

$^{142}\text{Ce}(\alpha,5n\gamma)$ **1977Lu04**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 187,1 (2023)	12-Oct-2022

E=51 MeV.

Measured: $\gamma(\theta)$, $\gamma\gamma$ (1977Lu04), $\gamma(t)$ (1976Lu07).1782.2 γ and 348.2 γ have prompt and delayed ($T_{1/2}=26$ ns 5) components. Delayed I(348 γ) \approx 10 (1976Lu07). ^{141}Nd Levels

E(level)	$J^{\pi\dagger}$	$T_{1/2}$	Comments
0.0	3/2 ⁺		
757.1	11/2 ⁻	62.0 s 8	
1224.3	5/2 ⁺		
1344.3	7/2 ⁺		
1624.3	(9/2)		
2211.6	9/2 ⁻		
2350.2	13/2		
2539.3	15/2 ⁽⁻⁾		
2831.1	15/2 ⁽⁻⁾		
2887.5	17/2		$T_{1/2}$: 28 ns 5 was measured from 348.2 γ that in ($^{24}\text{Mg},\alpha 3n\gamma$) was shown to be a multiplet (344.9 γ , 347.2 γ , 348.9 γ , and 349.2 γ), reason for which it was not assigned to this level or other levels.
2952.0	(19/2)		
3104.9	(21/2)		
4246.3	21/2		$T_{1/2}$: <1 ns was previously assigned to this level from 1293 γ decay was moved to 2050 level where this γ ray was relocated (see Adopted Levels, Gammas and ($^{24}\text{Mg},\alpha 3n\gamma$) datasets).
4376.8	(23/2)		
4494.9	(23/2)		
4583.0	(23/2)		
5271.0	(25/2)		

 \dagger Adopted values. $\gamma(^{141}\text{Nd})$

E_{γ}	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}	Mult.	Comments
64.5	2952.0	(19/2)	2887.5	17/2	D	Mult.: $A_2=-0.11$ 8, $A_4=+0.28$ 12.
121.0	1344.3	7/2 ⁺	1224.3	5/2 ⁺		
130.5	4376.8	(23/2)	4246.3	21/2	D	Mult.: $A_2=-0.16$ 7, $A_4=+0.09$ 10.
^x 146.2						Mult.: $A_2=-0.18$ 5, $A_4=-0.14$ 7.
152.9	3104.9	(21/2)	2952.0	(19/2)	D	Mult.: $A_2=-0.30$ 7, $A_4=-0.06$ 9.
^x 246.9						Mult.: $A_2=-0.26$ 8, $A_4=-0.15$ 12.
248.6	4494.9	(23/2)	4246.3	21/2	D	Mult.: $A_2=-0.11$ 2, $A_4=+0.04$ 3.
280.0	1624.3	(9/2)	1344.3	7/2 ⁺	(D)	Mult.: $A_2=-0.05$ 13, $A_4=+0.20$ 18.
336.7	4583.0	(23/2)	4246.3	21/2	D	Mult.: $A_2=-0.14$ 6, $A_4=-0.05$ 9.
348.2	2887.5	17/2	2539.3	15/2 ⁽⁻⁾	D	Mult.: $A_2=-0.30$ 3, $A_4=+0.01$ 4.
^x 487.5						Mult.: $A_2=-0.07$ 2, $A_4=+0.02$ 4.
757.1	757.1	11/2 ⁻	0.0	3/2 ⁺		Mult.: $A_2=-0.02$ 2, $A_4=+0.10$ 4.
^x 781.0						Mult.: $A_2=-0.49$ 10, $A_4=-0.08$ 12.
^x 870.5						Mult.: $A_2=+0.33$ 5, $A_4=+0.03$ 9.
1024.7	5271.0	(25/2)	4246.3	21/2	Q	Mult.: $A_2=+0.25$ 15.
1224.3	1224.3	5/2 ⁺	0.0	3/2 ⁺	(D)	Mult.: $A_2=-0.15$ 30.
1294.3	4246.3	21/2	2952.0	(19/2)	D	Mult.: $A_2=-0.71$ 4, $A_4=+0.11$ 4.
1344.3	1344.3	7/2 ⁺	0.0	3/2 ⁺		

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$^{142}\text{Ce}(\alpha,5n\gamma)$ 1977Lu04 (continued) $\gamma(^{141}\text{Nd})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
1454.5	2211.6	9/2 ⁻	757.1	11/2 ⁻	D+Q	Mult.: $A_2=-0.30$ 13, $A_4=+0.89$ 13.
1593.1	2350.2	13/2	757.1	11/2 ⁻	D+Q	Mult.: $A_2=-0.06$ 9, $A_4=+0.30$ 13.
1782.2	2539.3	15/2 ⁽⁻⁾	757.1	11/2 ⁻	Q	Mult.: $A_2=+0.15$ 3, $A_4=+0.10$ 14.
2074.0	2831.1	15/2 ⁽⁻⁾	757.1	11/2 ⁻	Q	Mult.: $A_2=+0.30$ 60, $A_2=-0.07$ 10.

^x γ ray not placed in level scheme.

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Level Scheme

