

Even Z
 $T_z = -1/2$

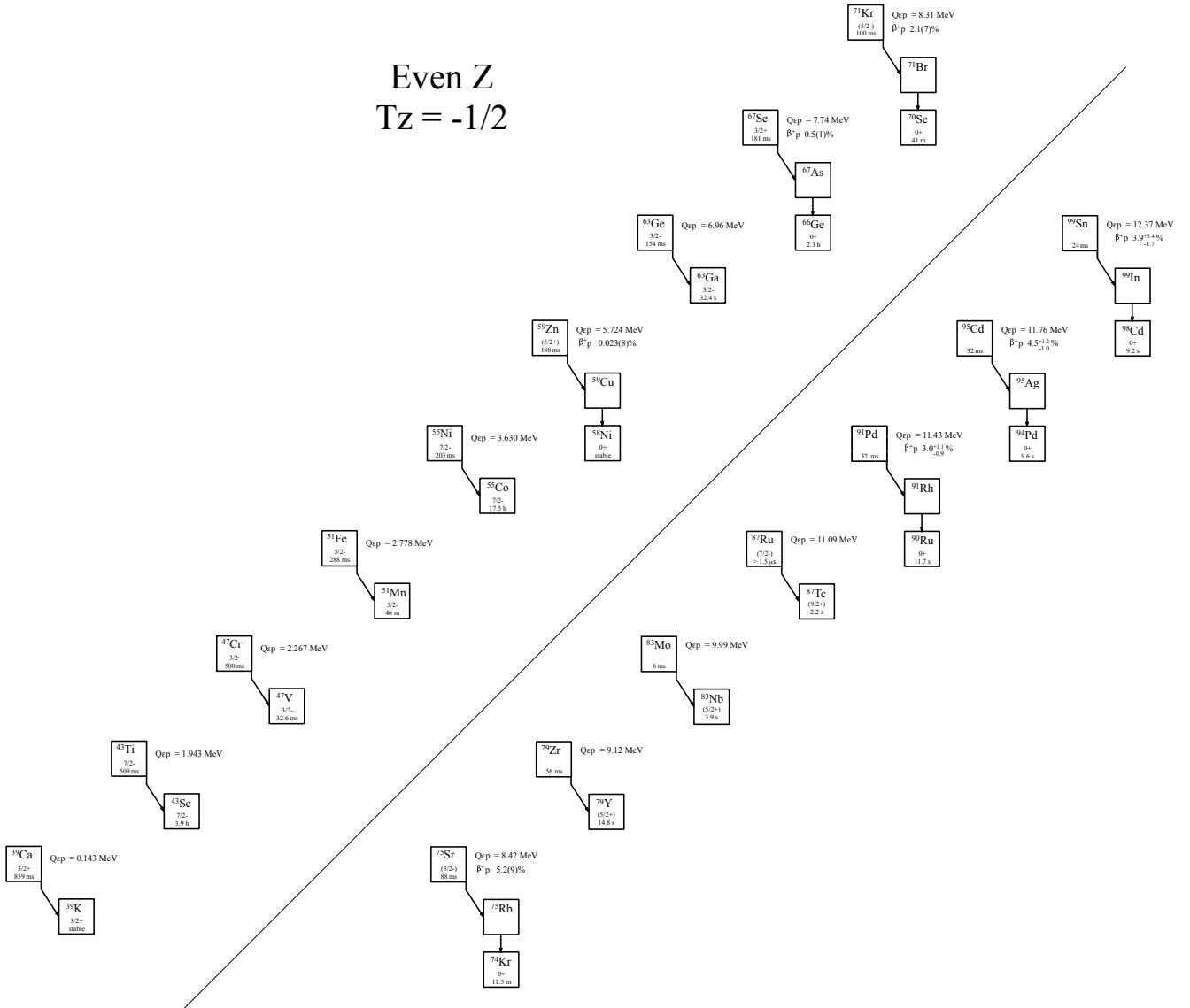


Fig. 1: Known experimental values for heavy particle emission of the even-Z $T_z = -1/2$ nuclei.

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Table 1

Observed and predicted β -delayed particle emission from the even- Z , $T_z = -1/2$ nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein. J^π values for ^{39}Ca , ^{43}Ti , ^{47}Cr , ^{51}Cr , and ^{55}Ni are taken from ENSDF.

Nuclide	J^π	$T_{1/2}$	Q_ϵ	$Q_{\epsilon p}$	$BR_{\beta p}$	$Q_{\epsilon 2p}$	$Q_{\epsilon \alpha}$	Experimental
^{39}Ca	$3/2^+$	859.4(16) ms	6.5245(6)	0.1431(6)		-10.099(1)	-0.694(1)	[1977Az01]
^{43}Ti	$7/2^-$	509(5) ms	6.8673(6)	1.943(6)		-8.3345(7)	2.066(7)	[1987Ho14]
^{47}Cr	$3/2^-$	508(10) ms	7.444(5)	2.276(5)		-8.069(5)	-0.800(65)	[1985Bu07]
^{51}Fe	$5/2^-$	288(6) ms	8.0540(14)	2.77832(14)		-6.805(2)	-0.607(1)	[2017Ku12]
^{55}Ni	$7/2^-$	203(2) ms	8.9640(6)	3.6297(6)		-5.2237(8)	0.482(1)	[2017Ku12]
^{59}Zn	$3/2^-$	174(2) ms*	9.1428(6)	5.7242(7)	0.023(8)%	-2.4480(9)	4.389(1)	[1981Ho19, 2017Ku12, 1984Ar12]
^{63}Ge	$3/2^-$	153.6(11) ms*	9.630(40)	6.960(40)		0.486(40)	7.014(40)	[2017GoZT, 2017Ku12, 2014Ro14, 2002B117]
^{67}Se	$(5/2^-)$	133(4) ms	10.010(70)	7.740(70)	0.5(1)%	1.500(70)	7.542(70)	[1995B123, 2002Lo13, 2002B117, 2014Ro14]
^{71}Kr	$(5/2^-)$	100(3) ms	10.18(13)	8.31(13)	2.1(7)%	2.20(13)	7.83(13)	[1997O11, 1995B123]
^{75}Sr	$(3/2^-)$	88(3) ms	10.60(22)	8.42(22)	5.2(9)%	2.45(22)	7.46(22)	[1995B123, 2003Hu01]
^{79}Zr		56(30) ms	11.03(31)#	9.12(30)#		3.48(30)#	8.02(30)#	[1999B108]
^{83}Mo		6_{-3}^{+30} ms	11.27(43)#	9.99(40)#		4.80(40)#	9.04(41)#	[2001K13]
^{87}Ru		>1.5 us	11.96(40)#	11.09(40)#		5.97(40)#	9.46(43)#	[1995Le14, 1995Ry03]
^{91}Pd		32(3) ms	12.40(30)#	11.43(42)#	$3.0_{-0.9}^{+1.1}$ %	6.65(42)#	9.10(42)#	[2018Pa20, 1995Le14, 1995Ry03]
^{95}Cd		32(3) ms	12.85(400)#	11.76(57)#	$4.5_{-1.0}^{+1.2}$ %	7.37(57)#	9.09(64)#	[2018Pa20, 2017Da07, 2016Ce02]
^{99}Sn		24(4) ms	13.40(50)#	12.37(58)#	$3.9_{-1.7}^{+3.4}$ %	8.35(58)#	9.51(71)#	[2018Pa20]

* [2017Ku12]

Table 2

Particle emission from the even Z , $T_z = -1/2$ nuclei. Unless otherwise stated, all Q-values and separation energies are taken from [2021Wa16] or deduced from values therein.

Nuclide	S_p	S_{2p}	Q_α
^{39}Ca	5.7709(6)	10.9130(6)	-6.6603(9)
^{43}Ti	4.484(6)	8.756(6)	-4.458(6)
^{47}Cr	4.776(5)	10.131(5)	-7.672(8)
^{51}Fe	4.8513(14)	9.44348(26)	-8.051(5)
^{55}Ni	4.6149(7)	8.9664(18)	-7.5717(16)
^{59}Zn	2.8368(7)	5.7097(8)	-4.3046(10)
^{63}Ge	2.220(40)	5.150(40)	-2.130(40)
^{67}Se	1.840(70)	4.680(70)	-2.08(80)
^{71}Kr	2.19(13)	4.47(13)	-2.17(15)
^{75}Sr	1.99(22)	4.64(22)	-2.72(25)
^{79}Zr	1.89(42)#	3.55(30)#	-2.58(37)#
^{83}Mo	1.82(50)#	3.39(41)#	-2.00(50)#
^{87}Ru	1.45(50)#	2.80(40)#	-1.82(57)#
^{91}Pd	1.83(47)#	2.38(42)#	-2.87(58)#
^{95}Cd	1.94(69)#	2.65(68)#	-3.31(71)#
^{99}Sn	1.36(66)#	1.82(72)#	-3.35(81)#

Table 3 β -p Emission from $^{59}\text{Zn}^*$, $T_{1/2} = 174(2)$ ms**, $BR_{\beta p} = 0.023(8)\%$.

E_p	$I_p(\text{rel})\%$	$I_p(\text{abs}) (X 10^{-5})\%$	$E_{\text{level}}(\text{emitter})^{***}$	$E_{\text{level}}(\text{daughter})$	coincident γ -rays
0.929(10)	16(8)	7(3)	4.348(10)	0	
1.081(5)	31(14)	14(5)	4.500(5)	0	
1.286(10)	9(7)	4(3)	4.705(10)	0	
1.354(10)	9(7)	4(3)	4.773(5)	0	
1.400(5)	51(21)	23(7)	4.819(5)	0	
1.809(5)	100	45(13)	5.228(5)	0	
1.848(5)	58(24)	26(8)	5.267(5)	0	
1.889(5)	38(17)	17(6)	5.308(5)	0	
2.060(5)	36(15)	16(5)	5.479(5)	0	
2.125(5)	62(27)	28(9)	5.544(5)	0	
2.220(10)	24(11)	11(4)	5.639(10)	0	
2.235(10)	22(11)	10(4)	5.654(10)	0	
2.289(10)	18(8)	8(3)	5.708(10)	0	
2.452(15)	36(17)	16(6)	5.871(15)	0	
2.497(15)	11(5)	5(2)	5.916(15)	0	

* All values taken from [1981Ho19], except where noted.

** [2017Ku12]

*** Calculated from proton energies and $S_p(^{59}\text{Cu}) = 3418.6(4)$ keV [2021Wa16].**References used in the Tables**

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