	0.63 8	3830.3	+	187.90	$(7/2)^+$
2452.8 <mark>a</mark>	2.6 3	2640.7?		187.90	$(7/2)^+$	^x 3665.5	0.21 2				
2585.0	2.8 3	3492.9	+	907.8	$(11/2)^+$	^x 3668.9	0.33 4				
^x 2605.6	0.38 4					^x 3697.5	0.42 4				
^x 2899.7	0.53 6					^x 3726.8	0.14 1				
3001.9 ^a	0.93 10	3570.9	+	569.5		^x 3735.3	0.12 1				
^x 3087.8	1.42 15					^x 3747.0	0.10 1				
^x 3256.4	1.01 11					^x 3763.6	0.17 2				
3305.0	3.4 4	3492.9	+	187.90	$(7/2)^+$	^x 3795.1	0.47 5				
^x 3319.0	0.17 2					^x 3814.7	0.27 3				
^x 3336.9	0.55 6					^x 3830.2	0.10 1				
^x 3354.5	0.29 3					3830.2	0.10 1	3830.3	+	0.0	$(5/2)^+$
3382.8	0.70 9	3570.9	+	187.90	$(7/2)^+$	^x 3877.0	0.47 5				
^x 3452.1	0.35 4					x3896.3	0.30 3				
^x 3507.5	0.63 7					^x 3951.7	0.24 3				
^x 3559.8	0.39 4					x3962.1	0.16 2				
^x 3570.9	0.31 4					^x 3981.6	0.28 3				

[†] Unless noted otherwise, from 1997Sz04. [‡] From comparison of exp and theoretical BRICC $\alpha(K)$. [#] All unplaced gammas from 1997Sz04.

[@] For absolute intensity per 100 decays, multiply by 0.485 3.

& 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.

^{*a*} Placement of transition in the level scheme is uncertain.

^{*x*} γ ray not placed in level scheme.

 $^{103}_{48}\text{Cd}_{55}$ -7

103 In ε decay





7

¹⁰³In ε decay



8

¹⁰³In ε decay



$^{103} {\rm In} \ \varepsilon \ {\rm decay}$

