

$^{138}\text{Ce}$        $Z = 58$        $N = 80$       [link to full NNDC output](#)

Based on ENSDF from Dec 2018, and mass evaluation from 2016

BE = 1156.037 ( 0.005) MeV

	Energy T	J+	J-	J-other	T1/2
138CE 1	0.000	0+			1 4.4E+16 Y GT
138CE 2	0.789	2+			2 1.98 PS 4
S-alpha= 1.046 ( 0.005)					
138CE 3	1.477	0+			3
138CE 4	1.511	2+			4 0.834 PS 20
138CE 5	1.827	4+			5 40 PS LT
138CE 6			2.129 7-		6 8.73 MS 20
138CE 7	2.137	4+			7
138CE 8				2.143 (2+)	8 123 FS 7
138CE 9				2.177 (3-)	9
138CE 10			2.217 5-		10 450 PS 30
138CE 11	2.237	2+			11 56.8 FS 35
138CE 12	2.294	6+			12 880 PS 19
138CE 13	2.340	0+			13
138CE 14				2.394 (3-)	14
138CE 15	2.396	6+			15
138CE 16	2.444	4+			16
138CE 17				2.471 (1,2+)	17 109 FS 6
138CE 18				2.472 (4+,5+)	18
138CE 19	2.642	2+			19 66 FS 32
138CE 20				2.719 (4+,5-)	20
138CE 21	2.733	6+			21
138CE 22	2.749	5+			22
138CE 23			2.765 6-		23
138CE 24				2.885 (2+,3-)	24
138CE 25			2.899 6-		25
138CE 26				2.903 (1,2+)	26
138CE 27				2.907 (3,4,5)	27
138CE 28				2.942 (4+,5-)	28
138CE 29				2.951 (2-,3-,4-)	29
138CE 30	2.996	6+			30
138CE 31				3.005 (4+,5-)	31
138CE 32				3.082 (4+,5-)	32
138CE 33	3.109	8+			33
138CE 34				3.176	34
138CE 35				3.177	35
138CE 36				3.214 (5,6,7)	36
138CE 37				3.220 (2+,3-)	37

138CE 38						3.230				38
138CE 39						3.277	(3-)			39
138CE 40				3.332	8-					40
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138CE 41						3.356	(2+,3-)			41
138CE 42						3.368				42
138CE 43						3.429	(4+,5-)			43
138CE 44						3.430	(7)+			44
138CE 45				3.507	9-					45
138CE 46						3.531				46
138CE 47		3.539	10+							47 82 NS 2
138CE 48						3.546	(9-)			48
138CE 49						3.646	(7-)			49
138CE 50						3.671	(6,7-)			50
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138CE 51						3.801	(6,7-)			51
138CE 52						3.927	(6,7-)			52
138CE 53		3.942	11+							53 140 PS 11
138CE 54						4.050				54
138CE 55						4.139	(10-)			55
138CE 56						4.157	6,7,8			56
138CE 57						4.204	(10-)			57
138CE 58						4.248	(6,7-)			58
138CE 59		4.360	12+							59
138CE 60				4.402	10-					60
-----										
138CE 61						4.782	(12+)			61
138CE 62				4.843	13-					62
138CE 63		4.975	13+							63
138CE 64						5.071	(11-)			64
138CE 65				5.089	12-					65
138CE 66				5.214	13-					66
138CE 67		5.312	14+							67 80 PS 9
138CE 68				5.388	11-					68
138CE 69				5.411	14-					69
138CE 70		5.566	15+							70
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138CE 71						5.714	(14-)			71
138CE 72		5.727	14+							72
138CE 73				5.731	15-					73
138CE 74		5.871	15+							74
138CE 75						5.955				75
138CE 76		6.014	16+							76
138CE 77						6.135	(14+)			77
138CE 78						6.329	(12-)			78
138CE 79				6.363	16-					79
138CE 80						6.409	(15-)			80
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138CE 81						6.451				81
138CE 82		6.451	16+							82

138CE 83						6.536	15(-)	83
138CE 84						6.598		84
138CE 85		6.606	17+					85
138CE 86					6.686	16-		86
138CE 87							6.738 (16-)	87
138CE 88		6.842	17+					88
138CE 89							6.860	89
138CE 90					6.889	17-		90
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138CE 91							7.074 (17-)	91
138CE 92		7.105	18+					92
138CE 93							7.185 (16-)	93
138CE 94					7.211	18-		94
138CE 95							7.225 (16-)	95
138CE 96							7.392 (18+)	96
138CE 97							7.428	97
138CE 98							7.532 (17-)	98
138CE 99		7.683	19+					99
138CE 100					7.686	19-		100
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S-p	=	7.719	( 0.005)	-----				
138CE 101							7.744 (18-)	101
138CE 102		7.803	20+					102
138CE 103							8.322 (20+)	103
138CE 104					8.350	20-		104
138CE 105					8.710	21-		105
138CE 106		8.873	22+					106
138CE 107							8.921	107
138CE 108							8.958 22(-)	108
138CE 109							8.978	109
138CE 110							9.431 (23+)	110
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138CE 111							9.511	111
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S-p	=	7.719	( 0.005)	-----				
S-n	=	9.724	( 0.005)	-----				
S-2p	=	13.262	( 0.005)	-----				
S-2n	=	17.205	( 0.005)	-----				
S-alpha	=	1.046	( 0.005)	-----				
S+p	=	-4.537	( 0.009)					
S+n	=	-7.448	( 0.009)					
S+2p	=	-11.266	( 0.006)					
S+2n	=	-16.648	( 0.005)					
S+alpha	=	-0.804	( 0.005)					
gap p	=	3.182	( 0.011)					
gap n	=	2.275	( 0.010)					
gap 2p	=	1.996	( 0.008)					

gap 2n = 0.557 ( 0.007)  
gap alpha = 0.242 ( 0.007)