

^{181}Hf $Z = 72$ $N = 109$ adopted link ENSDF link

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

BE = 1451.983 (0.001) MeV

Qbeta- = 1.036 (0.002) MeV

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

S-alpha=	-1.158	(0.001)	-----		
181HF 1			0.000	1/2-	1 42.39 D 6
181HF 2			0.046	3/2-	2
181HF 3			0.099	5/2-	3
181HF 4			0.204	7/2-	4
181HF 5			0.252	3/2-	5
181HF 6			0.304	9/2-	6
181HF 7			0.329	5/2-	7
181HF 8			0.441	7/2-	8
181HF 9			0.466	11/2-	9
181HF 10			0.574	9/2-	10

181HF 11	0.595	9/2+			11
181HF 12				0.617 (11/2+)	12
181HF 13				0.620 (13/2-)	13
181HF 14			0.664	7/2-	14
181HF 15			0.749	11/2-	15
181HF 16	0.759	13/2+			16
181HF 17			0.800	9/2-	17
181HF 18	0.806	11/2+			18
181HF 19				0.835 (15/2-)	19
181HF 20			0.904	7/2-	20

181HF 21				0.928 (15/2+)	21
181HF 22			0.930	13/2-	22
181HF 23			0.965	11/2-	23
181HF 24	1.009	13/2+			24
181HF 25			1.032	9/2-	25
181HF 26				1.043 (17/2+)	26 100 US AP
181HF 27			1.045	1/2-	27
181HF 28			1.056	5/2-	28
181HF 29			1.086	3/2-	29
181HF 30			1.117	3/2-	30

181HF 31				1.122 (17/2+)	31
181HF 32				1.127 (13/2-)	32
181HF 33			1.135	5/2-	33
181HF 34			1.153	1/2-	34
181HF 35			1.157	7/2-	35
181HF 36			1.178	5/2-	36

181HF	37	1.211	5/2+					37
181HF	38			1.230	3/2-			38
181HF	39					1.243	(19/2+)	39
181HF	40			1.261	5/2-			40

181HF	41					1.282		41
181HF	42			1.287	9/2-			42
181HF	43					1.312		43
181HF	44			1.322	3/2-			44
181HF	45					1.329	1/2,3/2,5/2-	45
181HF	46					1.347	(19/2+)	46
181HF	47					1.348	1/2,3/2,5/2	47
181HF	48			1.357	3/2-			48
181HF	49					1.363	1/2,3/2,5/2-	49
181HF	50					1.385	(19/2+)	50

181HF	51			1.397	5/2-			51
181HF	52					1.401	(7/2-)	52
181HF	53			1.424	5/2-			53
181HF	54					1.436		54
181HF	55					1.444		55
181HF	56	1.452	5/2+					56
181HF	57	1.453	1/2+					57
181HF	58			1.493	7/2-			58
181HF	59			1.494	1/2-			59
181HF	60					1.497		60

181HF	61	1.505	1/2+					61
181HF	62	1.505	5/2+					62
181HF	63	1.520	9/2+					63
181HF	64					1.568		64
181HF	65	1.575	9/2+					65
181HF	66	1.616	3/2+					66
181HF	67			1.629	1/2-			67
181HF	68					1.636	(5/2)	68
181HF	69					1.642	1/2-,3/2+	69
181HF	70	1.657	3/2+					70

181HF	71					1.668	(13/2+)	71
181HF	72			1.683	3/2-			72
181HF	73			1.696	9/2-			73
181HF	74					1.706	(1/2+)	74
181HF	75					1.713	1/2-, (3/2-)	75
181HF	76			1.717	3/2-			76
181HF	77					1.727	(5/2-)	77
181HF	78			1.737	3/2-			78
181HF	79					1.742	(25/2-)	79
181HF	80			1.747	5/2-			80

181HF	81					1.766	(5/2-)	81

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181HF 82				1.770	1/2,3/2	82
181HF 83			1.775	5/2-		83
181HF 84			1.800	5/2-		84
181HF 85				1.805	1/2,3/2	85
181HF 86		1.808	3/2+			86
181HF 87				1.813		87
181HF 88			1.834	5/2-		88
181HF 89				1.843	1/2-, (3/2-)	89
181HF 90			1.848	3/2-		90

181HF 91				1.867	1/2,3/2	91
181HF 92			1.874	5/2-		92
181HF 93				1.886	(7/2+)	93
181HF 94				1.896	1/2-,3/2-	94
181HF 95				1.908	(5/2+)	95
181HF 96				1.921	(3/2+)	96
181HF 97				1.941	1/2,3/2	97
181HF 98				1.951	(1/2-)	98
181HF 99				1.956	(5/2+)	99
181HF 100				1.963	1/2-,3/2	100

181HF 101		1.985	5/2+			101
181HF 102				1.986	1/2,3/2	102
181HF 103				1.998	1/2-,3/2	103
181HF 104				2.026		104
181HF 105			2.033	1/2-		105
181HF 106				2.053		106
181HF 107			2.082	3/2-		107
181HF 108				2.097	(7/2+)	108
181HF 109				2.110		109
181HF 110				2.121		110

181HF 111				2.129		111
181HF 112				2.140	1/2-,3/2	112
181HF 113				2.148	1/2-,3/2+	113
181HF 114				2.162	3/2+, (5/2-)	114
181HF 115				2.175	(11/2-)	115
181HF 116			2.195	3/2-		116
181HF 117		2.201	9/2+			117
181HF 118			2.203	3/2-		118
181HF 119			2.216	1/2-		119
181HF 120				2.224	(3/2-,5/2+)	120

181HF 121				2.230		121
181HF 122			2.247	1/2-		122
181HF 123				2.254	(3/2+,5/2-)	123
181HF 124				2.258	1/2-,3/2-	124
181HF 125			2.271	3/2-		125
181HF 126				2.282	(3/2-)	126
181HF 127				2.285	1/2,3/2	127

181HF 128			2.294	11/2-, 13/2+	128
181HF 129			2.310		129
181HF 130			2.324	(3/2-)	130

181HF 131			2.342	1/2, 3/2	131
181HF 132			2.352	(3/2-)	132
181HF 133			2.365	(3/2-)	133
181HF 134			2.369	1/2-, 3/2	134
181HF 135			2.374		135
181HF 136			2.396	1/2, 3/2	136
181HF 137			2.399	(3/2-)	137
181HF 138			2.405	1/2-, 3/2	138
181HF 139			2.408	(3/2-)	139
181HF 140			2.435	1/2, 3/2	140

181HF 141			2.440	1/2, 3/2	141
181HF 142			2.448	1/2-, 3/2	142
181HF 143			2.456	1/2-, 3/2	143
181HF 144			2.459		144
181HF 145			2.499		145
181HF 146			2.508	1/2, 3/2	146
181HF 147	2.516	3/2-			147
181HF 148			2.534		148
181HF 149			2.559		149
181HF 150			2.567	1/2-, 3/2	150

181HF 151	2.575	3/2-			151
181HF 152			2.588	(3/2+)	152
181HF 153	2.597	5/2-			153
181HF 154			2.598	1/2, 3/2	154
181HF 155			2.602	1/2-, 3/2	155
181HF 156			2.610	1/2-, 3/2	156
181HF 157			2.614	1/2, 3/2	157
181HF 158			2.617		158
181HF 159			2.627	(1/2-), 3/2-	159
181HF 160			2.642	(1/2-), 3/2	160

181HF 161			2.660		161
181HF 162			2.671	(1/2-, 3/2-)	162
181HF 163			2.679		163
181HF 164			2.685	(3/2-)	164
181HF 165			2.693	(3/2+)	165
181HF 166			2.740	(1/2-, 3/2+)	166
181HF 167			2.752		167
181HF 168			2.759	1/2, 3/2	168
181HF 169			2.765	1/2-, 3/2	169
181HF 170			2.772	1/2-, 3/2-	170

181HF 171			2.796	3/2	171
181HF 172			2.816	(9/2+)	172

181HF 173			2.833	3/2	173
181HF 174			2.847		174
181HF 175			2.851	1/2-,3/2	175
181HF 176			2.866	1/2,3/2	176
181HF 177			2.897	1/2,3/2	177
181HF 178			2.901	(7/2-)	178
181HF 179			2.916	(1/2-,3/2-)	179
181HF 180			2.933	(3/2+)	180

181HF 181			2.936	1/2-,3/2	181
181HF 182			2.950	(1/2-,3/2+)	182
181HF 183			2.984	1/2,3/2	183
181HF 184			2.987	(1/2-,3/2+)	184
181HF 185			3.002	(3/2-)	185
181HF 186			3.007	1/2,3/2	186
181HF 187			3.052	(3/2-)	187
181HF 188			3.097	(1/2-)	188

S-p = 8.015 (0.071)-----
S-n = 5.695 (0.002)-----
S-2p = 15.328 (0.179)-----
S-2n = 13.083 (0.002)-----
S-alpha= -1.158 (0.001)-----

S+p = -6.317 (0.002)
S+n = -6.718 (0.006)
S+2p = -13.541 (0.002)
S+2n = -12.023 (0.030)
S+alpha = 1.590 (0.002)

gap p = 1.699 (0.071)
gap n = -1.023 (0.007)
gap 2p = 1.788 (0.179)
gap 2n = 1.059 (0.030)
gap alpha = 0.432 (0.002)