

^{170}Hf $Z = 72$ $N = 98$ [link to full NNDC output](#)

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

BE = 1372.049 (0.028) MeV

Qbeta+ = 1.052 (0.033) MeV

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

S-alpha=	-2.917	(0.029)	-----		
170HF 1	0.000	0+			1 16.01 H 13
170HF 2	0.101	2+			2 1.21 NS 4
170HF 3	0.322	4+			3 60.5 PS 8
170HF 4	0.643	6+			4 9.13 PS 29
170HF 5				0.880 (0+)	5
170HF 6				0.962 (2+)	6
170HF 7				0.988 (2+)	7
170HF 8	1.043	8+			8 2.77 PS 9
170HF 9				1.088 (3+)	9
170HF 10				1.159 (4+)	10

170HF 11	1.219	4+			11
170HF 12	1.227	4+			12
170HF 13				1.373 (5-)	13
170HF 14				1.425	14
170HF 15				1.442 (2+,3,4+)	15
170HF 16				1.444 (6+)	16
170HF 17	1.504	10+			17 1.25 PS 8
170HF 18				1.544 (5-)	18
170HF 19				1.564 (4-)	19
170HF 20				1.566	20

170HF 21				1.573	21
170HF 22				1.583	22
170HF 23				1.659	23
170HF 24				1.698	24
170HF 25				1.726 (7-)	25
170HF 26				1.773 (6+)	26 5 NS LT
170HF 27				1.799 (6-)	27
170HF 28				1.966 (7+)	28
170HF 29				1.999	29
170HF 30	2.016	12+			30 0.76 PS 9

170HF 31				2.109 (8-)	31
170HF 32				2.117	32
170HF 33				2.130 (9-)	33
170HF 34				2.149 (7-)	34
170HF 35				2.183 (8-)	35 23 NS 2
170HF 36				2.254 (8-)	36

17OHF	37				2.349	(9-)	37
17OHF	38				2.384	9(-)	38
17OHF	39				2.384	(8-)	39
17OHF	40				2.405	(9-)	40

17OHF	41				2.476	(10-)	41
17OHF	42				2.483	(11)-	42
17OHF	43				2.530	(10-)	43
17OHF	44	2.567	14+				44 0.53 PS 8
17OHF	45				2.579	(11-)	45
17OHF	46				2.644	(10-)	46
17OHF	47				2.689	(11-)	47
17OHF	48				2.725	(10-)	48
17OHF	49				2.878	(12-)	49
17OHF	50				2.906	(11-)	50

17OHF	51				2.924	(12-)	51
17OHF	52				2.932	(13)-	52
17OHF	53				3.062	(13-)	53
17OHF	54				3.094	(13-)	54
17OHF	55				3.135	(12-)	55
17OHF	56				3.144	(13-)	56
17OHF	57	3.151	16+				57 0.38 PS 9
17OHF	58				3.178	(12-)	58
17OHF	59				3.196	(13-)	59
17OHF	60				3.324	(14-)	60

17OHF	61				3.423	(14-)	61
17OHF	62				3.429	(15)-	62
17OHF	63				3.460	(13-)	63
17OHF	64				3.532	(16+)	64
17OHF	65				3.538	(15-)	65
17OHF	66				3.578	(15-)	66
17OHF	67				3.611	(14-)	67
17OHF	68				3.635	(15-)	68
17OHF	69				3.717	(15-)	69
17OHF	70				3.750	(14-)	70

17OHF	71	3.766	18+				71 0.35 PS AP
17OHF	72				3.810	(16-)	72
17OHF	73				3.834	(16-)	73
17OHF	74				3.965	(17-)	74
17OHF	75				3.984	(16-)	75
17OHF	76				4.044	(15-)	76
17OHF	77				4.062	(17-)	77
17OHF	78				4.093	(18+)	78
17OHF	79				4.123	(17-)	79
17OHF	80				4.137	+	80

17OHF	81				4.145	(16-)	81

170HF 82				4.214	(17-)	82
170HF 83				4.293	(17-)	83
170HF 84				4.339	(16-)	84
170HF 85				4.364	(21-)	85
170HF 86				4.394	(18-)	86
170HF 87				4.418	(18-)	87
170HF 88		4.421	20+			88
170HF 89				4.529	(19-)	89
170HF 90				4.584	(18-)	90

170HF 91				4.629	(17-)	91
170HF 92				4.670	(19-)	92
170HF 93				4.715	(19-)	93
170HF 94				4.726	(18-)	94
170HF 95				4.751	(20+)	95
170HF 96				4.844	(19-)	96
170HF 97				4.909	(19-)	97
170HF 98				4.943	(18-)	98
170HF 99				4.968	(19-)	99
170HF 100				4.994	(20-)	100

170HF 101				5.065	(20-)	101
170HF 102				5.126	(21-)	102
170HF 103		5.130	22+			103
170HF 104				5.222	(20-)	104
170HF 105				5.269	(19-)	105
170HF 106				5.343	(21-)	106
170HF 107				5.352	(20-)	107
170HF 108				5.358	(21-)	108
S-p =	5.458	(0.028)	-----			
170HF 109				5.482	(22+)	109
170HF 110				5.506	(21-)	110

170HF 111				5.526	(21-)	111
170HF 112				5.623	(20-)	112
170HF 113				5.638	(22-)	113
170HF 114				5.757	(22-)	114
170HF 115				5.770	(23-)	115
170HF 116				5.897	(22-)	116
170HF 117		5.903	24+			117
170HF 118				5.996	(21-)	118
170HF 119				6.015	(23-)	119
170HF 120				6.023	(22-)	120

170HF 121				6.118	(23-)	121
170HF 122				6.128	(23-)	122
170HF 123				6.263	(23-)	123
170HF 124				6.267	(24+)	124
170HF 125				6.339	(24-)	125
170HF 126				6.388	(22-)	126

170HF 127				6.476	(25-)	127
170HF 128				6.499	(24-)	128
170HF 129				6.618	(24-)	129
170HF 130		6.739	26+			130

170HF 131				6.744	(25-)	131
170HF 132				6.746	(24-)	132
170HF 133				6.796	(25-)	133
170HF 134				6.798	(23-)	134
170HF 135				6.940	(25-)	135
170HF 136				7.044	(25-)	136
170HF 137				7.096	(26+)	137
170HF 138				7.106	(26-)	138
170HF 139				7.225	(24-)	139
170HF 140				7.252	(27-)	140

170HF 141				7.286	(26-)	141
170HF 142				7.397	(26-)	142
170HF 143				7.512	(27-)	143
170HF 144				7.520	(26-)	144
170HF 145				7.542	(27-)	145
170HF 146		7.636	28+			146
170HF 147				7.800	(27-)	147
170HF 148				7.868	(27-)	148
170HF 149				7.944	(28-)	149
170HF 150				7.967	(28+)	150

170HF 151				8.099	(29-)	151
170HF 152				8.123	(28-)	152
170HF 153				8.241	(28-)	153
170HF 154				8.283	(29-)	154
170HF 155				8.345	(28-)	155
170HF 156				8.410	(29-)	156
170HF 157		8.590	30+			157
170HF 158				8.667	(29-)	158
170HF 159				8.851	(30-)	159
170HF 160				8.882	(30+)	160

170HF 161				9.016	(31-)	161
170HF 162				9.025	(30-)	162
170HF 163				9.110	(31-)	163
170HF 164				9.150	(30-)	164
170HF 165				9.238	(30-)	165

S-2p	=	9.250	(0.028)	-----		
170HF 166				9.344	(31-)	166
170HF 167				9.577	(31-)	167
170HF 168		9.598	32+			168

S-n	=	9.608	(0.039)	-----		
170HF 169				9.819	(32-)	169
170HF 170				9.841	(32+)	170

170HF 171				9.996	(32-)	171
170HF 172				9.996	(33-)	172
170HF 173				10.002	(33-)	173
170HF 174				10.123	(32-)	174
170HF 175				10.335	(33-)	175
170HF 176	10.654	34+				176
170HF 177				10.837	(34-)	177
170HF 178				10.847	(34+)	178
170HF 179				10.942	(35-)	179
170HF 180				11.027	(34-)	180

170HF 181				11.049	(35-)	181
170HF 182				11.140	(34-)	182
170HF 183				11.366	(35-)	183
170HF 184	11.750	36+				184
170HF 185				11.888	(36-)	185
170HF 186				11.902	(36+)	186
170HF 187				11.945	(37-)	187
170HF 188				12.108	(36-)	188
170HF 189				12.146	(37-)	189
170HF 190				12.404	(37-)	190

170HF 191	12.880	38+				191
170HF 192				12.950	(38-)	192
170HF 193				12.985	(38+)	193
170HF 194				13.004	(39-)	194
170HF 195				13.277	(39-)	195
170HF 196				14.024	(40-)	196
170HF 197	14.031	40+				197
170HF 198				14.117	(41-)	198
170HF 199				15.284	(43-)	199
170HF 200				16.504	(45-)	200

S-2n	=	17.036 (0.039)	-----			
170HF 201				17.776	(47-)	201
170HF 202				19.101	(49-)	202
170HF 203				0+X		203
170HF 204				239.0+X		204
170HF 205				504.0+X		205
170HF 206				790.0+X		206
170HF 207				1095.0+X		207
170HF 208				1413.0+X		208
170HF 209				1743.0+X		209
170HF 210				2079.0+X		210

170HF 211				2419.0+X		211
170HF 212				2763.0+X		212
170HF 213				3116.0+X		213
170HF 214				3482.0+X		214

170HF 215		3862.0+X	215
170HF 216		Y	216
170HF 217		722.6+Y	217
170HF 218		1497.8+Y	218
170HF 219		2328.3+Y	219
170HF 220		3213.5+Y	220

170HF 221		4153.3+Y	221
170HF 222		5145.4+Y	222
170HF 223		6188.6+Y	223
170HF 224		7283.6+Y	224
170HF 225		8434.7+Y	225
170HF 226		9644.8+Y	226

S-p = 5.458 (0.028)-----
 S-n = 9.608 (0.039)-----
 S-2p = 9.250 (0.028)-----
 S-2n = 17.036 (0.039)-----
 S-alpha= -2.917 (0.029)-----

S+p = -2.755 (0.039)
 S+n = -7.249 (0.040)
 S+2p = -7.421 (0.039)
 S+2n = -16.291 (0.037)
 S+alpha = 3.602 (0.040)

gap p = 2.703 (0.048)
 gap n = 2.359 (0.056)
 gap 2p = 1.828 (0.048)
 gap 2n = 0.745 (0.054)
 gap alpha = 0.685 (0.049)