

^{230}Th $Z = 90$ $N = 140$ [link to full NNDC output](#)

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

BE = 1755.129 (0.001) MeV

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

S-alpha=	-4.770	(0.002)	-----		
230TH 1	0.000	0+			1 7.54E+4 Y 3
230TH 2	0.053	2+			2 0.354 NS 9
230TH 3	0.174	4+			3 0.166 NS 5
230TH 4	0.356	6+			4
230TH 5			0.508	1-	5
230TH 6			0.572	3-	6
230TH 7	0.594	8+			7
230TH 8	0.635	0+			8
230TH 9	0.678	2+			9 15 PS 2
230TH 10				0.687 (5-)	10

230TH 11				0.770 (4+)	11
230TH 12				0.775 (4+)	12
230TH 13	0.781	2+			13 3.3 PS 5
230TH 14	0.826	3+			14
230TH 15				0.852 (7-)	15
230TH 16				0.879 (10+)	16
230TH 17	0.884	4+			17
230TH 18				0.923 (6+)	18
230TH 19			0.952	1-	19
230TH 20				0.955 (5+)	20

230TH 21			0.972	2-	21
230TH 22	1.010	2+			22 0.8 PS GE
230TH 23			1.012	3-	23
230TH 24				1.022	24
230TH 25				1.039 (6+)	25
230TH 26				1.052 (3+)	26
230TH 27				1.065 (9-)	27
230TH 28				1.079 (2)-	28
230TH 29				1.089	29
230TH 30				1.108 (4+)	30

230TH 31				1.109 (5-)	31
230TH 32				1.117 (8+)	32
230TH 33				1.126 (1-), (0+)	33
230TH 34			1.128	3-	34
230TH 35				1.134 (7+)	35
230TH 36				1.144	36
230TH 37				1.148	37

230TH 38						1.176	(5+)	38
230TH 39						1.185		39
230TH 40						1.197	(4-)	40

230TH 41						1.207	(12+)	41
230TH 42						1.241		42
230TH 43						1.243	(8+)	43
230TH 44						1.251	(8+)	44
230TH 45						1.255	(6+)	45
230TH 46						1.259	(3-)	46
230TH 47						1.284	(5-)	47
230TH 48		1.297	0+					48
230TH 49						1.322	(11-)	49
230TH 50						1.322	(3-)	50

230TH 51		1.337	4+					51
230TH 52						1.349	(7+)	52
230TH 53						1.358	(9+)	53
230TH 54						1.360	(2+)	54
230TH 55						1.375	(1,2+)	55
230TH 56						1.401	(2+)	56
230TH 57		1.401	2+					57
230TH 58						1.420	(3+)	58
230TH 59						1.440	(3+)	59
230TH 60		1.448	0+					60

230TH 61						1.448	(8+)	61
230TH 62						1.486	(4+)	62
230TH 63						1.496		63
230TH 64		1.507	4+					64
230TH 65						1.520	(10+)	65
230TH 66		1.525	2+					66
230TH 67						1.566	(1-)	67
230TH 68						1.572	(14+)	68
230TH 69						1.574	1(-),2+	69
230TH 70						1.585	(4-,5+)	70

230TH 71		1.590	0+					71
230TH 72						1.595	(1-)	72
230TH 73						1.601	(3-)	73
230TH 74						1.612	(4-,5+)	74
230TH 75						1.616	(13-)	75
230TH 76						1.619	(4-,5+)	76
230TH 77						1.628		77
230TH 78		1.630	2+					78
230TH 79						1.638	(0+)	79
230TH 80						1.653	(6+)	80

230TH 81						1.663		81
230TH 82						1.668	(4+)	82

230TH 83						1.679	(2+)	83
230TH 84						1.683	(4-)	84
230TH 85						1.695	(4+)	85
230TH 86						1.696	1(-),2+	86
230TH 87		1.709	2+					87
230TH 88						1.718		88
230TH 89						1.724	(4+)	89
230TH 90						1.745	(0+)	90

230TH 91						1.751	(3-)	91
230TH 92						1.762	(4+)	92
230TH 93						1.770	(4+)	93
230TH 94						1.771	(1,2+)	94
230TH 95						1.775	(1,2+)	95
230TH 96						1.789	1(-),2+	96
230TH 97						1.793	(5-)	97
230TH 98		1.803	0+					98
230TH 99						1.811	(1,2+)	99
230TH 100		1.812	4+					100

230TH 101						1.825	(6+)	101
230TH 102						1.840	1(-),2+	102
230TH 103						1.850	(2+)	103
230TH 104						1.851	(3-)	104
230TH 105						1.858	(3-)	105
230TH 106						1.869	(0+)&(6+)	106
230TH 107						1.887	(2+)	107
230TH 108						1.903	(1,2+)	108
230TH 109						1.910	(6+)	109
230TH 110						1.915	(1-)	110

230TH 111		1.926	4+					111
230TH 112						1.931	(1-)	112
230TH 113						1.940	(1)	113
230TH 114		1.947	4+					114
230TH 115						1.947	(15-)	115
230TH 116						1.950	(1,2+)	116
230TH 117		1.956	2+					117
230TH 118						1.967	(1,2+)	118
230TH 119						1.969	(16+)	119
230TH 120						1.973	(1+,2+)	120

230TH 121						1.985	(5-)	121
230TH 122						2.001	(1,2+)	122
230TH 123						2.002	(3-)	123
230TH 124						2.010	(1,2+)	124
230TH 125						2.017	(3-)	125
230TH 126						2.025	(1+,2+)	126
230TH 127		2.033	4+					127
230TH 128		2.039	4+					128

230TH 129				2.049	(4+)	129
230TH 130				2.061	(3-)	130

230TH 131				2.073	(8+)	131
230TH 132				2.075	(4+)	132
230TH 133				2.078		133
230TH 134				2.086	(4+)	134
230TH 135	2.094	0+				135
230TH 136	2.102	4+				136
230TH 137	2.118	4+				137
230TH 138				2.123	(1,2+)	138
230TH 139	2.131	2+				139
230TH 140				2.133		140

230TH 141	2.138	2+				141
230TH 142	2.151	0+				142
230TH 143				2.152	(1,2+)	143
230TH 144				2.169	(4+)	144
230TH 145	2.175	0+				145
230TH 146				2.182	(4+)	146
230TH 147	2.187	2+				147
230TH 148				2.195	(6+)	148
230TH 149	2.205	2+				149
230TH 150				2.208	(4+)	150

230TH 151				2.216	(4+)	151
230TH 152	2.226	2+				152
230TH 153	2.241	2+				153
230TH 154				2.250	(6+)	154
230TH 155	2.255	4+				155
230TH 156	2.269	0+				156
230TH 157				2.276	(4+)	157
230TH 158				2.283	1,2+	158
230TH 159	2.296	4+				159
230TH 160				2.299	(1,2+)	160

230TH 161	2.305	2+				161
230TH 162				2.310	(17-)	162
230TH 163				2.311	(4+)	163
230TH 164				2.314	(1,2+)	164
230TH 165	2.318	4+				165
230TH 166	2.330	2+				166
230TH 167				2.337	(5-)	167
230TH 168				2.355	(6+)	168
230TH 169				2.369	(0+)	169
230TH 170				2.384	(4+)	170

230TH 171				2.388		171
230TH 172	2.395	0+				172
230TH 173				2.396	(18+)	173

230TH 174				2.402	(6+)	174
230TH 175	2.412	2+				175
230TH 176	2.423	2+				176
230TH 177				2.426	(0+)	177
230TH 178	2.437	2+				178
230TH 179	2.443	2+				179
230TH 180				2.449	(3-)	180

230TH 181	2.461	2+				181
230TH 182	2.467	2+				182
230TH 183	2.474	2+				183
230TH 184	2.478	4+				184
230TH 185				2.481	(6+)	185
230TH 186	2.494	0+				186
230TH 187	2.501	4+				187
230TH 188				2.508		188
230TH 189				2.519	(6+)	189
230TH 190	2.528	0+				190

230TH 191	2.537	4+				191
230TH 192	2.550	0+				192
230TH 193				2.556	(4+)	193
230TH 194				2.563	(4+)	194
230TH 195				2.573	(6+)	195
230TH 196	2.589	2+				196
230TH 197				2.596	(0+)	197
230TH 198				2.601	(4+)	198
230TH 199	2.616	2+				199
230TH 200	2.626	2+				200

230TH 201	2.640	4+				201
230TH 202	2.661	4+				202
230TH 203				2.666	(2+)	203
230TH 204	2.672	4+				204
230TH 205	2.679	2+				205
230TH 206	2.695	2+				206
230TH 207				2.704	(19-)	207
230TH 208	2.707	2+				208
230TH 209				2.713	(6+)	209
230TH 210	2.727	2+				210

230TH 211	2.741	2+				211
230TH 212	2.746	4+				212
230TH 213				2.754	(6+)	213
230TH 214	2.765	2+				214
230TH 215	2.777	2+				215
230TH 216	2.792	4+				216
230TH 217	2.800	2+				217
230TH 218	2.808	0+				218
230TH 219	2.824	4+				219

230TH 220	2.834	2+				220

230TH 221					2.841 (2+)	221
230TH 222					2.849 (20+)	222
230TH 223	2.856	2+				223
230TH 224	2.863	2+				224
230TH 225					2.871 (3-)	225
230TH 226	2.880	2+				226
230TH 227					2.886 (1-)	227
230TH 228	2.896	2+				228
230TH 229					2.906 (3-)	229
230TH 230					2.914 (4+)	230

230TH 231	2.924	2+				231
230TH 232	2.931	2+				232
230TH 233	2.941	2+				233
230TH 234					2.951 (6+)	234
230TH 235					2.988 (6+)	235
230TH 236	2.999	2+				236
230TH 237	3.010	2+				237
230TH 238	3.021	2+				238
230TH 239	3.030	2+				239
230TH 240	3.043	2+				240

230TH 241					3.052 (3+)	241
230TH 242					3.064 (2+)	242
230TH 243					3.073 (6+)	243
230TH 244	3.084	2+				244
230TH 245	3.101	2+				245
230TH 246					3.114 (LE 4)	246
230TH 247					3.125 (4+)	247
230TH 248					3.125 (21-)	248
230TH 249					3.136 (LE 4)	249
230TH 250					3.147 (LE 4)	250

230TH 251	3.162	2+				251
230TH 252	3.174	2+				252
230TH 253					3.186 (6+)	253
230TH 254	3.198	2+				254
230TH 255	3.212	2+				255
230TH 256	3.223	2+				256
230TH 257					3.234	257
230TH 258	3.249	2+				258
230TH 259					3.259	259
230TH 260					3.270 (2+)	260

230TH 261					3.324 (22+)	261
230TH 262					3.572 (23-)	262
230TH 263					3.819 (24+)	263
230TH 264					5.000	264

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S-p    =  7.116 ( 0.012)-----  
S-n    =  6.794 ( 0.003)-----  
S-2p   = 12.656 ( 0.002)-----  
S-2n   = 12.051 ( 0.002)-----  
S-alpha= -4.770 ( 0.002)-----  
  
S+p    = -4.727 ( 0.002)  
S+n    = -5.118 ( 0.002)  
S+2p   = -10.831 ( 0.002)  
S+2n   = -11.559 ( 0.002)  
S+alpha =  4.858 ( 0.002)  
  
gap p   =  2.389 ( 0.012)  
gap n   =  1.676 ( 0.003)  
gap 2p  =  1.825 ( 0.003)  
gap 2n  =  0.492 ( 0.003)  
gap alpha =  0.088 ( 0.003)
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