

¹⁴³La β⁻ decay [1981Ya06,1984So18](#)

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

Parent: ¹⁴³La: E=0.0; J^π=(7/2)⁺; T_{1/2}=14.2 min *I*; Q(β⁻)=3434 eV; %β⁻ decay=100.0

¹⁴³La-T_{1/2}: Measured 14.14 min *I6* from 1556γ(t) ([1981Ya06](#)).

[2002Ur04](#): Reevaluated data.

Measured: γ, β⁻, βγ, γγ, F-K, T_{1/2} ([1981Ya06](#)).

Other Measurements: γ ([1977Bj01,1976Bl10](#)), γγ ([1977Bj01](#)), β⁻ ([1961Fr06](#)).

@B@0@0@@@ @B@0@1@@@@@1 each level.

¹⁴³Ce Levels

E(level)	J ^π †	E(level)	J ^π †	E(level)	J ^π †	E(level)	J ^π †
0.0	3/2 ⁻	1116.8 3	(11/2 ⁺)‡	1906.1 5	(7/2) ⁻	2481.3 5	5/2 ⁻ ,7/2 ⁻
18.9 1	7/2 ⁻	1165.0 1		1980.2 1		2517.3 5	5/2 ⁻ ,7/2 ⁻
42.28 7	5/2 ⁻	1167.6 2		1989.5 4		2519.2 2	
640.3 2	(11/2 ⁻)‡	1220.0 4	9/2 ⁻	2057.0 4		2570.7 5	
662.7 2	9/2 ⁻	1598.7 8		2065.3 7		2643.7 2	
808.2 3	3/2 ⁻	1676.9 3		2255.3 4	1/2 ⁻ ,3/2 ⁻	2728.7 2	
817.0 2	(9/2 ⁻)‡	1726.7 2		2307.2 6	(5/2 ⁻ ,7/2 ⁻)	2815.8 3	
1095.3 2		1857.0 2		2403.8 3		2825.1# 3	

† From Adopted Levels, unless otherwise noted.

‡ Assignment based on systematics of these levels in other N=85 isotones ([2002Ur04](#)).

Level from [1977Bj01](#). Decaying transitions from [1981Ya06](#).

β⁻ radiations

E(decay)	E(level)	Iβ ⁻ †‡	Log ft	Comments
(609 8)	2825.1	0.18	6.5	av Eβ=191 3
(618 8)	2815.8	0.08	6.9	av Eβ=195 3
(705 8)	2728.7	0.18	6.7	av Eβ=227 3
(790 8)	2643.7	0.65	6.4	av Eβ=260 3
(863 8)	2570.7	0.31	6.8	av Eβ=288 4
(915 8)	2519.2	1.30	6.3	av Eβ=309 4
(917 8)	2517.3	0.55	6.7	av Eβ=309 4
(953 8)	2481.3	0.18	7.2	av Eβ=324 4
(1030 8)	2403.8	0.21	7.3	av Eβ=355 4
(1127 8)	2307.2	0.26	7.3	av Eβ=395 4
(1179 8)	2255.3	0.10	7.8	av Eβ=416 4
(1369 8)	2065.3	0.23	7.7	av Eβ=496 4
(1377 8)	2057.0	0.05	8.4	av Eβ=500 4
(1445 8)	1989.5	0.12	8.1	av Eβ=529 4
				Additional information 2.
(1454 8)	1980.2	1.66	6.9	av Eβ=533 4
(1528 8)	1906.1	0.10	8.2	av Eβ=564 4
(1577 8)	1857.0	0.26	7.9	av Eβ=586 4
(1707 8)	1726.7	0.42	7.8	av Eβ=643 4
(1757 8)	1676.9	0.44	7.8	av Eβ=665 4
(1835 8)	1598.7	0.70	7.7	av Eβ=699 4
(2214 8)	1220.0	0.26	8.4	av Eβ=869 4
(2266 8)	1167.6	1.17	7.8	av Eβ=892 4

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¹⁴³La β⁻ decay **1981Ya06,1984So18** (continued)

β⁻ radiations (continued)

E(decay)	E(level)	Iβ ^{-†‡}	Log ft	Comments
(2269 8)	1165.0	1.6	7.7	av Eβ=894 4
(2317 8)	1116.8	0.09	9.0	av Eβ=915 4
				Additional information 3.
(2339 8)	1095.3	0.70	8.1	av Eβ=925 4
2.56×10 ³ 10	817.0	1.01	8.2	av Eβ=1052 4
2.64×10 ³ 10	662.7	2.6	7.8	av Eβ=1123 4
(2794 8)	640.3	0.34	8.7	av Eβ=1133 4
3.26×10 ³ 10	42.28	≥52	≤6.9	av Eβ=1409 4
				Iβ ⁻ : From γ-ray transition intensity balance Iβ= 16.5% 3 to levels from 640- to 2825 keV. Thus, Iβ(0 4242 1818)= 100% - 16.5% 3 = 83.5% 3 . Assuming Iβ(0)<32%, then Iβ(42 1818)≥52%. Thus Iβ(42)≥52% shown here includes β ⁻ population to the 18.9-keV level.
				Additional information 4.
3.28×10 ³ 10	18.9			See comment to 42.28-keV level.
				Additional information 5.
(3434 [#] 8)	0.0	<32	>8.6 ^{1u}	av Eβ=1410 4
				Iβ ⁻ : From log ft systematics of first-unique transitions.

† From γ-ray transition intensity balance using I(620γ + 621γ)≈3.9%.

‡ Absolute intensity per 100 decays.

Existence of this branch is questionable.

γ(¹⁴³Ce)

Iγ normalization: From I(620.3γ+621.4γ)≈3.9% (**1984So18**).

E _γ	I _γ [@]	E _i (level)	J _i ^π	E _f	J _f ^π	Mult.	Comments
(18.9)		18.9	7/2 ⁻	0.0	3/2 ⁻	[E2]	
23.40 [†] 5	†	42.28	5/2 ⁻	18.9	7/2 ⁻	[M1,E2]	
42.28 [†] 7	†	42.28	5/2 ⁻	0.0	3/2 ⁻	[M1,E2]	
433.0 1	15.1 12	1095.3		662.7	9/2 ⁻		
454.03 6	61 4	1116.8	(11/2 ⁺)	662.7	9/2 ⁻	[E1]	
462.3 1	12.7 11	2519.2		2057.0			
476.6 2	10.0 7	1116.8	(11/2 ⁺)	640.3	(11/2 ⁻)	[E1]	
527.3 1	11.0 10	1167.6		640.3	(11/2 ⁻)		
559.9 2	12.1 13	1676.9		1116.8	(11/2 ⁺)		
581.7 1	18.4 12	1676.9		1095.3			
620.3 1	234 12	662.7	9/2 ⁻	42.28	5/2 ⁻	[E2]	
621.4 1	152 8	640.3	(11/2 ⁻)	18.9	7/2 ⁻	[E2]	
643.75 9	155 8	662.7	9/2 ⁻	18.9	7/2 ⁻		
766.4 2	17.8 14	808.2	3/2 ⁻	42.28	5/2 ⁻		Additional information 6.
774.7 1	36 2	817.0	(9/2 ⁻)	42.28	5/2 ⁻	[E2]	
789.3& 1	6.5&# 9	808.2	3/2 ⁻	18.9	7/2 ⁻		
789.3& 1	21.5&‡ 21	1906.1	(7/2 ⁻)	1116.8	(11/2 ⁺)		
798.14 8	118 6	817.0	(9/2 ⁻)	18.9	7/2 ⁻		
807.9 2	15.0 12	808.2	3/2 ⁻	0.0	3/2 ⁻		
919.18 10	29 2	2517.3	5/2 ⁻ , 7/2 ⁻	1598.7			
^x 942.9 3	1.9 4						
948.6 2	9.7 9	2065.3		1116.8	(11/2 ⁺)		

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$^{143}\text{La} \beta^-$ decay **1981Ya06,1984So18** (continued) $\gamma(^{143}\text{Ce})$ (continued)

E_γ	I_γ @	$E_i(\text{level})$	J_i^π	E_f	J_f^π
1053.04 7	63 4	1095.3		42.28	5/2 ⁻
1064.1 3	7.0 10	1726.7		662.7	9/2 ⁻
1076.4 1	48 3	1095.3		18.9	7/2 ⁻
1087.1 4	3.8 7	1726.7		640.3	(11/2 ⁻)
^x 1093.6 3	7.0 8				
1122.73 8	35 2	1165.0		42.28	5/2 ⁻
1139.4 2	19.6 17	2307.2	(5/2 ⁻ , 7/2 ⁻)	1167.6	
1146.1 2	85 5	1165.0		18.9	7/2 ⁻
1148.5 2	116 6	1167.6		18.9	7/2 ⁻
1164.94 8	38 3	1165.0		0.0	3/2 ⁻
1167.9 2	11.4 10	1167.6		0.0	3/2 ⁻
1172.0 3	6.6 7	1989.5		817.0	(9/2 ⁻)
1177.6 3	3.6 6	1220.0	9/2 ⁻	42.28	5/2 ⁻
1201.3 3	26 2	1220.0	9/2 ⁻	18.9	7/2 ⁻
1212.0 3	7.0 7	2307.2	(5/2 ⁻ , 7/2 ⁻)	1095.3	
1216.6 3	8.5 9	1857.0		640.3	(11/2 ⁻)
1240.0 2	17.3 11	2057.0		817.0	(9/2 ⁻)
1243.3 4	9.1 8	1906.1	(7/2 ⁻)	662.7	9/2 ⁻
1248.3 4	14.8 12	2065.3		817.0	(9/2 ⁻)
^x 1259.4 2	12.1 11				
1299.9 3	4.4 6	2519.2		1220.0	9/2 ⁻
^x 1346.6 2	15.7 11				
1402.4 3	8.8 9	2519.2		1116.8	(11/2 ⁺)
1423.8 3	4.8 8	2519.2		1095.3	
1453.0 3	6.4 8	2570.7		1116.8	(11/2 ⁺)
1475.4 2	24 2	2570.7		1095.3	
1556.43 7	100 5	1598.7		42.28	5/2 ⁻
1592.6 2	10.2 10	2255.3	1/2 ⁻ , 3/2 ⁻	662.7	9/2 ⁻
^x 1602.3 4	3.9 8				
1611.5 3	3.9 8	2728.7		1116.8	(11/2 ⁺)
1658.2 2	14.5 11	1676.9		18.9	7/2 ⁻
1664.3 3	18.4 14	2481.3	5/2 ⁻ , 7/2 ⁻	817.0	(9/2 ⁻)
1707.70 9	32 2	1726.7		18.9	7/2 ⁻
1740.7 2	9.2 9	2403.8		662.7	9/2 ⁻
1838.11 9	19.0 13	1857.0		18.9	7/2 ⁻
1856.4 3	4.7 8	2519.2		662.7	9/2 ⁻
1876.5 3	26 2	2517.3	5/2 ⁻ , 7/2 ⁻	640.3	(11/2 ⁻)
1878.4 2	23 2	2519.2		640.3	(11/2 ⁻)
1937.85 9	33 2	1980.2		42.28	5/2 ⁻
1961.44 6	101 5	1980.2		18.9	7/2 ⁻
1980.19 8	34 2	1980.2		0.0	3/2 ⁻
1989.5 4	5.6 9	1989.5		0.0	3/2 ⁻
2003.91 8	36 2	2643.7		640.3	(11/2 ⁻)
2065.4 3	4.3 8	2728.7		662.7	9/2 ⁻
2385.2 2	12.6 10	2403.8		18.9	7/2 ⁻
^x 2478.5 4	2.9 6				
2500.06 5	73 4	2519.2		18.9	7/2 ⁻
^x 2560.96 8	10.0 8				
2624.72 6	31 2	2643.7		18.9	7/2 ⁻
2709.87 8	9.1 7	2728.7		18.9	7/2 ⁻
2773.8 5	1.3 4	2815.8		42.28	5/2 ⁻
2796.9 3	6.1 6	2815.8		18.9	7/2 ⁻
2805.7 3	6.6 6	2825.1		18.9	7/2 ⁻
2825.1 3	10.2 8	2825.1		0.0	3/2 ⁻
^x 2854.3 3	3.3 5				
^x 2946.9 2	4.5 5				

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^{143}La β^- decay **1981Ya06,1984So18** (continued)

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

† Transitions seen but intensity not determined due to lack of proper calibration at these low energies.

‡ See comment to 789 γ from 808 level.

From $I\gamma(\text{doublet } 789\gamma)=28.2$ and branching in (n, γ).

@ For absolute intensity per 100 decays, multiply by 0.010.

& Multiply placed with intensity suitably divided.

^x γ ray not placed in level scheme.

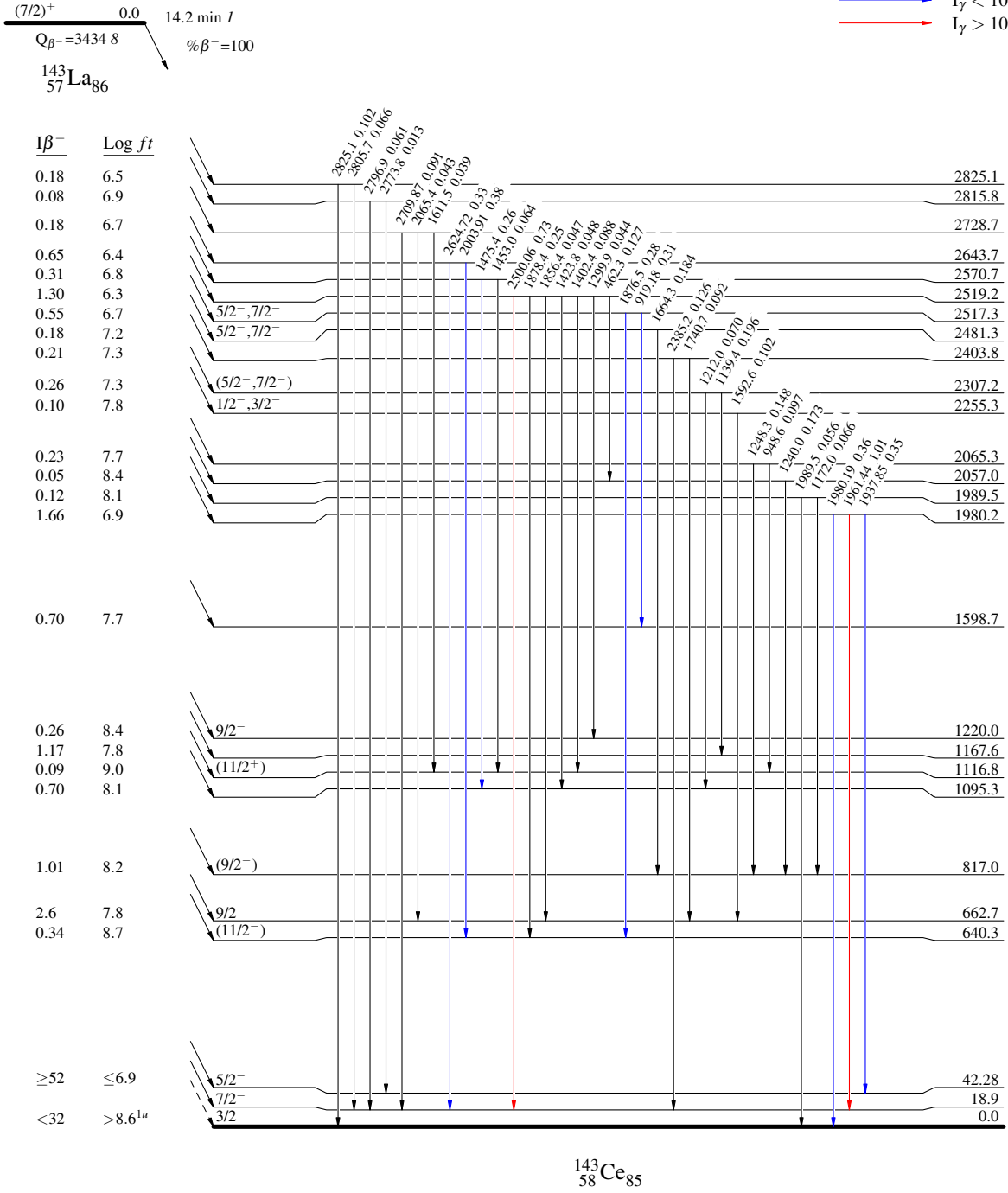
$^{143}\text{La} \beta^-$ decay 1981Ya06,1984So18

Decay Scheme

Intensities: I_γ per 100 parent decays

Legend

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



^{143}La β^- decay 1981Ya06,1984So18

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays
 @ Multiplied: intensity suitably divided

Legend

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

