

¹¹⁴Cd(³⁶S,5n γ):SD **1995Rz03,2000Rz01**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli		NDS 110, 507 (2009)	1-Oct-2008

1995Rz03: E=182 MeV. Measured E γ , I γ , $\gamma\gamma\gamma$, $\gamma\gamma(\theta)$ (DCO) with GASP array (40 Compton suppressed Ge detectors and 80 BGO detectors), deduced SD bands. Earlier a weak evidence for SD-2 band was reported by **1992RzZY** using a smaller array of Ge detectors.

2000Rz01: E=182 MeV. Lifetime data for SD-1 and SD-2 bands. Deduced intrinsic quadrupole moments.

¹⁴⁵Gd Levels

E(level)	J π	E(level)	J π	E(level)	J π	E(level)	J π
x [†]	J	12021.8+x [†] 15	J+24	5289.9+y [‡] 13	J1+12	919.7+z [#] 10	J2+2
723.2+x [†] 7	J+2	13372.4+x [†] 15	J+26	6351.5+y [‡] 14	J1+14	1893.4+z [#] 12	J2+4
1492.8+x [†] 8	J+4	14779.3+x [†] 16	J+28	7471.9+y [‡] 14	J1+16	2926.4+z [#] 13	J2+6
2310.9+x [†] 9	J+6	16243.3+x [†] 19	J+30	8647.8+y [‡] 14	J1+18	4012.8+z [#] 14	J2+8
3178.9+x [†] 9	J+8	17763.4+x [†] 20	J+32	9876.1+y [‡] 15	J1+20	5157.3+z [#] 15	J2+10
4097.7+x [†] 10	J+10	19339.6+x [†] 21	J+34	11152.5+y [‡] 15	J1+22	6360.2+z [#] 17	J2+12
5068.5+x [†] 11	J+12	y [‡]	J1	12471.7+y [‡] 15	J1+24	7619.4+z [#] 17	J2+14
6092.3+x [†] 11	J+14	792.7+y [‡] 11	J1+2	13834.0+y [‡] 16	J1+26	8933.7+z [#] 19	J2+16
7169.4+x [†] 12	J+16	1602.9+y [‡] 12	J1+4	15241.0+y [‡] 17	J1+28	10303.6+z [#] 22	J2+18
8300.4+x [†] 12	J+18	2446.2+y [‡] 12	J1+6	16696.6+y [‡] 18	J1+30	11736+z [#] 3	J2+20
9486.3+x [†] 13	J+20	3338.3+y [‡] 13	J1+8	18206.9+y [‡] 21	J1+32		
10726.5+x [†] 14	J+22	4285.6+y [‡] 13	J1+10	z [#]	J2		

[†] Band(A): SD-1 band (**1995Rz03,2000Rz01**). Q(intrinsic)=11.8 8 (**2000Rz01**). Configuration= $\pi 6^1 \pi 9/2[404] \nu 9/2[514] \nu^0$ (**2000Rz01**). Percent population ≈ 1.1 (**1995Rz03**).

[‡] Band(B): SD-2 band (**1995Rz03,2000Rz01**). Q(intrinsic)=13.2 10 (**2000Rz01**). Configuration= $\nu 5/2[642] \nu 7^0 \pi 6^2$. $\alpha = -1/2$ (**2000Rz01**). At higher energies the N=6 neutron orbital is 1/2[651]. This band shows two band crossings, the first due to the alignment of i13/2 proton pair and the second due to alignment of i13/2 and i11/2 neutron orbitals percent population ≈ 0.6 (**1995Rz03**).

[#] Band(C): SD-3 band (**1995Rz03**). Configuration= $\nu 5/2[642] \nu 7^0 \pi 6^2$. $\alpha = +1/2$ (**1995Rz03**). At higher energies the N=6 neutron orbital is 1/2[651]. This band is interpreted as signature partner of SD-2 band. Percent population ≈ 0.2 (**1995Rz03**).

$\gamma(^{145}\text{Gd})$

E γ	I γ [†]	E _i (level)	J _i π	E _f	J _f π
723.2 7	0.41 5	723.2+x	J+2	x	J
769.6 3	1.00 12	1492.8+x	J+4	723.2+x	J+2
792.7 [‡] 11	0.21 7	792.7+y?	J1+2	y	J1
810.2 3	0.44 6	1602.9+y	J1+4	792.7+y?	J1+2
818.1 3	0.85 10	2310.9+x	J+6	1492.8+x	J+4
843.3 3	0.48 7	2446.2+y	J1+6	1602.9+y	J1+4
868.0 3	0.85 10	3178.9+x	J+8	2310.9+x	J+6
892.1 3	0.46 6	3338.3+y	J1+8	2446.2+y	J1+6
918.8 5	1.02 12	4097.7+x	J+10	3178.9+x	J+8
919.7 10	0.06 2	919.7+z	J2+2	z	J2
947.3 3	0.47 6	4285.6+y	J1+10	3338.3+y	J1+8
970.8 3	0.94 11	5068.5+x	J+12	4097.7+x	J+10
973.7 5	0.12 3	1893.4+z	J2+4	919.7+z	J2+2
1004.3 3	0.60 8	5289.9+y	J1+12	4285.6+y	J1+10

Continued on next page (footnotes at end of table)

$^{114}\text{Cd}(^{36}\text{S},5\text{n}\gamma):\text{SD}$ **1995Rz03,2000Rz01** (continued) $\gamma(^{145}\text{Gd})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
1023.8 3	1.12 14	6092.3+x	J+14	5068.5+x	J+12
1033.0 5	0.15 3	2926.4+z	J2+6	1893.4+z	J2+4
1061.6 3	0.50 7	6351.5+y	J1+14	5289.9+y	J1+12
1077.1 3	1.02 11	7169.4+x	J+16	6092.3+x	J+14
1086.4 5	0.13 3	4012.8+z	J2+8	2926.4+z	J2+6
1120.4 3	0.54 7	7471.9+y	J1+16	6351.5+y	J1+14
1131.0 3	0.84 10	8300.4+x	J+18	7169.4+x	J+16
1144.5 5	0.14 3	5157.3+z	J2+10	4012.8+z	J2+8
1175.9 3	0.48 7	8647.8+y	J1+18	7471.9+y	J1+16
1185.9 4	0.94 11	9486.3+x	J+20	8300.4+x	J+18
1202.9 8	0.13 5	6360.2+z	J2+12	5157.3+z	J2+10
1228.3 3	0.43 6	9876.1+y	J1+20	8647.8+y	J1+18
1240.2 6	0.75 8	10726.5+x	J+22	9486.3+x	J+20
1259.2 5	0.13 3	7619.4+z	J2+14	6360.2+z	J2+12
1276.4 3	0.33 5	11152.5+y	J1+22	9876.1+y	J1+20
1295.3 4	0.63 8	12021.8+x	J+24	10726.5+x	J+22
1314.3 7	0.10 3	8933.7+z	J2+16	7619.4+z	J2+14
1319.2 4	0.36 6	12471.7+y	J1+24	11152.5+y	J1+22
1350.6 4	0.58 8	13372.4+x	J+26	12021.8+x	J+24
1362.3 4	0.37 6	13834.0+y	J1+26	12471.7+y	J1+24
1369.9 12	0.09 4	10303.6+z	J2+18	8933.7+z	J2+16
1406.8 4	0.38 6	14779.3+x	J+28	13372.4+x	J+26
1407.0 5	0.24 5	15241.0+y	J1+28	13834.0+y	J1+26
1432.1 18	0.08 3	11736+z	J2+20	10303.6+z	J2+18
1455.6 7	0.26 5	16696.6+y	J1+30	15241.0+y	J1+28
1464.0 10	0.30 10	16243.3+x	J+30	14779.3+x	J+28
1510.3 10	0.18 4	18206.9+y	J1+32	16696.6+y	J1+30
1520.1 7	0.28 5	17763.4+x	J+32	16243.3+x	J+30
1576.2 7	0.25 5	19339.6+x	J+34	17763.4+x	J+32

† Relative intensity normalized to 1.0 for 769.6 γ in SD-1 band.

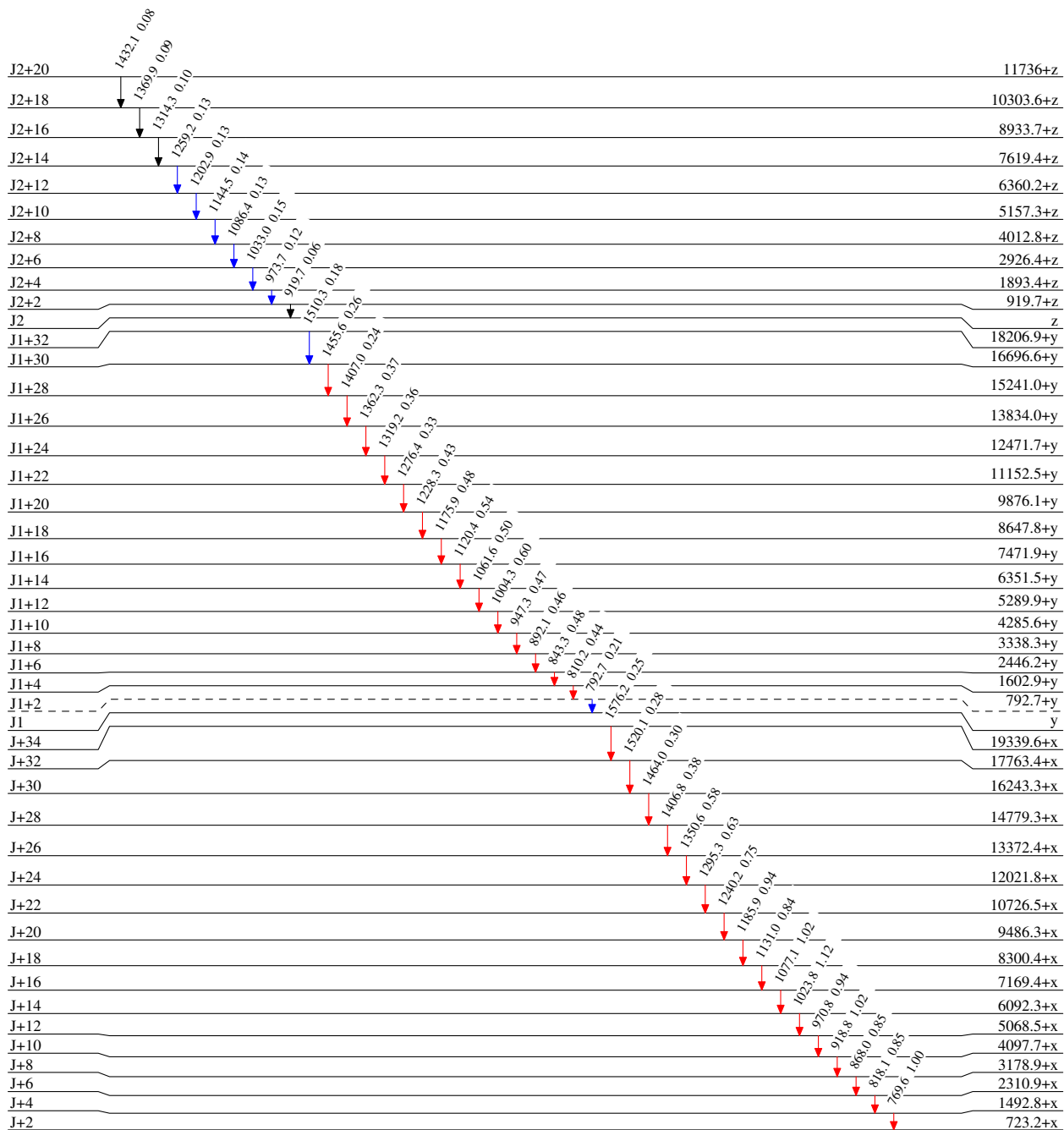
‡ Placement of transition in the level scheme is uncertain.

$^{114}\text{Cd}(^{36}\text{S},5n\gamma):\text{SD}$ 1995Rz03,2000Rz01

Legend

Level Scheme
Intensities: Relative I_γ

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - - - γ Decay (Uncertain)



$^{114}\text{Cd}(^{36}\text{S},5\text{n}\gamma):\text{SD}$ 1995Rz03,2000Rz01

		Band(C): SD-3 band (1995Rz03)	
		J2+20	11736+z
		J2+18	$\begin{matrix} 1432 \\ \downarrow \\ 10303.6+z \end{matrix}$
		J2+16	$\begin{matrix} 1370 \\ \downarrow \\ 8933.7+z \end{matrix}$
		J2+14	$\begin{matrix} 1314 \\ \downarrow \\ 7619.4+z \end{matrix}$
		J2+12	$\begin{matrix} 1259 \\ \downarrow \\ 6360.2+z \end{matrix}$
		J2+10	$\begin{matrix} 1203 \\ \downarrow \\ 5157.3+z \end{matrix}$
		J2+8	$\begin{matrix} 1144 \\ \downarrow \\ 4012.8+z \end{matrix}$
		J2+6	$\begin{matrix} 1086 \\ \downarrow \\ 2926.4+z \end{matrix}$
		J2+4	$\begin{matrix} 1033 \\ \downarrow \\ 1893.4+z \end{matrix}$
		J2+2	$\begin{matrix} 974 \\ \downarrow \\ 919.7+z \end{matrix}$
		J2	$\begin{matrix} 920 \\ \downarrow \\ z \end{matrix}$
		Band(B): SD-2 band (1995Rz03,2000Rz01)	
	J1+32	18206.9+y	
	J1+30	$\begin{matrix} 1510 \\ \downarrow \\ 16696.6+y \end{matrix}$	
	J1+28	$\begin{matrix} 1456 \\ \downarrow \\ 15241.0+y \end{matrix}$	
	J1+26	$\begin{matrix} 1407 \\ \downarrow \\ 13834.0+y \end{matrix}$	
	J1+24	$\begin{matrix} 1362 \\ \downarrow \\ 12471.7+y \end{matrix}$	
	J1+22	$\begin{matrix} 1319 \\ \downarrow \\ 11152.5+y \end{matrix}$	
	J1+20	$\begin{matrix} 1276 \\ \downarrow \\ 9876.1+y \end{matrix}$	
	J1+18	$\begin{matrix} 1228 \\ \downarrow \\ 8647.8+y \end{matrix}$	
	J1+16	$\begin{matrix} 1176 \\ \downarrow \\ 7471.9+y \end{matrix}$	
	J1+14	$\begin{matrix} 1120 \\ \downarrow \\ 6351.5+y \end{matrix}$	
	J1+12	$\begin{matrix} 1062 \\ \downarrow \\ 5289.9+y \end{matrix}$	
	J1+10	$\begin{matrix} 1004 \\ \downarrow \\ 4285.6+y \end{matrix}$	
	J1+8	$\begin{matrix} 947 \\ \downarrow \\ 3338.3+y \end{matrix}$	
	J1+6	$\begin{matrix} 892 \\ \downarrow \\ 2446.2+y \end{matrix}$	
	J1+4	$\begin{matrix} 843 \\ \downarrow \\ 1602.9+y \end{matrix}$	
	J1+2	$\begin{matrix} 810 \\ \downarrow \\ 792.7+y \end{matrix}$	
	J1	$\begin{matrix} 793 \\ \downarrow \\ y \end{matrix}$	
	Band(A): SD-1 band (1995Rz03,2000Rz01)		
J+34		19339.6+x	
J+32	$\begin{matrix} 1576 \\ \downarrow \\ 17763.4+x \end{matrix}$		
J+30	$\begin{matrix} 1520 \\ \downarrow \\ 16243.3+x \end{matrix}$		
J+28	$\begin{matrix} 1464 \\ \downarrow \\ 14779.3+x \end{matrix}$		
J+26	$\begin{matrix} 1407 \\ \downarrow \\ 13372.4+x \end{matrix}$		
J+24	$\begin{matrix} 1351 \\ \downarrow \\ 12021.8+x \end{matrix}$		
J+22	$\begin{matrix} 1295 \\ \downarrow \\ 10726.5+x \end{matrix}$		
J+20	$\begin{matrix} 1240 \\ \downarrow \\ 9486.3+x \end{matrix}$		
J+18	$\begin{matrix} 1186 \\ \downarrow \\ 8300.4+x \end{matrix}$		
J+16	$\begin{matrix} 1131 \\ \downarrow \\ 7169.4+x \end{matrix}$		
J+14	$\begin{matrix} 1077 \\ \downarrow \\ 6092.3+x \end{matrix}$		
J+12	$\begin{matrix} 1024 \\ \downarrow \\ 5068.5+x \end{matrix}$		
J+10	$\begin{matrix} 971 \\ \downarrow \\ 4097.7+x \end{matrix}$		
J+8	$\begin{matrix} 919 \\ \downarrow \\ 3178.9+x \end{matrix}$		
J+6	$\begin{matrix} 868 \\ \downarrow \\ 2310.9+x \end{matrix}$		
J+4	$\begin{matrix} 818 \\ \downarrow \\ 1492.8+x \end{matrix}$		
J+2	$\begin{matrix} 770 \\ \downarrow \\ 723.2+x \end{matrix}$		
J	$\begin{matrix} 723 \\ \downarrow \\ x \end{matrix}$		