

$^{166}\text{Hf}$        $Z = 72$        $N = 94$       [link to full NNDC output](#)

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

BE = 1337.369 ( 0.028) MeV

Qbeta+ = 2.162 ( 0.041) MeV

	Energy T	J+	J-	J-other	T1/2
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S-alpha=	-3.542	( 0.032)			
166HF 1	0.000	0+			1 6.77 M 30
166HF 2	0.159	2+			2 497 PS 23
166HF 3	0.470	4+			3 16.4 PS 5
166HF 4				0.810 (2+)	4
166HF 5	0.897	6+			5 3.24 PS 19
166HF 6				1.007 (3+)	6
166HF 7				1.065 (0+)	7
166HF 8				1.163	8
166HF 9	1.219	2+			9
166HF 10				1.332 (2+,3,4+)	10
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166HF 11				1.405	11
166HF 12	1.406	8+			12 1.05 PS 10
166HF 13				1.419 (5+)	13
166HF 14				1.466 (5-)	14
166HF 15				1.551 (4-)	15
166HF 16				1.603 (2+,3,4+)	16
166HF 17				1.726 (7-)	17
166HF 18				1.841 (6-)	18
166HF 19	1.972	10+			19 0.7 PS 5
166HF 20				2.079 (9-)	20 1.7 PS 4
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166HF 21				2.197 (8-)	21
166HF 22				2.376 (8-)	22
166HF 23				2.497 (11-)	23
166HF 24				2.540 (10-)	24
166HF 25	2.566	12+			25 0.9 PS 7
166HF 26				2.680 (10-)	26
166HF 27	2.735	12+			27
166HF 28				2.793 (11-)	28
166HF 29				2.911 (12-)	29
166HF 30				2.962 (13-)	30
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166HF 31	3.009	14+			31 6.9 PS 7
166HF 32				3.024 (12+)	32
166HF 33				3.086 (12-)	33
166HF 34				3.211 14(+)	34
166HF 35				3.231 (13-)	35
166HF 36				3.375 (14-)	36

166HF	37	3.449	16+				37	
166HF	38				3.473	(15-)	38	
166HF	39				3.516	(14+)	39	
166HF	40				3.586	(14-)	40	
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166HF	41				3.779	(15-)	41	
166HF	42				3.817	(15-)	42	
166HF	43				3.835	(16+)	43	
166HF	44				3.920	(16-)	44	
166HF	45				3.972	(15-)	45	
166HF	46	4.009	18+				46	
166HF	47				4.030	(17-)	47	
166HF	48				4.065	(16+)	48	
166HF	49				4.163	(16-)	49	
166HF	50				4.228	(16-)	50	
-----								
166HF	51				4.374	(17-)	51	
166HF	52				4.400	(17-)	52	
166HF	53				4.443	(17-)	53	
166HF	54				4.445	(14-)	54	
166HF	55				4.459	(18+)	55	
166HF	56				4.516	(18-)	56	
166HF	57				4.582	(15-)	57	
166HF	58				4.625	(19-)	58	
166HF	59				4.641	(18-)	59	
166HF	60	4.671	20+				60	
-----								
166HF	61				4.677	(18+)	61	
-----								
S-p	=	4.706	( 0.039)	-----				
166HF	62				4.745	(16-)	62	
166HF	63				4.824	(18-)	63	
166HF	64				4.937	(17-)	64	
166HF	65				5.006	(19-)	65	
166HF	66				5.031	(19-)	66	
166HF	67				5.071	(19-)	67	
166HF	68				5.087	(19-)	68	
166HF	69				5.090	(20-)	69	
166HF	70				5.122	(20+)	70	
-----								
166HF	71				5.157	(19+)	71	
166HF	72				5.160	(18-)	72	
166HF	73				5.214	(20-)	73	
166HF	74				5.253	(21-)	74	
166HF	75				5.313	(20+)	75	
166HF	76	5.410	22+				76	
166HF	77				5.410	(19-)	77	
166HF	78				5.510	(20-)	78	
166HF	79				5.666	(21-)	79	
166HF	80				5.673	(21-)	80	
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166HF 81						5.679	(22-)	81
166HF 82						5.687	(20-)	82
166HF 83						5.720	(21-)	83
166HF 84						5.784	(21-)	84
166HF 85						5.799	(21+)	85
166HF 86						5.852	(22+)	86
166HF 87						5.897	(22-)	87
166HF 88						5.927	(23-)	88
166HF 89						5.986	(22+)	89
166HF 90						5.988	(21-)	90
-----								
166HF 91		6.201	24+					91
166HF 92						6.243	(22-)	92
166HF 93						6.311	(22-)	93
166HF 94						6.331	(23-)	94
166HF 95						6.356	(24-)	95
166HF 96						6.386	(23-)	96
166HF 97						6.441	(23-)	97
166HF 98						6.531	(23-)	98
166HF 99						6.536	(23+)	99
166HF 100						6.615	(24+)	100
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166HF 101						6.641	(24-)	101
166HF 102						6.651	(23-)	102
166HF 103						6.666	(25-)	103
166HF 104						6.978	(24-)	104
166HF 105						7.007	(24-)	105
166HF 106		7.030	26+					106
166HF 107						7.078	(25-)	107
166HF 108						7.137	(26-)	108
166HF 109						7.145	(25-)	109
166HF 110				7.199	25-			110
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166HF 111						7.314	(25-)	111
166HF 112						7.342	(25+)	112
166HF 113						7.364	(25-)	113
166HF 114						7.392	(26+)	114
-----								
S-2p	=	7.420	( 0.032)	-----				
166HF 115						7.444	(26-)	115
166HF 116						7.481	(27-)	116
166HF 117						7.714	(26-)	117
166HF 118						7.770	(26-)	118
166HF 119		7.895	28+					119
166HF 120						7.899	(27-)	120
-----								
166HF 121						7.954	(27-)	121
166HF 122						8.007	(27-)	122
166HF 123						8.017	(28-)	123
166HF 124						8.063	(27-)	124
166HF 125						8.222	(28+)	125

166HF 126				8.303	(28-)	126
166HF 127				8.375	(29-)	127
166HF 128				8.426	(28-)	128
166HF 129				8.767	(29-)	129
166HF 130		8.801	30+			130
-----						
166HF 131				8.808	(29-)	131
166HF 132				8.817	(29-)	132
166HF 133				8.871	(29-)	133
166HF 134				8.980	(30-)	134
166HF 135				9.116	(30+)	135
166HF 136				9.212	(30-)	136
166HF 137				9.216	(30-)	137
166HF 138				9.338	(31-)	138
166HF 139				9.635	(31-)	139
166HF 140				9.682	(31-)	140
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166HF 141				9.734	(31-)	141
166HF 142		9.753	32+			142
166HF 143				9.771	(31-)	143
166HF 144				9.991	(32-)	144
166HF 145				10.009	(32+)	145
166HF 146				10.080	(32-)	146
166HF 147				10.167	(32-)	147
-----						
S-n	=	10.295	( 0.039)	-----		
166HF 148				10.330	(33-)	148
166HF 149				10.721	(33-)	149
166HF 150		10.748	34+			150
-----						
166HF 151				10.933	(34+)	151
166HF 152				10.994	(34-)	152
166HF 153				11.298	(35-)	153
166HF 154		11.751	36+			154
166HF 155				11.928	(36+)	155
166HF 156				12.005	(36-)	156
166HF 157				12.289	(37-)	157
166HF 158		12.762	38+			158
166HF 159				13.038	(38-)	159
166HF 160				13.328	(39-)	160
-----						
166HF 161		13.800	40+			161
166HF 162				14.096	(40-)	162
166HF 163				14.424	(41-)	163
166HF 164		14.879	42+			164
166HF 165				15.575	(43-)	165
166HF 166				16.006	(44+)	166
166HF 167				0.0+X		167
166HF 168				236.0+X		168
166HF 169				486.0+X		169
166HF 170				759.0+X		170

166HF 171		1064.1+X	171
166HF 172		1387.7+X	172
166HF 173		1734.9+X	173
166HF 174		2095.8+X	174
166HF 175		2475.9+X	175
166HF 176		2860.7+X	176
166HF 177		3256.1+X	177
166HF 178		3665.0+X	178
166HF 179		4083.1+X	179
166HF 180		0.0+Y	180
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166HF 181		204.0+Y	181
166HF 182		438.0+Y	182
166HF 183		697.0+Y	183
166HF 184		977.0+Y	184
166HF 185		1274.0+Y	185
166HF 186		1582.0+Y	186
166HF 187		1905.0+Y	187
166HF 188		2240.0+Y	188

S-p = 4.706 ( 0.039)-----  
S-n = 10.295 ( 0.039)-----  
S-2p = 7.420 ( 0.032)-----  
S-2n = 18.183 ( 0.032)-----  
S-alpha= -3.542 ( 0.032)-----

S+p = -1.781 ( 0.039)  
S+n = -7.680 ( 0.039)  
S+2p = -5.612 ( 0.031)  
S+2n = -17.644 ( 0.039)  
S+alpha = 4.143 ( 0.031)

gap p = 2.925 ( 0.055)  
gap n = 2.615 ( 0.056)  
gap 2p = 1.808 ( 0.044)  
gap 2n = 0.539 ( 0.051)  
gap alpha = 0.601 ( 0.044)