

$^{142}\text{Ce}(\text{n},\gamma)$ E=thermal 1976Ge02

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 113, 715 (2012)		31-May-2011

Measured: γ , $\gamma\gamma$ (1976Ge02), γ (1969Gr31).

The authors discuss a possible level at 56.4 proposed in (d,p). They noted four weak γ rays to this level from reported levels with higher energies.

 ^{143}Ce Levels

E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$
0.0	$3/2^-$	1165.2 5		1945.4 6	$3/2^-$	2272.7? 10	$1/2^-, 3/2$
18.4 5	$7/2^-$	1172.5 3	$3/2^-, (1/2)^-$	1993.3 6	$(3/2)^-$	2313.9 8	$3/2^-, 1/2^-$
42.4 6	$5/2^-$	1572.4 5	$1/2^-, 3/2^-$	2027.4 8	$(1/2^-)$	2488.6 10	$3/2, 1/2$
632.5 5	$(1/2^-)$	1620.5 4	$3/2, (1/2^-)$	2061.5 6	$3/2^-$	2537.3 8	$(3/2, 1/2)$
808.2 3	$3/2^-$	1628.7 4	$3/2, 1/2$	2202.0 6	$1/2, 3/2$	(5144.80 ‡ 9)	$1/2^+$
862.1 3	$(1/2)^-$	1835.2 8	$(1/2)^-$	2215.9 6	$(3/2)^-$		
1154.1 3	$3/2^-$	1913.4 11	$(1/2)^-$	2232.1 7	$(3/2)^-$		

† From Adopted Levels.

‡ From 2011AuZZ.

 $\gamma(^{143}\text{Ce})$

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
$^x283.3$ 3	0.4 1				
345.4 7	0.10 5	1154.1	$3/2^-$	808.2	$3/2^-$
$^x393.8$ 2	0.10 5				
489.8 3	0.7 3	2061.5	$3/2^-$	1572.4	$1/2^-, 3/2^-$
632.3 4	0.3 1	632.5	$(1/2^-)$	0.0	$3/2^-$
$^x645.5$ 8	0.3 1				
$^x696.9$ 3	0.3 1				
$^x731.6$ 8	0.6 1				
738.4 6	<0.8 ‡	2313.9	$3/2^-, 1/2^-$	1572.4	$1/2^-, 3/2^-$
741.6 6	<0.8 ‡	1913.4	$(1/2)^-$	1172.5	$3/2^-, (1/2)^-$
766.0 5	47.2 25	808.2	$3/2^-$	42.4	$5/2^-$
789.4 3	16.1 12	808.2	$3/2^-$	18.4	$7/2^-$
808.3 3	34.2 30	808.2	$3/2^-$	0.0	$3/2^-$
820.8 b 10	0.2 b 1	1628.7	$3/2, 1/2$	808.2	$3/2^-$
820.8 b 10	0.2 b 1	1993.3	$(3/2)^-$	1172.5	$3/2^-, (1/2)^-$
$^x830.8$ 8	0.3 1				
$^x853.3$ 8	0.4 1				
862.2 3	14.8 20	862.1	$(1/2)^-$	0.0	$3/2^-$
915.2 7	0.5 1	2488.6	$3/2, 1/2$	1572.4	$1/2^-, 3/2^-$
$^x963.2$ 5	0.8 1				
972.3 6	1.7 2	1835.2	$(1/2)^-$	862.1	$(1/2)^-$
988.3 5	0.5 1	1620.5	$3/2, (1/2^-)$	632.5	$(1/2^-)$
1026.8 7	1.3 2	1835.2	$(1/2)^-$	808.2	$3/2^-$
$^x1047.3$ 8	0.3 1				
$^x1093.9$ 10	0.9 2				
1106.3 5	1.5 3	1913.4	$(1/2)^-$	808.2	$3/2^-$
1117.4 b 10	0.2 1	2272.7?	$1/2^-, 3/2$	1154.1	$3/2^-$
1123.1 5	0.4 1	1165.2		42.4	$5/2^-$

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$^{142}\text{Ce}(n,\gamma)$ E=thermal **1976Ge02** (continued) $\gamma(^{143}\text{Ce})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
1130.2 4	1.5 3	1172.5	$3/2^-, (1/2)^-$	42.4	$5/2^-$
1136.0 ^b 4	2.1 1	1154.1	$3/2^-$	18.4	$7/2^-$
1146.1 4	1.5 4	1165.2		18.4	$7/2^-$
1154.1 3	8.8 3	1154.1	$3/2^-$	0.0	$3/2^-$
1165.2 ^a 5	0.6 ^{a#} 1	1165.2		0.0	$3/2^-$
1165.2 ^a 5	0.6 ^{a#} 3	2027.4	$(1/2)^-$	862.1	$(1/2)^-$
1172.3 4	2.0 3	1172.5	$3/2^-, (1/2)^-$	0.0	$3/2^-$
1185.7 6	0.4 1	1993.3	$(3/2)^-$	808.2	$3/2^-$
^x 1217.6 3	0.9 2				
^x 1259.4 2	1.4 1				
^x 1278.3 8	0.5 1				
^x 1347.2 2	1.0 2				
^x 1434.2 5	0.7 1				
1505.9 7	0.6 2	2313.9	$3/2^-, 1/2^-$	808.2	$3/2^-$
^x 1515.3 7	0.2 1				
^x 1521.3 7	0.4 1				
1529.1 6	0.8 2	1572.4	$1/2^-, 3/2^-$	42.4	$5/2^-$
^x 1546.2 6	0.3 1				
^x 1557.6 6	0.4 1				
1572.2 5	5.7 6	1572.4	$1/2^-, 3/2^-$	0.0	$3/2^-$
1578.6 8	1.1 3	1620.5	$3/2, (1/2)^-$	42.4	$5/2^-$
1586.0 10	0.3 1	1628.7	$3/2, 1/2$	42.4	$5/2^-$
1620.5 5	0.8 2	1620.5	$3/2, (1/2)^-$	0.0	$3/2^-$
1628.5 6	1.1 3	1628.7	$3/2, 1/2$	0.0	$3/2^-$
^x 1650.9 3	1.3 3				
^x 1662.9 5	0.6 2				
1674.9 8	0.3 1	2537.3	$(3/2, 1/2)$	862.1	$(1/2)^-$
1681.3 8	0.8 3	2313.9	$3/2^-, 1/2^-$	632.5	$(1/2)^-$
^x 1736.8 5	0.4 2				
^x 1748.7 5	0.8 2				
^x 1757.0 5	0.6 1				
^x 1782.1 [@] 5	0.6 2				
1835.8 6	1.1 3	1835.2	$(1/2)^-$	0.0	$3/2^-$
^x 1843.2 6	0.9 2				
^x 1883.4 15	0.3 2				
1902.8 5	0.9 3	1945.4	$3/2^-$	42.4	$5/2^-$
1912.2 8	1.5 5	1913.4	$(1/2)^-$	0.0	$3/2^-$
^x 1922.6 8	0.8 3				
1928.0 15	0.3 2	1945.4	$3/2^-$	18.4	$7/2^-$
1949.9 2	3.4 3	1993.3	$(3/2)^-$	42.4	$5/2^-$
1993.2 4	0.6 1	1993.3	$(3/2)^-$	0.0	$3/2^-$
2018.8 4	3.2 6	2061.5	$3/2^-$	42.4	$5/2^-$
2027.9 8	1.6 3	2027.4	$(1/2)^-$	0.0	$3/2^-$
2042.9 8	0.7 3	2061.5	$3/2^-$	18.4	$7/2^-$
2061.3 6	1.3 3	2061.5	$3/2^-$	0.0	$3/2^-$
2174.0 6	0.7 3	2215.9	$(3/2)^-$	42.4	$5/2^-$
2190.3 5	0.8 3	2232.1	$(3/2)^-$	42.4	$5/2^-$
2201.8 4	1.1 3	2202.0	$1/2, 3/2$	0.0	$3/2^-$
2231.3 ^{&} 8	0.2 ^{&} 1	2232.1	$(3/2)^-$	0.0	$3/2^-$
2231.3 ^{&b} 8	0.2 ^{&} 1	2272.7?	$1/2^-, 3/2$	42.4	$5/2^-$
^x 2244.1 8	0.5 2				
2271.2 ^{&b} 15	0.20 ^{&} 7	2272.7?	$1/2^-, 3/2$	0.0	$3/2^-$
2271.2 ^{&} 15	0.20 ^{&} 7	2313.9	$3/2^-, 1/2^-$	42.4	$5/2^-$
^x 2276.0 15	0.3 2				

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$^{142}\text{Ce}(\text{n},\gamma)$ E=thermal **1976Ge02** (continued) $\gamma(^{143}\text{Ce})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
^x 2305.5 15	0.4 2				
^x 2433.6 10	0.2 1				
2446.8 15	0.6 3	2488.6	3/2,1/2	42.4	5/2 ⁻
^x 2453.2 15	0.6 3				
2494.5 8	0.5 3	2537.3	(3/2,1/2)	42.4	5/2 ⁻
2538.0 10	1.3 2	2537.3	(3/2,1/2)	0.0	3/2 ⁻
^x 2568.1 10	0.6 2				
^x 2596.5 10	0.7 2				
2608.5 6	1.1 2	(5144.80)	1/2 ⁺	2537.3	(3/2,1/2)
2657.6 8	1.1 2	(5144.80)	1/2 ⁺	2488.6	3/2,1/2
2831.7 10	0.9 1	(5144.80)	1/2 ⁺	2313.9	3/2 ⁻ ,1/2 ⁻
2873.2 10	1.4 2	(5144.80)	1/2 ⁺	2272.7?	1/2 ⁻ ,3/2
2913.4 6	1.7 3	(5144.80)	1/2 ⁺	2232.1	(3/2) ⁻
2930.6 10	0.8 3	(5144.80)	1/2 ⁺	2215.9	(3/2) ⁻
2943.4 10	0.8 2	(5144.80)	1/2 ⁺	2202.0	1/2,3/2
3084.0 10	5.1 5	(5144.80)	1/2 ⁺	2061.5	3/2 ⁻
3118.9 8	1.2 3	(5144.80)	1/2 ⁺	2027.4	(1/2) ⁻
3153.1 5	3.8 4	(5144.80)	1/2 ⁺	1993.3	(3/2) ⁻
3200.2 5	2.6 4	(5144.80)	1/2 ⁺	1945.4	3/2 ⁻
3232.5 6	4.1 5	(5144.80)	1/2 ⁺	1913.4	(1/2) ⁻
3310.4 8	3.2 4	(5144.80)	1/2 ⁺	1835.2	(1/2) ⁻
3517.0 10	2.9 3	(5144.80)	1/2 ⁺	1628.7	3/2,1/2
3525.7 10	2.9 3	(5144.80)	1/2 ⁺	1620.5	3/2,(1/2) ⁻
3573.1 7	4.3 5	(5144.80)	1/2 ⁺	1572.4	1/2 ⁻ ,3/2 ⁻
3973.1 7	0.7 2	(5144.80)	1/2 ⁺	1172.5	3/2 ⁻ ,(1/2) ⁻
3991.7 6	7.2 10	(5144.80)	1/2 ⁺	1154.1	3/2 ⁻
4283.9 6	9.8 15	(5144.80)	1/2 ⁺	862.1	(1/2) ⁻
4337.8 6	100 5	(5144.80)	1/2 ⁺	808.2	3/2 ⁻
4513.0 7	0.43 12	(5144.80)	1/2 ⁺	632.5	(1/2) ⁻
5145.5 7	0.28 7	(5144.80)	1/2 ⁺	0.0	3/2 ⁻

[†] Photon intensities relative to $I_\gamma(4337.8\gamma)=100$.

[‡] $I_\gamma(741\gamma+738\gamma)=0.8$ 2.

From $I_\gamma(\text{doublet})=1.2$ 2 and branching in ^{143}La β decay.

@ Unresolved doublet.

& Multiply placed with undivided intensity.

^a Multiply placed with intensity suitably divided.

^b Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

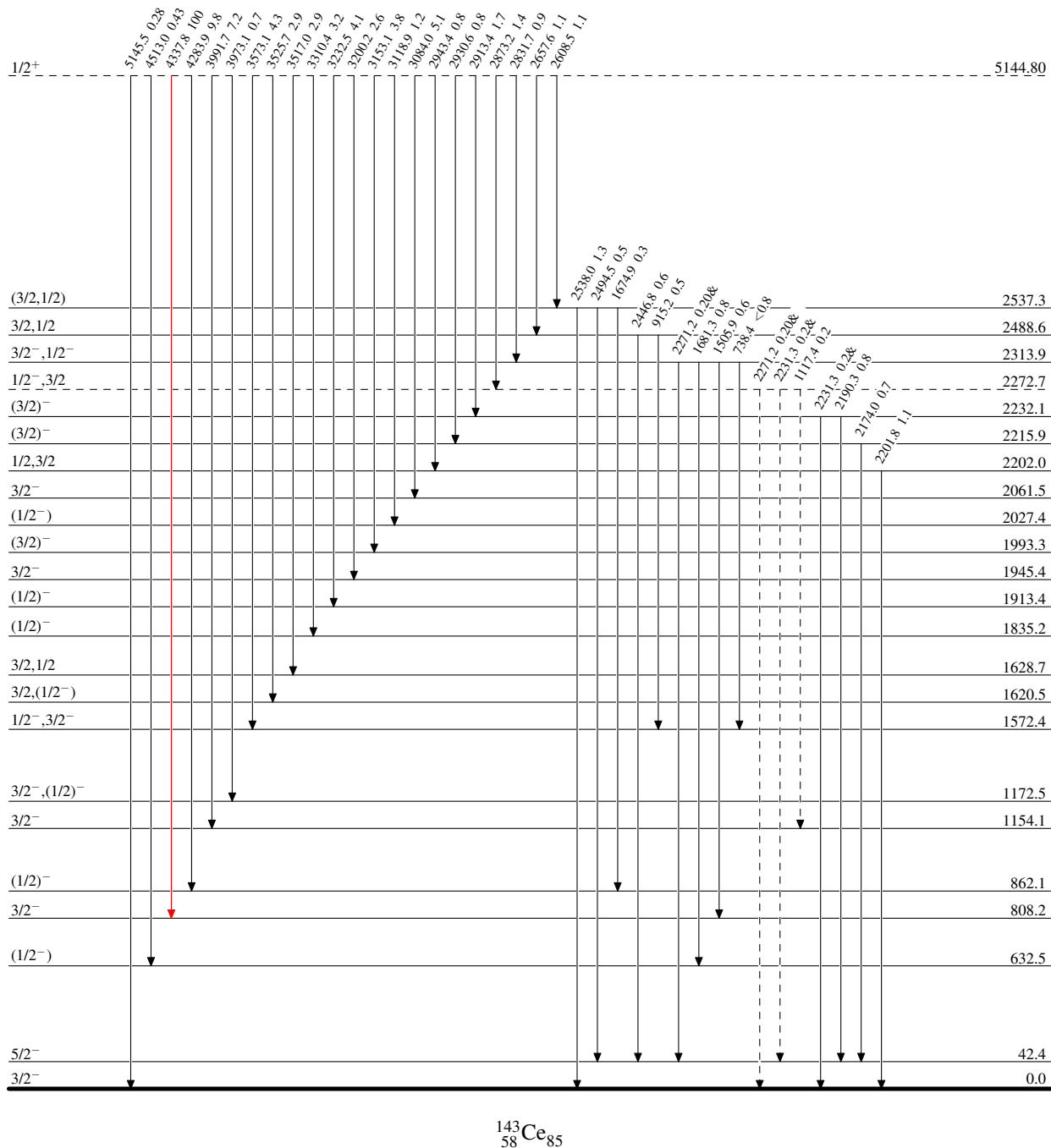
$^{142}\text{Ce}(n,\gamma) \text{ E=thermal}$ 1976Ge02

Level Scheme

Intensities: Type not specified
& Multiply placed: undivided intensity given

Legend

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

 $^{143}_{58}\text{Ce}_{85}$

$^{142}\text{Ce}(n,\gamma) \text{E=thermal}$ 1976Ge02

Level Scheme (continued)

Legend

Intensities: Type not specified
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

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

