

^{177}Hf $Z = 72$ $N = 105$ adopted link ENSDF link

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

BE = 1425.175 (0.001) MeV

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

S-alpha=	-2.246	(0.001)	-----		
177HF 1			0.000	7/2-	1 STABLE
177HF 2			0.113	9/2-	2 0.541 NS 14
177HF 3			0.250	11/2-	3 107 PS 10
177HF 4	0.321	9/2+			4 0.665 NS 16
177HF 5				0.375	5
177HF 6				0.390	6
177HF 7			0.409	13/2-	7
177HF 8	0.427	11/2+			8 40 PS 3
177HF 9				0.459	9
177HF 10			0.508	5/2-	10

177HF 11	0.555	13/2+			11
177HF 12			0.560	1/2-	12
177HF 13				0.567 (1/2-)	13
177HF 14			0.591	15/2-	14
177HF 15			0.604	7/2-	15
177HF 16				0.607 (3/2-)	16
177HF 17				0.623 (3/2-)	17
177HF 18				0.652 (5/2-)	18
177HF 19				0.665 (5/2)-	19
177HF 20				0.703 (7/2)-	20

177HF 21	0.708	15/2+			21
177HF 22			0.727	9/2-	22
177HF 23				0.739 (1/2-,3/2-)	23
177HF 24				0.746 (7/2)+	24
177HF 25				0.780 (7/2)-	25
177HF 26			0.794	17/2-	26
177HF 27			0.806	3/2-	27
177HF 28				0.839 (7/2-)	28
177HF 29				0.841 (9/2-)	29
177HF 30				0.846 (9/2-)	30

177HF 31	0.847	9/2+			31
177HF 32				0.873 (5/2)-	32
177HF 33	0.883	17/2+			33
177HF 34				0.919 (1/2-,3/2-)	34
177HF 35				0.948 (3/2-,5/2,7/2-	35)
177HF 36				0.979 (7/2)-	36
177HF 37				1.003 (7/2-)	37

177HF	38					1.016	5/2-,7/2-	38
177HF	39				1.018	19/2-		39
177HF	40				1.058	7/2-		40

177HF	41		1.087	19/2+				41
177HF	42					1.101	(13/2+)	42
177HF	43					1.113	(13/2-)	43
177HF	44					1.143	(13/2-)	44
177HF	45					1.157	(11/2-)	45
177HF	46				1.260	21/2-		46
177HF	47					1.294	1/2-,3/2-	47
177HF	48		1.301	21/2+				48
177HF	49		1.315	23/2+				49 1.09 S 5
177HF	50					1.342	(19/2-)	50 55.9 US 12

177HF	51					1.350		51
177HF	52					1.434	(3/2-)	52
177HF	53					1.475	(5/2-)	53
177HF	54					1.477	(17/2-)	54
177HF	55					1.485	(9/2+)	55
177HF	56					1.502	(3/2-)	56
177HF	57				1.521	23/2-		57
177HF	58					1.535	(17/2-)	58
177HF	59					1.535	(7/2-)	59
177HF	60		1.561	23/2+				60

177HF	61					1.565	(15/2-)	61
177HF	62					1.565	(5/2-)	62
177HF	63					1.583	(21/2-)	63
177HF	64		1.593	25/2+				64
177HF	65					1.609	(13/2+)	65
177HF	66					1.634	(1/2-)	66
177HF	67					1.666	(3/2-)	67
177HF	68					1.701	(3/2-)	68
177HF	69				1.713	25/2-		69 1 NS LT
177HF	70					1.743	(5/2-)	70

177HF	71					1.779	(5/2-)	71
177HF	72				1.798	25/2-		72
177HF	73		1.803	25/2+				73
177HF	74					1.846	(23/2-)	74
177HF	75					1.847	(7/2-)	75
177HF	76					1.882	(1/2-)	76
177HF	77		1.888	27/2+				77
177HF	78					1.925	(21/2-)	78
177HF	79					1.932	(3/2-)	79
177HF	80					1.932	(7/2-)	80

177HF	81				1.968	27/2-		81
177HF	82					1.969	(5/2-)	82

177HF 83						2.005	(21/2-)	83
177HF 84						2.007	5/2-,7/2-	84
177HF 85						2.048	(19/2-)	85
177HF 86						2.070	(23/2-)	86
177HF 87						2.071	(7/2)-	87
177HF 88				2.091	27/2-			88
177HF 89						2.114	5/2-,7/2-	89
177HF 90						2.124	(25/2-)	90

177HF 91		2.128	27/2+					91
177HF 92		2.199	29/2+					92
177HF 93				2.249	29/2-			93
177HF 94						2.336	(25/2-)	94
177HF 95		2.378	29/2+					95
177HF 96				2.399	29/2-			96
177HF 97						2.410	(27/2-)	97
177HF 98						2.417	(27/2-)	98
177HF 99						2.418	(27/2-)	99
177HF 100						2.451	(25/2-)	100

177HF 101		2.526	31/2+					101
177HF 102						2.539	(25/2-)	102
177HF 103				2.555	31/2-			103
177HF 104						2.590	(23/2-)	104
177HF 105						2.615	(27/2-)	105
177HF 106						2.700	(29/2-)	106
177HF 107				2.720	31/2-			107
177HF 108						2.724	(29/2-)	108
177HF 109				2.740	37/2-			109 51.4 M 5
177HF 110		2.783	31/2+					110

177HF 111		2.865	33/2+					111
177HF 112						2.873	(29/2+)	112
177HF 113				2.882	33/2-			113
177HF 114						2.897	(31/2-)	114
177HF 115						2.909	(29/2-)	115
177HF 116						2.936	(33/2-)	116
177HF 117		3.016	33/2+					117
177HF 118						3.047	(31/2-)	118
177HF 119				3.054	33/2-			119
177HF 120		3.105	39/2+					120 1 NS LT

177HF 121						3.134	(29/2-)	121
177HF 122				3.141	39/2-			122
177HF 123		3.217	35/2+					123
177HF 124						3.218	(31/2-)	124
177HF 125						3.222	(31/2+)	125
177HF 126				3.229	35/2-			126
177HF 127						3.237	(33/2-)	127
177HF 128						3.303	(35/2-)	128

177HF 129				3.399	35/2-		129
177HF 130		3.465	41/2+				130

177HF 131		3.518	35/2+				131
177HF 132				3.562	41/2-		132
177HF 133		3.579	37/2+				133
177HF 134						3.582 (33/2+)	134
177HF 135				3.593	37/2-		135
177HF 136						3.686 (37/2-)	136
177HF 137		3.703	37/2+				137
177HF 138				3.754	37/2-		138
177HF 139		3.840	43/2+				139
177HF 140		3.948	39/2+				140

177HF 141				4.002	43/2-		141
177HF 142				4.121	39/2-		142
177HF 143		4.232	45/2+				143
177HF 144				4.460	45/2-		144
177HF 145				4.498	41/2-		145
177HF 146		4.640	47/2+				146
177HF 147		5.064	49/2+				147

S-p = 6.787 (0.002)-----
 S-n = 6.376 (0.002)-----
 S-2p = 12.763 (0.001)-----
 S-2n = 14.542 (0.003)-----
 S-alpha = -2.246 (0.001)-----

S+p = -5.055 (0.001)
 S+n = -7.626 (0.002)
 S+2p = -10.992 (0.015)
 S+2n = -13.725 (0.002)
 S+alpha = 2.222 (0.002)

gap p = 1.732 (0.002)
 gap n = -1.250 (0.003)
 gap 2p = 1.771 (0.015)
 gap 2n = 0.817 (0.003)
 gap alpha = -0.024 (0.002)