

$^{102}\text{Pd}(\alpha, 2n\gamma)$ 1978Ge05, 1985An27

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 108,2035 (2007)	30-Mar-2007

$E\alpha=33$ MeV (1978Ge05), $E\alpha=27.5$ MeV(1980Co14), $E\alpha=20.43$ MeV (1969HaZU).

$E\alpha=27$ MeV (1985An27).

Measured: γ , $\gamma(t)$, $\gamma\gamma$, $\gamma(\theta)$, excitation functions (1978Ge05).

The most complete work is that of 1978Ge05 and has been adopted.

1969HaZU has observed only the first two excited levels.

1980Co14 generally agree with 1978Ge05 and give γ -lines at 123.9, 145.6, 187.6, 238.2, 263.8, 307.5, 321.1, 367.2, 423.2, 473.2, 488.0, 499.8, 533.1, 585.1, 622.6, 658.3, 679.2, 776.5, 827.8, 834.7, 841.2, 878.8, 890.7, 927.5, 943.6, 1002.0, 1040.0 1115, 1232, 1282 keV (no decay scheme was constructed by 1980Co14).

 ^{104}Cd Levels

E(level) [†]	$J^{\pi\ddagger}$	$T_{1/2}$	Comments
0	0^+	57.7 min 10	
657.9	2^+		
1491.9	4^+		
2114.0	$(4)^+$		
2370.0	6^+		
2435.4	6^+		
2531.5	3,4,5		
2843.7	(5,6,7)		J^{π} : 6,8 in 1978Ge05.
2902.0	8^+	0.8 ns +2-1	$T_{1/2}$: from 1985An27 centroid-shift method.
3031.1	(2 to 6)		
3210.7	8^+		
3297.6	8^+		J^{π} : 6,8 in 1978Ge05, 1985An27.
3653.2	(7)		J^{π} : 5,6,7 in 1978Ge05.
3887.5			
3903.9	9^+		J^{π} : 5,7,9 in 1978Ge05, 1985An27.
4038.3	9^-		J^{π} : 7,9 in 1978Ge05.
4100.9	10^+		
4327.2	(10^+)		J^{π} : 6,8 in 1978Ge05.
4394.4	(9)		
4463	(10^+)		
4735.5			
4741	(11)		J^{π} : 7,9,11 in 1978Ge05.
4817.7	(11^+)		

[†] Not adopted.

[‡] From Adopted Levels.

 $\gamma(^{104}\text{Cd})$

E_{γ}	I_{γ}	$E_i(\text{level})$	J^{π}_i	E_f	J^{π}_f	Mult. [†]	Comments
187.4 2	10 5	3031.1	(2 to 6)	2843.7	(5,6,7)		$\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
307.2 3	25 4	3210.7	8^+	2902.0	8^+		$\Delta J=1$ from $\gamma\gamma(\theta)$.
321.2 2	53 7	2435.4	6^+	2114.0	(4^+)		
414.2 3	≈ 5	4741	(11)	4327.2	(10^+)		
423.3 3	17 3	4327.2	(10^+)	3903.9	9^+		
467.3 3	10 4	2902.0	8^+	2435.4	6^+	E2	$B(E2)(W.u.)=0.07$ 4
473.7 2	20 5	2843.7	(5,6,7)	2370.0	6^+		$\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
499.6 2	54 10	3031.1	(2 to 6)	2531.5	3,4,5		$\Delta J=1$ from $\gamma\gamma(\theta)$. Assigned to 2613 level in (HI,xn γ).

Continued on next page (footnotes at end of table)

$^{102}\text{Pd}(\alpha, 2n\gamma)$ **1978Ge05,1985An27 (continued)** $\gamma(^{104}\text{Cd})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
532.9 2	150 20	2902.0	8 ⁺	2370.0	6 ⁺	E2	B(E2)(W.u.)=0.53 17 $\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
559 1	≈15	4463	(10 ⁺)	3903.9	9 ⁺		The energy and intensity of the 559-keV line have been obtained from the coincidence data.
622.1 [‡] 2	5.0 [‡] 25	2114.0	(4) ⁺	1491.9	4 ⁺		Another line with the same energy has been located between the 3653- and 3031-keV levels.
622.1 [‡] 2	6.0 [‡] 25	3653.2	(7)	3031.1	(2 to 6)		Another line with the same energy has been located between the 2114- and 1492-keV levels.
634.6 2	30 15	4735.5		4100.9	10 ⁺		
657.9 2	1000	657.9	2 ⁺	0	0 ⁺	E2	$\Delta J=0$, 2 but more probably 2 from $\gamma\gamma(\theta)$.
702.6 2	42 7	4741	(11)	4038.3	9 ⁻		$\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
716.8 2	16 5	4817.7	(11 ⁺)	4100.9	10 ⁺		
740.6 3	15 5	4394.4	(9)	3653.2	(7)		
775.3 2	86 13	3210.7	8 ⁺	2435.4	6 ⁺		$\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
827.6 2	45 8	4038.3	9 ⁻	3210.7	8 ⁺		$\Delta J=1$ from $\gamma\gamma(\theta)$.
834.0 2	990 15	1491.9	4 ⁺	657.9	2 ⁺	E2	$\Delta J=0$, 2 but more probably 2 from $\gamma\gamma(\theta)$.
840.6 2	126 19	3210.7	8 ⁺	2370.0	6 ⁺	E2	$\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
856.4 3	10 5	3887.5		3031.1	(2 to 6)		
878.1 2	510 80	2370.0	6 ⁺	1491.9	4 ⁺	E2	$\Delta J=0$, 2 but more probably 2 from $\gamma\gamma(\theta)$.
890.2 2	113 16	4100.9	10 ⁺	3210.7	8 ⁺		$\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
927.6 3	60 9	3297.6	8 ⁺	2370.0	6 ⁺		$\Delta J=0$, 2 from $\gamma\gamma(\theta)$.
943.5 3	143 20	2435.4	6 ⁺	1491.9	4 ⁺		$\Delta J=0$, 2 from $\gamma\gamma(\theta)$. This line has a complex nature, mixed with a 943.6 keV (^{105}Cd).
1001.0 3	85 13	3903.9	9 ⁺	2902.0	8 ⁺		$\Delta J=1$ from $\gamma\gamma(\theta)$.
1039.6 3	37 6	2531.5	3,4,5	1491.9	4 ⁺		$\Delta J=0$, 1 from $\gamma\gamma(\theta)$. Placed from 3653 in (HI,xn γ).
1356.0 3	15 5	3887.5		2531.5	3,4,5		Placed from 3727 level in (HI,xn γ).

[†] Stretched E2 in $\gamma\gamma(\theta)$.[‡] Multiply placed with intensity suitably divided.

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Level Scheme

Intensities: Relative I_γ
 @ Multiply placed: intensity suitably divided

Legend

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

