

^{169}Hf $Z = 72$ $N = 97$ adopted link ENSDF link

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

BE = 1362.441 (0.028) MeV

Qbeta+ = 3.365 (0.028) MeV

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

S-alpha=	-3.153	(0.039)	-----		
169HF	1		0.000	5/2-	1 3.24 M 4
169HF	2			0.029 (7/2)+	2 82 NS +40-15
169HF	3			0.037 (9/2+)	3
169HF	4			0.038 (5/2+)	4
169HF	5			0.059 (5/2-)	5
169HF	6			0.078 (7/2-)	6
169HF	7			0.104 (11/2+)	7
169HF	8			0.145 (13/2+)	8
169HF	9			0.159 (7/2-)	9
169HF	10			0.177 (9/2-)	10

169HF	11			0.289 (9/2-)	11
169HF	12			0.303 (11/2-)	12
169HF	13			0.311 (15/2+)	13
169HF	14			0.363 (17/2+)	14
169HF	15			0.443 (11/2-)	15
169HF	16			0.444 (13/2-)	16
169HF	17			0.614 (15/2-)	17
169HF	18			0.622 (13/2-)	18
169HF	19			0.642 (19/2+)	19
169HF	20			0.689 (21/2+)	20

169HF	21			0.790 (17/2-)	21
169HF	22			0.820 (15/2-)	22
169HF	23			0.998 (19/2-)	23
169HF	24			1.028 (17/2-)	24
169HF	25			1.080 (23/2+)	25
169HF	26			1.113 (25/2+)	26
169HF	27			1.202 (21/2-)	27
169HF	28			1.443 (23/2-)	28
169HF	29			1.472 (21/2-)	29
169HF	30			1.608 (27/2+)	30

169HF	31			1.618 (29/2+)	31
169HF	32			1.662 (25/2-)	32
169HF	33			1.734 (15/2+)	33
169HF	34			1.867 (17/2+)	34
169HF	35			1.909 (25/2-)	35
169HF	36			1.941 (27/2-)	36

169HF	37				1.953	(21/2-)	37
169HF	38				2.013	(19/2+)	38
169HF	39				2.127	(25/2-)	39
169HF	40				2.141	(23/2-)	40

169HF	41				2.154	(29/2)-	41
169HF	42				2.188	(33/2+)	42
169HF	43				2.191	(21/2+)	43
169HF	44				2.211	(31/2+)	44
169HF	45				2.358	(25/2-)	45
169HF	46				2.380	(29/2-)	46
169HF	47				2.384	(23/2+)	47
169HF	48				2.484	(31/2)-	48
169HF	49				2.525	(29/2-)	49
169HF	50				2.598	(27/2-)	50

169HF	51				2.598	(25/2+)	51
169HF	52				2.667	(33/2-)	52
169HF	53				2.684	(31/2-)	53
169HF	54				2.803	(37/2+)	54
169HF	55				2.841	(27/2+)	55
169HF	56				2.857	(29/2-)	56
169HF	57				2.875	(35/2+)	57
169HF	58				2.914	(33/2-)	58
169HF	59				2.969	(33/2-)	59
169HF	60				3.066	(35/2-)	60

169HF	61				3.107	(29/2+)	61
169HF	62				3.134	(31/2-)	62
169HF	63				3.180	(35/2-)	63
169HF	64				3.221	(37/2-)	64
169HF	65				3.396	(31/2+)	65
169HF	66				3.425	(33/2-)	66
169HF	67				3.453	(41/2+)	67
169HF	68				3.472	(37/2-)	68
169HF	69				3.515	(37/2-)	69
169HF	70				3.589	(39/2+)	70 0.29 PS 19

169HF	71				3.672	(39/2-)	71
169HF	72				3.700	(33/2+)	72
169HF	73				3.729	(35/2-)	73
169HF	74				3.769	(39/2-)	74
169HF	75				3.833	(41/2-)	75
169HF	76				4.020	(35/2+)	76
169HF	77				4.041	(41/2+)	77
169HF	78				4.041	(37/2-)	78
169HF	79				4.053	(41/2-)	79
169HF	80				4.141	(45/2+)	80 0.29 PS 5

169HF	81				4.156	(41/2-)	81

169HF	82			4.321	(43/2-)	82	0.20	PS	+11-7
169HF	83			4.343	(43/2+)	83	0.20	PS	+13-9
169HF	84			4.350	(37/2+)	84			
169HF	85			4.361	(39/2-)	85			
169HF	86			4.442	(43/2-)	86			
169HF	87			4.510	(45/2-)	87	0.23	PS	4
169HF	88			4.685	(39/2+)	88			
169HF	89			4.688	(41/2-)	89			
169HF	90			4.706	(45/2-)	90			

169HF	91			4.730	(45/2+)	91			
169HF	92			4.828	(45/2-)	92			
169HF	93			4.882	(49/2+)	93			
S-p	=	4.933	(0.047)	-----					
169HF	94			5.021	(43/2-)	94			
169HF	95			5.027	(41/2+)	95			
169HF	96			5.035	(47/2-)	96	0.21	PS	+10-14
169HF	97			5.132	(47/2+)	97	0.15	PS	5
169HF	98			5.174	(47/2-)	98			
169HF	99			5.251	(49/2-)	99	0.13	PS	+5-4
169HF	100			5.362	(45/2-)	100			

169HF	101			5.371	(43/2+)	101			
169HF	102			5.425	(49/2-)	102			
169HF	103			5.496	(49/2+)	103			
169HF	104			5.544	(49/2-)	104			
169HF	105			5.689	(53/2+)	105	0.055	PS	21
169HF	106			5.712	(47/2-)	106			
169HF	107			5.818	(51/2-)	107	0.11	PS	3
169HF	108			5.956	(51/2-)	108			
169HF	109			5.958	(51/2+)	109	0.14	PS	10
169HF	110			6.046	(53/2-)	110	0.049	PS	21

169HF	111			6.077	(49/2-)	111			
169HF	112			6.098	(47/2+)	112			
169HF	113			6.213	(53/2-)	113			
169HF	114			6.309	(53/2+)	114			
169HF	115			6.326	(53/2-)	115			
169HF	116			6.455	(51/2-)	116			
169HF	117			6.565	(57/2+)	117	0.11	PS	+4-6
169HF	118			6.668	(55/2-)	118			
169HF	119			6.790	(55/2-)	119			
169HF	120			6.830	(55/2+)	120			

169HF	121			6.854	(53/2-)	121			
169HF	122			6.895	(57/2-)	122	0.09	PS	4
169HF	123			7.076	(57/2-)	123			
169HF	124			7.171	(57/2+)	124			
169HF	125			7.180	(57/2-)	125			
S-n	=	7.428	(0.040)	-----					

169HF 126				7.509	(61/2+)	126	0.09 PS	3
169HF 127				7.581	(59/2-)	127		
169HF 128				7.677	(59/2-)	128		
169HF 129				7.752	(59/2+)	129		
169HF 130				7.806	(61/2-)	130	0.11 PS	6

169HF 131				8.010	(61/2-)	131		
169HF 132				8.089	(61/2+)	132		
169HF 133				8.099	(61/2-)	133		
169HF 134				8.514	(65/2+)	134		
169HF 135				8.539	(63/2-)	135		
169HF 136				8.569	(63/2-)	136		
S-2p	=	8.705	(0.028)	-----				
169HF 137				8.718	(63/2+)	137		
169HF 138				8.785	(65/2-)	138		
169HF 139				8.997	(65/2-)	139		
169HF 140				9.054	(65/2+)	140		

169HF 141				9.405	(67/2-)	141		
169HF 142				9.575	(69/2+)	142		
169HF 143				9.719	(67/2+)	143		
169HF 144				9.827	(69/2-)	144		
169HF 145				9.995	(69/2-)	145		
S-p	=	4.933	(0.047)	-----				
S-n	=	7.428	(0.040)	-----				
S-2p	=	8.705	(0.028)	-----				
S-2n	=	17.392	(0.040)	-----				
S-alpha	=	-3.153	(0.039)	-----				
S+p	=	-2.710	(0.040)					
S+n	=	-9.608	(0.040)					
S+2p	=	-6.947	(0.040)					
S+2n	=	-16.857	(0.040)					
S+alpha	=	3.565	(0.040)					
gap p	=	2.224	(0.062)					
gap n	=	-2.180	(0.056)					
gap 2p	=	1.758	(0.049)					
gap 2n	=	0.535	(0.056)					
gap alpha	=	0.411	(0.055)					