

$^{140}\text{Ce}(n,\gamma)$ E=thermal **1970Ge03**

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

Measured: γ , $\gamma\gamma$.Others: [1959Ba05](#), [1965Gr34](#), [1969Ch34](#), [1969Gr31](#), [1969IrZZ](#), [1970Or05](#), [2012To09](#). ^{141}Ce Levels

E(level)	J^π [†]	$T_{1/2}$	Comments
0.0	$7/2^-$	32.56 d 5	$T_{1/2}$: from time variation of 145-keV γ from ^{141}Ce decay (2012To09). Measured capture $\sigma=0.51$ b 2 and resonance integral=0.55 b 2 (2012To09). J^π : from CP(4767 γ) in $^{140}\text{Ce}(\text{pol } n,\gamma)$ (1971Dj03).
662.0 1	$3/2^-$		
1137.0 3	$1/2^-$		
1497.3 4	$5/2^-$		
1808.7 4	$3/2^-$		
1994.0 5	$(1/2)^-$		
2189.6 5	$3/2^-$		
2336.3 8	$3/2^-$		
2410.8 6	$1/2^-$		
2425.6 8	$3/2^-$		
2522.9 6	$1/2^-, 3/2^-$		
(5428.6 6)	$1/2^+$		E(level), J^π : n-capture state $1/2^+$.

[†] Adopted values. $\gamma(^{141}\text{Ce})$ I γ normalization: from I(4291 γ)=7.9 and I(4767 γ)=16 per 100 n-captures ([1969Gr31](#)).

E_γ	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
475.0 2	29 12	1137.0	$1/2^-$	662.0	$3/2^-$	
602 1	0.3 3	2410.8	$1/2^-$	1808.7	$3/2^-$	
617.1 6	0.4 2	2425.6	$3/2^-$	1808.7	$3/2^-$	
662.0 1	100 6	662.0	$3/2^-$	0.0	$7/2^-$	
672.0 8	1.4 4	1808.7	$3/2^-$	1137.0	$1/2^-$	
692.5 4		2189.6	$3/2^-$	1497.3	$5/2^-$	
835.2 10	0.4 3	1497.3	$5/2^-$	662.0	$3/2^-$	
839.4 6	0.6 3	2336.3	$3/2^-$	1497.3	$5/2^-$	
1052.6 4	1.8 4	2189.6	$3/2^-$	1137.0	$1/2^-$	
1146.6 3	2.9 5	1808.7	$3/2^-$	662.0	$3/2^-$	
1274.0 15	0.3 2	2410.8	$1/2^-$	1137.0	$1/2^-$	
1288.9 10	2.4 6	2425.6	$3/2^-$	1137.0	$1/2^-$	
1332.2 4	1.9 4	1994.0	$(1/2)^-$	662.0	$3/2^-$	
1386.0 4	1.9	2522.9	$1/2^-, 3/2^-$	1137.0	$1/2^-$	
1497.3 4	2.8 8	1497.3	$5/2^-$	0.0	$7/2^-$	
1527.6 6	1.4 3	2189.6	$3/2^-$	662.0	$3/2^-$	
1673.9 10	0.5 2	2336.3	$3/2^-$	662.0	$3/2^-$	
1748.7 5	3.4 5	2410.8	$1/2^-$	662.0	$3/2^-$	
1764.4 10	0.7 3	2425.6	$3/2^-$	662.0	$3/2^-$	
^x 1774.1 [‡] 10	0.7 4					E_γ : isotope identification is not known.
1808.4 7	1.7 5	1808.7	$3/2^-$	0.0	$7/2^-$	
^x 1910.8 7	0.8 2					
^x 1957.8 8	1.0 5					

Continued on next page (footnotes at end of table)

$^{140}\text{Ce}(\text{n},\gamma)$ E=thermal **1970Ge03** (continued) $\gamma(^{141}\text{Ce})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
^x 2515 1	0.6 3				
2905.9 5	3.0 7	(5428.6)	1/2 ⁺	2522.9	1/2 ⁻ , 3/2 ⁻
3003.3 6	3.9 6	(5428.6)	1/2 ⁺	2425.6	3/2 ⁻
3017.1 7	4.7 6	(5428.6)	1/2 ⁺	2410.8	1/2 ⁻
3092.5 5	2.8 6	(5428.6)	1/2 ⁺	2336.3	3/2 ⁻
3239.0 15	2.7 6	(5428.6)	1/2 ⁺	2189.6	3/2 ⁻
3435.0 6	2.0 4	(5428.6)	1/2 ⁺	1994.0	(1/2) ⁻
3619.7 6	4.0 9	(5428.6)	1/2 ⁺	1808.7	3/2 ⁻
4291.4 6	22.1 24	(5428.6)	1/2 ⁺	1137.0	1/2 ⁻
4766.6 5	48.0 48	(5428.6)	1/2 ⁺	662.0	3/2 ⁻

[†] For intensity per 100 neutron captures, multiply by 0.345 15.

[‡] Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

$^{140}\text{Ce}(n,\gamma) \text{E=thermal} \quad 1970\text{Ge03}$

Level Scheme

Intensities: I_γ per 100 neutron captures

Legend

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

