

^{180}Hf $Z = 72$ $N = 108$ [link to full NNDC output](#)

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

BE = 1446.287 (0.001) MeV

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

S-alpha=	-1.287 (0.000)				
180HF 1	0.000	0+			1 STABLE
180HF 2	0.093	2+			2 1.519 NS 10
180HF 3	0.309	4+			3 71 PS 10
180HF 4	0.641	6+			4 10.0 PS 7
180HF 5	1.084	8+			5 2.18 PS 11
180HF 6	1.102	0+			6
180HF 7			1.142 8-		7 5.53 H 2
180HF 8				1.164	8
180HF 9	1.183	2+			9
180HF 10				1.193 (6+)	10

180HF 11	1.200	2+			11 0.51 PS 5
180HF 12				1.261 (2+)	12
180HF 13	1.291	3+			13
180HF 14				1.300 (2+)	14
180HF 15	1.316	0+			15
180HF 16				1.354 (1-,2-,3-)	16
180HF 17				1.370 (4+)	17
180HF 18				1.374 (4-)	18 0.57 US 2
180HF 19				1.382 (3+,2+,4+)	19
180HF 20			1.385 9-		20

180HF 21				1.409 (4+)	21
180HF 22				1.409 (2+)	22
180HF 23				1.421	23
180HF 24				1.430 (3-)	24
180HF 25				1.444 (5-)	25
180HF 26				1.472 (6+)	26
180HF 27				1.483 (5-)	27
180HF 28				1.484	28
180HF 29				1.508	29
180HF 30				1.525	30

180HF 31				1.539 (3-)	31
180HF 32				1.557 (5+)	32
180HF 33				1.559 (4+)	33
180HF 34				1.598 (4+,5+)	34
180HF 35				1.608 (4)+	35
180HF 36				1.609 (3-)	36
180HF 37				1.613 (6-)	37

180HF	38	1.631	10+				38	0.79 PS	4
180HF	39					1.633	(2+,3,4+)		39
180HF	40					1.637	(2+)		40

180HF	41					1.650	(3-)		41
180HF	42					1.653	(10-)		42
180HF	43					1.658	(6+)		43
180HF	44					1.687			44
180HF	45					1.701	(6+)	5 NS	LT
180HF	46					1.709	(5-)		46
180HF	47					1.724	(6+)		47
180HF	48					1.725	(2+,3+,4+)		48
180HF	49					1.739			49
180HF	50					1.743	(5)+		50

180HF	51					1.743	(2+)		51
180HF	52					1.756			52
180HF	53					1.765	(7-)		53
180HF	54					1.788	(6-)		54
180HF	55					1.814	(3-)		55
180HF	56					1.819	(5-)		56
180HF	57					1.821	(3-)		57
180HF	58					1.828			58
180HF	59			1.839	3-				59
180HF	60					1.862			60

180HF	61					1.889			61
180HF	62					1.893	(7+)		62
180HF	63					1.902			63
180HF	64					1.904			64
180HF	65					1.904	(1,2+)		65
180HF	66					1.910	(4+,3)		66
180HF	67			1.926	3-				67
180HF	68					1.929	(7+)		68
180HF	69					1.932			69
180HF	70					1.937			70

180HF	71					1.938	(8-)		71
180HF	72					1.945	(2+)		72
180HF	73					1.946	(11-)		73
180HF	74					1.949			74
180HF	75					1.971			75
180HF	76					2.023			76
180HF	77					2.034			77
180HF	78					2.047	(8+)		78
180HF	79					2.059			79
180HF	80					2.075			80

180HF	81					2.078			81
180HF	82					2.111	(8+)		82

180HF 83				2.120	1,2	83	0.46 PS	22
180HF 84				2.134	(8+)	84		
180HF 85				2.134	(9-)	85		
180HF 86				2.147		86		
180HF 87				2.151		87		
180HF 88			2.174	3-		88		
180HF 89				2.183		89		
180HF 90				2.197		90		

180HF 91				2.201		91		
180HF 92				2.216		92		
180HF 93				2.243		93		
180HF 94				2.246		94		
180HF 95				2.253		95		
180HF 96				2.262		96		
180HF 97				2.262	(12-)	97		
180HF 98				2.271		98		
180HF 99				2.273		99		
180HF 100		2.274	12+			100	0.37 PS	3

180HF 101				2.276		101		
180HF 102				2.293		102		
180HF 103				2.301		103		
180HF 104				2.303		104		
180HF 105				2.317	(4-,5-)	105		
180HF 106				2.321		106		
180HF 107				2.335		107		
180HF 108				2.341		108		
180HF 109				2.348		109		
180HF 110				2.350	(10-)	110		

180HF 111				2.352	(9+)	111		
180HF 112				2.369		112		
180HF 113				2.378	1	113	0.29 PS	7
180HF 114				2.389	(1,2+)	114		
180HF 115		2.391	4+			115		
180HF 116				2.399	(9+)	116		
180HF 117				2.414		117		
180HF 118				2.425	(10+)	118	2 NS	LT
180HF 119			2.447	5-		119		
180HF 120				2.466		120		

180HF 121				2.472		121		
180HF 122				2.477	(4,5)	122		
180HF 123			2.482	3-		123		
180HF 124		2.486	12+			124	0.94 US	11
180HF 125				2.493	1	125	62 FS	13
180HF 126				2.505		126		
180HF 127				2.533	(10+)	127		
180HF 128			2.533	3-		128		

180HF 129				2.537	(14+)	129	10 US	GT
180HF 130				2.549		130		

180HF 131				2.561		131		
180HF 132				2.582	1	132	10 FS	3
180HF 133				2.588	(11-)	133		
180HF 134		2.591	4+			134		
180HF 135				2.603	(13-)	135		
180HF 136				2.614	(10+)	136		
180HF 137				2.615	(10+)	137		
180HF 138				2.617	1	138	9.5 FS	8
180HF 139				2.624	(13+)	139		
180HF 140				2.680	4+,5-	140		

180HF 141				2.682		141		
180HF 142				2.706		142		
180HF 143				2.713	1	143	12.4 FS	24
180HF 144				2.731		144		
180HF 145				2.741		145		
180HF 146				2.772		146		
180HF 147				2.784		147		
180HF 148				2.796		148		
180HF 149				2.797		149		
180HF 150				2.806		150		

180HF 151				2.807	(14+)	151		
180HF 152				2.812	1	152	0.16 PS	3
180HF 153				2.839		153		
180HF 154				2.848	(12-)	154		
180HF 155				2.850		155		
180HF 156				2.859		156		
180HF 157				2.873		157		
180HF 158				2.880	1,2	158	0.25 PS	7
180HF 159				2.892	1	159	20.0 FS	21
180HF 160				2.897	(11+)	160		

180HF 161				2.914		161		
180HF 162				2.948	1	162	13.0 FS	9
180HF 163				2.961	(11+)	163		
180HF 164				2.965	(14-)	164		
180HF 165				2.993	1	165	47 FS	5
180HF 166				3.000		166		
180HF 167		3.005	14+			167		
180HF 168				3.011	1	168	30 FS	6
180HF 169				3.023		169		
180HF 170				3.050		170		

180HF 171				3.059		171		
180HF 172				3.069	1	172	14.1 FS	13
180HF 173				3.082	1	173	0.17 PS	5

180HF 174			3.084		174			
180HF 175			3.086	1	175	0.14 PS	3	
180HF 176			3.090		176			
180HF 177			3.101		177			
180HF 178			3.101	(15+)	178			
180HF 179			3.111	(12+)	179			
180HF 180			3.123	(13-)	180			

180HF 181			3.124		181			
180HF 182			3.126	1	182	29 FS	3	
180HF 183			3.129	(12+)	183			
180HF 184			3.132		184			
180HF 185			3.151	1	185	10 FS	4	
180HF 186			3.153		186			
180HF 187			3.163		187			
180HF 188			3.174		188			
180HF 189			3.184		189			
180HF 190			3.191	(12+)	190			

180HF 191			3.200		191			
180HF 192			3.215		192			
180HF 193			3.253		193			
180HF 194			3.254	1	194	32 FS	8	
180HF 195			3.258		195			
180HF 196			3.300		196			
180HF 197			3.304		197			
180HF 198			3.317		198			
180HF 199			3.330	1	199	95 FS	20	
180HF 200			3.330		200			

180HF 201			3.339		201			
180HF 202			3.350	(15-)	202			
180HF 203			3.384		203			
180HF 204			3.417		204			
180HF 205			3.429		205			
180HF 206			3.432	(14-)	206			
180HF 207			3.443		207			
180HF 208			3.447	(16+)	208			
180HF 209			3.469		209			
180HF 210			3.483		210			

180HF 211			3.489		211			
180HF 212			3.500		212			
180HF 213			3.507	1,2	213	77 FS	16	
180HF 214			3.516		214			
180HF 215			3.527		215			
180HF 216			3.529		216			
180HF 217			3.560	1	217	12.8 FS	23	
180HF 218			3.569	1	218	30 FS	6	
180HF 219			3.584	1	219	7.3 FS	19	

180HF 220			3.592	1	220	16 FS	4

180HF 221			3.596		221		
180HF 222			3.598	(18-)	222	90 US	10
180HF 223			3.606	(13+)	223		
180HF 224			3.615	1	224	13.0 FS	13
180HF 225			3.625		225		
180HF 226			3.627	1	226	51 FS	12
180HF 227			3.641		227		
180HF 228			3.654		228		
180HF 229			3.672		229		
180HF 230			3.678	(14+)	230		

180HF 231			3.681		231		
180HF 232			3.734	(15-)	232		
180HF 233			3.751		233		
180HF 234			3.755	(16-)	234		
180HF 235			3.767	1	235	10.0 FS	14
180HF 236			3.774	1	236	4.7 FS	19
180HF 237			3.782	(14+)	237		
180HF 238			3.786	1	238	8.6 FS	18
180HF 239			3.804	1	239	16 FS	3
180HF 240	3.813	16+			240		

180HF 241			3.818	1	241	40 FS	8
180HF 242			3.830	1	242	25 FS	5
180HF 243			3.836	1	243	14.7 FS	24
180HF 244			3.848		244		
180HF 245			3.852	1	245	7.0 FS	14
180HF 246			3.856		246		
180HF 247			3.862	1,2	247	69 FS	22
180HF 248			3.869		248		
180HF 249			3.880		249		
180HF 250			3.889	1	250	12.6 FS	16

180HF 251			3.908		251		
180HF 252			3.927		252		
180HF 253			3.928	1	253	22 FS	4
180HF 254			3.948	1	254	25 FS	6
180HF 255			3.958		255		
180HF 256			3.968	1	256	18 FS	4
180HF 257			3.971		257		
180HF 258			3.975		258		
180HF 259			3.978	1	259	1.8 FS	9
180HF 260			3.988		260		

180HF 261			3.992		261		
180HF 262			4.003		262		
180HF 263			4.091	(16-)	263		
180HF 264			4.138		264		

180HF 265				4.180	(17-)	265
180HF 266				4.270	(16+)	266
180HF 267				4.324	(15+)	267
180HF 268				4.332		268
180HF 269				4.356		269
180HF 270				4.413	(17-)	270

180HF 271				4.423		271
180HF 272		4.682	18+			272
180HF 273				4.808		273
180HF 274				4.853		274
180HF 275				4.916		275
180HF 276				4.924	(18+)	276
180HF 277				4.965		277
180HF 278				5.048		278
180HF 279				5.058		279
180HF 280		5.554	20+			280

180HF 281				5.629	(20+)	281
180HF 282				5.666	(20+)	282

S-p = 8.009 (0.005)-----
S-n = 7.388 (0.002)-----
S-2p = 14.662 (0.010)-----
S-2n = 13.487 (0.002)-----
S-alpha= -1.287 (0.000)-----

S+p = -5.948 (0.002)
S+n = -5.695 (0.002)
S+2p = -13.045 (0.002)
S+2n = -12.413 (0.006)
S+alpha = 1.649 (0.002)

gap p = 2.061 (0.006)
gap n = 1.693 (0.003)
gap 2p = 1.617 (0.010)
gap 2n = 1.074 (0.007)
gap alpha = 0.361 (0.002)