

^{231}Pa $Z = 91$ $N = 140$ adopted link ENSDF link

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

BE = 1759.857 (0.002) MeV

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

S-alpha=	-5.150	(0.003)	-----		
231PA 1			0.000	3/2-	1 3.276E4 Y 11
231PA 2			0.009	1/2-	2
231PA 3			0.059	7/2-	3 274 PS 10
231PA 4			0.078	5/2-	4
231PA 5	0.084	5/2+			5 45.1 NS 13
231PA 6	0.101	7/2+			6 0.7 NS LE
231PA 7	0.102	3/2+			7 0.7 NS LE
231PA 8				0.112 (9/2+)	8
231PA 9				0.134 (11/2+)	9
231PA 10			0.169	11/2-	10

231PA 11				0.171 (11/2+)	11
231PA 12				0.174 (5/2)-	12
231PA 13	0.183	5/2+			13 0.19 NS LE
231PA 14				0.189 (13/2+)	14
231PA 15				0.193 (9/2-)	15
231PA 16				0.218 (7/2)-	16
231PA 17	0.247	7/2+			17
231PA 18				0.274 (1/2+)	18
231PA 19				0.275 (9/2-)	19
231PA 20				0.297	20

231PA 21				0.301 (15/2+)	21
231PA 22				0.305 (9/2+)	22
231PA 23				0.312 (5/2+)	23
231PA 24				0.317 (17/2+)	24
231PA 25				0.318 (3/2+)	25
231PA 26			0.320	3/2-	26
231PA 27			0.329	15/2-	27
231PA 28				0.345 (11/2-)	28
231PA 29				0.352 (13/2-)	29
231PA 30				0.352 (5/2-)	30

231PA 31				0.385	31
231PA 32				0.392 (9/2+)	32
231PA 33				0.396 (7/2-)	33
231PA 34				0.406 (11/2+)	34
231PA 35				0.409 (7/2+)	35
231PA 36				0.425 (13/2-)	36
231PA 37				0.443	37

231PA 38				0.451	(9/2-)	38
231PA 39				0.488	(19/2+)	39
231PA 40				0.495	(21/2+)	40

231PA 41				0.507		41
231PA 42				0.513		42
231PA 43				0.521	(15/2-)	43
231PA 44				0.525	(13/2+)	44
231PA 45				0.536	(19/2-)	45
231PA 46				0.543	(11/2+)	46
231PA 47				0.551	(17/2-)	47
231PA 48				0.567		48
231PA 49				0.584		49
231PA 50				0.590		50

231PA 51				0.604	(3/2-)	51
231PA 52				0.632	(5/2-)	52
231PA 53				0.678	(7/2-)	53
231PA 54				0.700		54
231PA 55				0.705	(17/2+)	55
231PA 56				0.717	(15/2+)	56
231PA 57				0.722	(25/2+)	57
231PA 58				0.729	(23/2+)	58
231PA 59				0.750		59
231PA 60				0.785	(23/2-)	60

231PA 61				0.788	(21/2-)	61
231PA 62				0.801	(11/2-)	62
231PA 63				0.815		63
231PA 64				0.857		64
231PA 65				0.874		65
231PA 66				0.902		66
231PA 67				0.918		67
231PA 68				0.927	(19/2+)	68
231PA 69				0.930	(21/2+)	69
231PA 70				0.946	(19/2+)	70

231PA 71				0.968		71
231PA 72				0.995	(29/2+)	72
231PA 73				1.020	(27/2+)	73
231PA 74				1.048		74
231PA 75				1.057	(25/2-)	75
231PA 76				1.076	(27/2-)	76
231PA 77				1.086		77
231PA 78				1.137		78
231PA 79				1.158		79
231PA 80				1.196	(23/2+)	80

231PA 81				1.221		81
231PA 82				1.309	(33/2+)	82

231PA 83				1.356	(29/2-)	83
231PA 84				1.358	(31/2+)	84
231PA 85				1.399	(31/2-)	85
231PA 86				1.662	(37/2+)	86
231PA 87				1.684	(33/2-)	87
231PA 88				1.755	(35/2-)	88
231PA 89				2.041	(37/2-)	89
231PA 90				2.140	(39/2-)	90

S-p = 4.727 (0.002)-----

S-n = 6.820 (0.004)-----

S-2p = 11.844 (0.012)-----

S-2n = 12.615 (0.004)-----

S-alpha= -5.150 (0.003)-----

S+p = -6.104 (0.003)

S+n = -5.549 (0.008)

S+2p = -10.054 (0.051)

S+2n = -12.078 (0.002)

S+alpha = 5.194 (0.002)

gap p = -1.377 (0.003)

gap n = 1.271 (0.009)

gap 2p = 1.790 (0.052)

gap 2n = 0.538 (0.004)

gap alpha = 0.044 (0.003)