

$^{168}\text{Hf}$        $Z = 72$        $N = 96$       adopted link      ENSDF link

Based on ENSDF from Oct 2022, and mass evaluation from 2020

BE = 1355.013 ( 0.028) MeV

Qbeta+ = 1.712 ( 0.047) MeV

	Energy T	J+	J-	J-other	T1/2
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S-alpha=	-3.227	( 0.032)	-----		
168HF 1	0.000	0+			1 25.95 M 20
168HF 2	0.124	2+			2 0.89 NS 4
168HF 3	0.386	4+			3 30.6 PS 15
168HF 4	0.757	6+			4 4.9 PS 3
168HF 5	0.876	2+			5
168HF 6	0.942	0+			6
168HF 7	1.031	3+			7
168HF 8	1.059	2+			8
168HF 9				1.161 4(+)	9
168HF 10	1.214	8+			10 1.46 PS 18
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168HF 11				1.285 (4+)	11
168HF 12				1.373 (2)	12
168HF 13				1.386 (5+)	13
168HF 14				1.402	14
168HF 15				1.408 (4)	15
168HF 16				1.412 (LE4)	16
168HF 17				1.497 (4-)	17
168HF 18				1.551 (6+)	18
168HF 19				1.569 (3)	19
168HF 20				1.618 (LE4)	20
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168HF 21				1.644 (LE4)	21
168HF 22				1.671 (1+,2+)	22
168HF 23				1.734 (2+,3,4+)	23
168HF 24				1.735 (7-)	24
168HF 25	1.736	10+			25 0.71 PS 10
168HF 26				1.797 (4)	26
168HF 27				1.800 (2+,3,4+)	27
168HF 28				1.814 (6-)	28
168HF 29				1.967	29
168HF 30				1.993 (6-)	30
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168HF 31				2.048	31
168HF 32				2.067 (9-)	32
168HF 33				2.081 (7-)	33
168HF 34				2.109 (2+,3,4+)	34
168HF 35				2.156 (8-)	35
168HF 36				2.194 (8-)	36

168HF	37	2.306	12+			37	0.52 PS	18
168HF	38				2.321 (9-)	38		
168HF	39				2.353	39		
168HF	40				2.467 (10-)	40		
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168HF	41				2.474 (11-)	41		
168HF	42				2.553 (10-)	42		
168HF	43				2.646 (11-)	43		
168HF	44				2.706 (10-)	44		
168HF	45				2.828 (12-)	45		
168HF	46				2.852 (11-)	46		
168HF	47	2.858	14+			47	0.84 PS	18
168HF	48				2.938 (13-)	48		
168HF	49				2.976 (12-)	49		
168HF	50				2.991 14(+)	50		
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168HF	51				3.066 (13-)	51		
168HF	52				3.085 (12-)	52		
168HF	53				3.269 (14-)	53		
168HF	54				3.289 (13-)	54		
168HF	55				3.310 (16+)	55	1.82 PS	20
168HF	56				3.442 (15-)	56		
168HF	57				3.452 (14-)	57		
168HF	58				3.561 (14-)	58		
168HF	59				3.589 (15-)	59		
168HF	60				3.624 (16+)	60		
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168HF	61				3.777 (16-)	61		
168HF	62				3.818 (15-)	62		
168HF	63				3.832 (18+)	63		
168HF	64				3.989 (16-)	64		
168HF	65				3.990 (17-)	65		
168HF	66				4.087 (14-)	66		
168HF	67				4.119 (16-)	67		
168HF	68				4.190 (17-)	68		
168HF	69				4.297 (15-)	69		
168HF	70				4.322 (18+)	70		
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168HF	71				4.336 (18-)	71		
168HF	72				4.415 (17-)	72		
168HF	73				4.440 (20+)	73		
168HF	74				4.450 (15-)	74		
168HF	75				4.468 (15-)	75		
168HF	76				4.529 (16-)	76		
168HF	77				4.578 (19-)	77		
168HF	78				4.578 (18-)	78		
168HF	79				4.616 (16-)	79		
168HF	80				4.672 (16-)	80		
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168HF	81				4.715 (18-)	81		

168HF	82				4.773	(17-)	82
168HF	83				4.810	(17-)	83
168HF	84				4.830	(19-)	84
168HF	85				4.894	(17-)	85
168HF	86				4.934	(20-)	86
168HF	87				5.012	(18-)	87
168HF	88				5.028	(19-)	88
168HF	89				5.030	(18-)	89
168HF	90				5.049	(20+)	90

S-p = 5.123 ( 0.047)

168HF	91				5.124	(22+)	91
168HF	92				5.140	(18-)	92
168HF	93				5.147	(19-)	93
168HF	94				5.169	(19+)	94
168HF	95				5.197	(21-)	95
168HF	96				5.213	(20-)	96
168HF	97				5.246	(19-)	97
168HF	98				5.275	(19-)	98
168HF	99				5.328	(20-)	99
168HF	100				5.413	(19-)	100

168HF	101				5.479	(21-)	101
168HF	102				5.497	(20-)	102
168HF	103				5.545	(20-)	103
168HF	104				5.574	(22-)	104
168HF	105				5.658	(21-)	105
168HF	106				5.695	(20-)	106
168HF	107				5.763	(22+)	107
168HF	108				5.768	(21-)	108
168HF	109				5.802	(21-)	109
168HF	110				5.833	(21-)	110

168HF	111				5.853	(23-)	111
168HF	112				5.875	(24+)	112
168HF	113				5.889	(21+)	113
168HF	114				5.894	(22-)	114
168HF	115				5.942	(22-)	115
168HF	116				6.003	(21-)	116
168HF	117				6.065	(22-)	117
168HF	118				6.141	(22-)	118
168HF	119				6.150	(23-)	119
168HF	120				6.269	(24-)	120

168HF	121				6.318	(23-)	121
168HF	122				6.330	(22-)	122
168HF	123				6.382	(23-)	123
168HF	124				6.461	(23-)	124
168HF	125				6.481	(24+)	125
168HF	126				6.495	(23-)	126

168HF 127			6.565	(23-)	127
168HF 128			6.566	(25-)	128
168HF 129			6.628	(24-)	129
168HF 130			6.644	(24-)	130
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168HF 131			6.673	(23-)	131
168HF 132			6.687	(26+)	132
168HF 133			6.690	(23+)	133
168HF 134			6.720	(24-)	134
168HF 135			6.794	(24-)	135
168HF 136			6.892	(25-)	136
168HF 137			7.029	(24-)	137
168HF 138			7.029	(26-)	138
168HF 139			7.077	(25-)	139
168HF 140			7.085	(25-)	140
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168HF 141			7.136	(25-)	141
168HF 142			7.241	(25-)	142
168HF 143			7.261	(26+)	143
168HF 144			7.335	(25-)	144
168HF 145			7.347	(27-)	145
168HF 146			7.407	(25-)	146
168HF 147			7.423	(26-)	147
168HF 148			7.439	(26-)	148
168HF 149			7.452	(26-)	149
168HF 150			7.487	(26-)	150
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168HF 151			7.520	(25+)	151
168HF 152			7.562	(28+)	152
168HF 153			7.662		153
168HF 154			7.706	(27-)	154
168HF 155			7.797	(26-)	155
168HF 156			7.839	(27-)	156
168HF 157			7.843	(27-)	157
168HF 158			7.861	(28-)	158
168HF 159			7.919	(27-)	159
168HF 160			8.038	(27-)	160
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168HF 161			8.075	(27-)	161
168HF 162			8.117	(28+)	162
168HF 163			8.198	(29-)	163
168HF 164			8.202	(27-)	164
168HF 165			8.209	(28-)	165
168HF 166			8.245	(28-)	166
168HF 167			8.270	(28-)	167
168HF 168			8.330	(28-)	168
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S-2p =	8.345	(0.029)			
168HF 169			8.366	(27+)	169
168HF 170			8.501	(30+)	170
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168HF 171			8.587	(29-)	171
168HF 172			8.594	(29-)	172
168HF 173			8.620	(28-)	173
168HF 174			8.666	(29-)	174
168HF 175			8.763	(30-)	175
168HF 176			8.812	(29-)	176
168HF 177			8.845	(29-)	177
168HF 178			8.988	(30-)	178
168HF 179			9.041	(30+)	179
168HF 180			9.054	(29-)	180
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168HF 181			9.102	(30-)	181
168HF 182			9.114	(31-)	182
168HF 183			9.174	(30-)	183
168HF 184			9.262	(30-)	184
168HF 185			9.386	(31-)	185
168HF 186			9.501	(32+)	186
168HF 187			9.502	(30-)	187
168HF 188			9.552	(31-)	188
168HF 189			9.557	(31-)	189
168HF 190			9.661	(31-)	190
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168HF 191			9.731	(32-)	191
168HF 192			9.750	(31-)	192
168HF 193			9.963	(31-)	193

S-p = 5.123 ( 0.047)-----  
S-n = 9.964 ( 0.040)-----  
S-2p = 8.345 ( 0.029)-----  
S-2n = 17.644 ( 0.040)-----  
S-alpha= -3.227 ( 0.032)-----

S+p = -2.219 ( 0.040)  
S+n = -7.428 ( 0.040)  
S+2p = -6.508 ( 0.031)  
S+2n = -17.036 ( 0.040)  
S+alpha = 3.838 ( 0.040)

gap p = 2.904 ( 0.061)  
gap n = 2.536 ( 0.056)  
gap 2p = 1.836 ( 0.042)  
gap 2n = 0.608 ( 0.056)  
gap alpha = 0.612 ( 0.051)