

^{146}Sm $Z = 62$ $N = 84$ [link to full NNDC output](#)

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

BE = 1210.903 (0.003) MeV

	Energy T	J+	J-	J-other	T1/2

S-alpha=	-2.529	(0.003)	-----		
146SM 1	0.000	0+			1 6.8E+7 Y 7
146SM 2	0.747	2+			2 7.2 PS LE
146SM 3			1.380	3-	3
146SM 4	1.381	4+			4 9 PS LE
146SM 5	1.648	2+			5
146SM 6				1.792	6
146SM 7	1.812	6+			7 0.09 NS +10-5
146SM 8				1.913	8
146SM 9				2.024	9
146SM 10			2.046	4-	10

146SM 11			2.083	5-	11
146SM 12	2.156	2+			12
146SM 13	2.211	0+			13
146SM 14	2.222	6+			14
146SM 15				2.225 (2+)	15
146SM 16	2.270	3+			16
146SM 17	2.281	4+			17
146SM 18				2.329	18
146SM 19	2.331	0+			19
146SM 20				2.399	20

146SM 21	2.401	2+			21
146SM 22				2.402 3-,4-	22
146SM 23	2.439	4+			23
146SM 24			2.513	3-	24
146SM 25	2.532	4+			25
146SM 26	2.544	2+			26
146SM 27				2.552	27
146SM 28				2.589	28
146SM 29	2.600	0+			29
146SM 30			2.600	7-	30 11 PS 4

146SM 31				2.605	31
146SM 32				2.636	32
146SM 33				2.650 (2+)	33
146SM 34				2.652	34
146SM 35			2.667	4-	35
146SM 36	2.678	4+			36
146SM 37				2.685 (2+)	37

146SM	38	2.737	8+					38	11 PS	4
146SM	39						2.741	39		
146SM	40						2.744	40	(4+,5,6+)	

146SM	41						2.783	41	(4+,5-)	
146SM	42				2.788	5-		42		
146SM	43				2.798	9-		43	0.83 NS	+20-13
146SM	44	2.800	3+					44		
146SM	45	2.824	2+					45		
146SM	46				2.826	6-		46		
146SM	47						2.829	47	3-,4-	
146SM	48						2.829	48	(2+)	
146SM	49	2.850	4+					49		
146SM	50	2.859	2+					50		

146SM	51						2.879	51		
146SM	52	2.898	5+					52		
146SM	53						2.906	53	(4+)	
146SM	54	2.921	0+					54		
146SM	55						2.932	55	(4+)	
146SM	56						2.969	56	2+,3+	
146SM	57						2.973	57	3+,4+	
146SM	58				2.974	3-		58		
146SM	59						2.978	59		
146SM	60						2.984	60		

146SM	61						2.991	61	(4+)	
146SM	62						3.011	62		
146SM	63	3.015	3+					63		
146SM	64						3.020	64		
146SM	65	3.021	0+					65		
146SM	66						3.039	66		
146SM	67	3.043	8+					67		
146SM	68						3.058	68		
146SM	69	3.068	3+					69		
146SM	70	3.073	5+					70		

146SM	71						3.092	71	(4+,5,6+)	
146SM	72	3.093	3+					72		
146SM	73				3.099	7-		73		
146SM	74						3.105	74	(2+,3,4+)	
146SM	75						3.123	75	(2+,3,4+)	
146SM	76	3.126	0+					76		
146SM	77						3.130	77		
146SM	78				3.136	3-		78		
146SM	79						3.151	79		
146SM	80				3.167	8-		80		

146SM	81	3.176	2+					81		
146SM	82				3.183	8-		82		

146SM 83		3.184	3+					83
146SM 84						3.186		84
146SM 85						3.199		85
146SM 86					3.200	4-		86
146SM 87		3.205	2+					87
146SM 88						3.208	(8+)	88
146SM 89						3.221	(3-,4,5-)	89
146SM 90						3.224	(2+,3+,4+)	90

146SM 91		3.232	4+					91
146SM 92		3.239	4+					92
146SM 93						3.245	(2+,3,4+)	93
146SM 94					3.260	5-		94
146SM 95						3.268		95
146SM 96						3.278		96
146SM 97		3.278	2+					97
146SM 98						3.289	(2+,3,4+)	98
146SM 99		3.291	8+					99
146SM 100		3.308	2+					100

146SM 101						3.327		101
146SM 102						3.330	(2+,3,4+)	102
146SM 103		3.338	3+					103
146SM 104						3.340	(5-,6-)	104
146SM 105					3.355	9-		105 28 PS +5-4
146SM 106						3.361	3-,4-	106
146SM 107						3.369	(4+)	107
146SM 108		3.377	4+					108
146SM 109						3.377		109
146SM 110						3.378	(3-,4,5-)	110

146SM 111						3.388		111
146SM 112						3.391		112
146SM 113					3.392	3-		113
146SM 114						3.398	(4+)	114
146SM 115						3.413	(4+,5,6-)	115
146SM 116		3.419	3+					116
146SM 117						3.428		117
146SM 118						3.431	3-,4-	118
146SM 119					3.462	5-		119
146SM 120						3.466		120

146SM 121						3.472	(2+),3+	121
146SM 122						3.475	5+,(6+)	122
146SM 123						3.477	(2+,3,4,5-)	123
146SM 124						3.484	(4+,5,6-)	124
146SM 125						3.489		125
146SM 126						3.496		126
146SM 127						3.509	(3+)	127
146SM 128		3.517	3+					128

146SM 129						3.526		3-,4-		129
146SM 130		3.531		4+						130

146SM 131						3.546		2+,3+		131
146SM 132						3.560				132
146SM 133						3.565				133
146SM 134		3.567		9+						134
146SM 135						3.568				135
146SM 136						3.580		(4+)		136
146SM 137						3.584		4-		137
146SM 138						3.592		(4+)		138
146SM 139						3.593				139
146SM 140						3.595				140

146SM 141						3.606		3-		141
146SM 142		3.618		0+						142
146SM 143						3.620				143
146SM 144		3.626		4+						144
146SM 145						3.634				145
146SM 146						3.647		(2+,3,4+)		146
146SM 147						3.652		(3-),4+		147
146SM 148						3.654		(2+,3,4+)		148
146SM 149						3.670				149
146SM 150						3.677				150

146SM 151						3.685				151
146SM 152		3.686		0+						152
146SM 153						3.693		(2+,3,4+)		153
146SM 154						3.701		(7-,8,9)		154
146SM 155						3.716				155
146SM 156						3.721		3-		156
146SM 157						3.741		(3,4+)		157
146SM 158						3.749		(3-,4+)		158
146SM 159						3.754		10-		159
146SM 160						3.766		3-,4-		160

146SM 161						3.767				161
146SM 162		3.770		2+						162
146SM 163		3.775		10+						163
146SM 164						3.783		11-		164 10 PS +4-3
146SM 165						3.786		(2+,3,4+)		165
146SM 166						3.790		3-,4-		166
146SM 167						3.801				167
146SM 168						3.804		(3-,4,5+)		168
146SM 169						3.810				169
146SM 170						3.810				170

146SM 171						3.815				171
146SM 172						3.826				172
146SM 173						3.835		3-,4-		173

146SM 174						3.870				174
146SM 175		3.891	0+							175
146SM 176						3.901				176
146SM 177						3.917	3-,4-			177
146SM 178						3.924	(9-)			178
146SM 179						3.952				179
146SM 180						3.963				180

146SM 181						3.970				181
146SM 182						3.990	(3-),4-			182
146SM 183						4.006				183
146SM 184						4.014	(4+)			184
146SM 185		4.021	0+							185
146SM 186		4.031	2+							186
146SM 187						4.032				187
146SM 188						4.034	(11+)			188
146SM 189						4.038				189
146SM 190						4.058				190

146SM 191						4.080				191
146SM 192						4.087	3-,4-			192
146SM 193					4.091	11-			4.9 PS	+15-13
146SM 194						4.116				194
146SM 195						4.126				195
146SM 196						4.128				196
146SM 197						4.136				197
146SM 198						4.144	(10-,11-)			198
146SM 199						4.145	(10+)			199
146SM 200						4.149				200

146SM 201						4.165				201
146SM 202						4.174				202
146SM 203		4.195	12+						10.4 PS	14
146SM 204						4.202	(11+)			204
146SM 205						4.239				205
146SM 206						4.250				206
146SM 207						4.282				207
146SM 208						4.291				208
146SM 209						4.331				209
146SM 210						4.341				210

146SM 211						4.341	(11-)			211
146SM 212						4.360				212
146SM 213						4.374				213
146SM 214						4.407				214
146SM 215						4.415				215
146SM 216						4.443				216
146SM 217						4.461	(12-)		5.8 PS	LE
146SM 218						4.580	(12-)			218
146SM 219					4.629	13-			5.3 PS	+23-20

146SM 220				4.663		220

146SM 221				4.752	(13-)	221
146SM 222				4.970	(14-)	222
146SM 223		5.129	13-			223
146SM 224				5.144		224
146SM 225	5.206	14+				225
146SM 226				5.218	(15-)	226
146SM 227				5.517	(16-)	227
146SM 228				5.614	(15-)	228
146SM 229				5.697	(16+)	229
146SM 230				5.800		230

146SM 231				5.873		231
146SM 232				5.972		232
146SM 233				6.177	(18+)	233

S-p = 7.018 (0.004)-----
 S-n = 8.416 (0.003)-----
 S-2p = 11.826 (0.003)-----
 S-2n = 15.173 (0.003)-----
 S-alpha= -2.529 (0.003)-----

S+p = -3.837 (0.004)
 S+n = -6.341 (0.003)
 S+2p = -9.851 (0.003)
 S+2n = -14.483 (0.003)
 S+alpha = 2.807 (0.007)

gap p = 3.180 (0.006)
 gap n = 2.075 (0.005)
 gap 2p = 1.975 (0.005)
 gap 2n = 0.691 (0.005)
 gap alpha = 0.279 (0.008)