

$^{233}\text{Pa}$        $Z = 91$        $N = 142$       adopted link      ENSDF link

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

BE = 1771.934 ( 0.001) MeV

Qbeta- = 0.570 ( 0.003) MeV

	Energy T	J+	J-	J-other	T1/2
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S-alpha=	-4.375 ( 0.012)				
233PA 1			0.000 3/2-		1 26.975 D 13
233PA 2			0.007 1/2-		2
233PA 3			0.057 7/2-		3
233PA 4			0.071 5/2-		4
233PA 5	0.086	5/2+			5 36.5 NS 4
233PA 6	0.095	3/2+			6
233PA 7	0.104	7/2+			7
233PA 8	0.109	9/2+			8
233PA 9				0.133 (11/2+)	9
233PA 10				0.163 (11/2-)	10
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233PA 11	0.169	1/2+			11
233PA 12	0.173	13/2+			12
233PA 13				0.179 (9/2-)	13
233PA 14	0.202	3/2+			14
233PA 15	0.212	5/2+			15
233PA 16	0.238	5/2+			16
233PA 17			0.257 5/2-		17
233PA 18				0.280 (7/2+)	18
233PA 19				0.296 (5/2+, 11/2-)	19
233PA 20	0.300	7/2+			20
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233PA 21				0.304 (9/2+)	21
233PA 22				0.306 (7/2-)	22
233PA 23				0.324 (15/2-)	23
233PA 24				0.331 (13/2-)	24
233PA 25	0.355	3/2+			25
233PA 26				0.355 (9/2-)	26
233PA 27	0.366	9/2+			27
233PA 28				0.421 (11/2-)	28
233PA 29			0.448 3/2-		29
233PA 30	0.454	3/2+			30
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233PA 31				0.488 (5/2+)	31
233PA 32				0.518 (17/2-)	32
233PA 33				0.529 (19/2-)	33
233PA 34				0.529 (13/2+)	34
233PA 35				0.554 1/2+, 3/2+	35
233PA 36	0.555	11/2+			36

233PA 37		0.585	3/2+					37
233PA 38		0.586	7/2+					38
233PA 39						0.589	(13/2+)	39
233PA 40					0.670	3/2-		40
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233PA 41						0.703	(3/2-)	41
233PA 42						0.704	(5/2-)	42
233PA 43						0.739	(21/2-)	43
233PA 44						0.749	(7/2-)	44
233PA 45						0.765	1/2+,3/2+	45
233PA 46						0.777	(23/2-)	46
233PA 47						0.803	(9/2-)	47
233PA 48		0.812	3/2+					48
233PA 49						0.852		49
233PA 50						0.871	(11/2-)	50
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233PA 51						0.872	(3/2-)	51
233PA 52						0.942	(3/2)	52
233PA 53						0.969	(1/2,3/2)	53
233PA 54						0.985	(3/2)+	54
233PA 55						0.993	(25/2-)	55
233PA 56						0.998	(9/2+)	56
233PA 57						1.019	(3/2)	57
233PA 58						1.044		58
233PA 59						1.063	(27/2-)	59
233PA 60						1.064	(3/2)	60
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233PA 61		1.073	5/2+					61
233PA 62						1.139	(1/2,3/2)	62
233PA 63						1.143		63
233PA 64		1.179	1/2+					64
233PA 65						1.240	(1/2+,3/2-)	65
233PA 66		1.274	1/2+					66
233PA 67						1.276	(29/2-)	67
233PA 68		1.318	1/2+					68
233PA 69						1.358		69
233PA 70						1.385	(31/2-)	70
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233PA 71		1.386	5/2+					71
233PA 72		1.403	5/2+					72
233PA 73						1.486	(5/2+,11/2-)	73
233PA 74						1.557		74
233PA 75						1.589	(33/2-)	75
233PA 76						1.625		76
233PA 77						1.680		77
233PA 78						1.738	(35/2-)	78
233PA 79						1.929	(37/2-)	79
233PA 80						2.122	(39/2-)	80
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233PA 81						2.297	(41/2-)	81

233PA	82				2.533	(43/2-)	82
233PA	83				2.693	(45/2-)	83
233PA	84				2.973	(47/2-)	84
233PA	85				3.115	(49/2-)	85
233PA	86				3.570	(53/2-)	86
233PA	87				4.051	(57/2)	87

S-p = 5.246 ( 0.002)-----  
 S-n = 6.528 ( 0.008)-----  
 S-2p = 12.851 ( 0.013)-----  
 S-2n = 12.078 ( 0.002)-----  
 S-alpha= -4.375 ( 0.012)-----

S+p = -6.633 ( 0.002)  
 S+n = -5.222 ( 0.004)  
 S+2p = -11.024 ( 0.002)  
 S+2n = -11.343 ( 0.014)  
 S+alpha = 4.957 ( 0.002)

gap p = -1.387 ( 0.003)  
 gap n = 1.306 ( 0.009)  
 gap 2p = 1.827 ( 0.013)  
 gap 2n = 0.734 ( 0.014)  
 gap alpha = 0.583 ( 0.012)