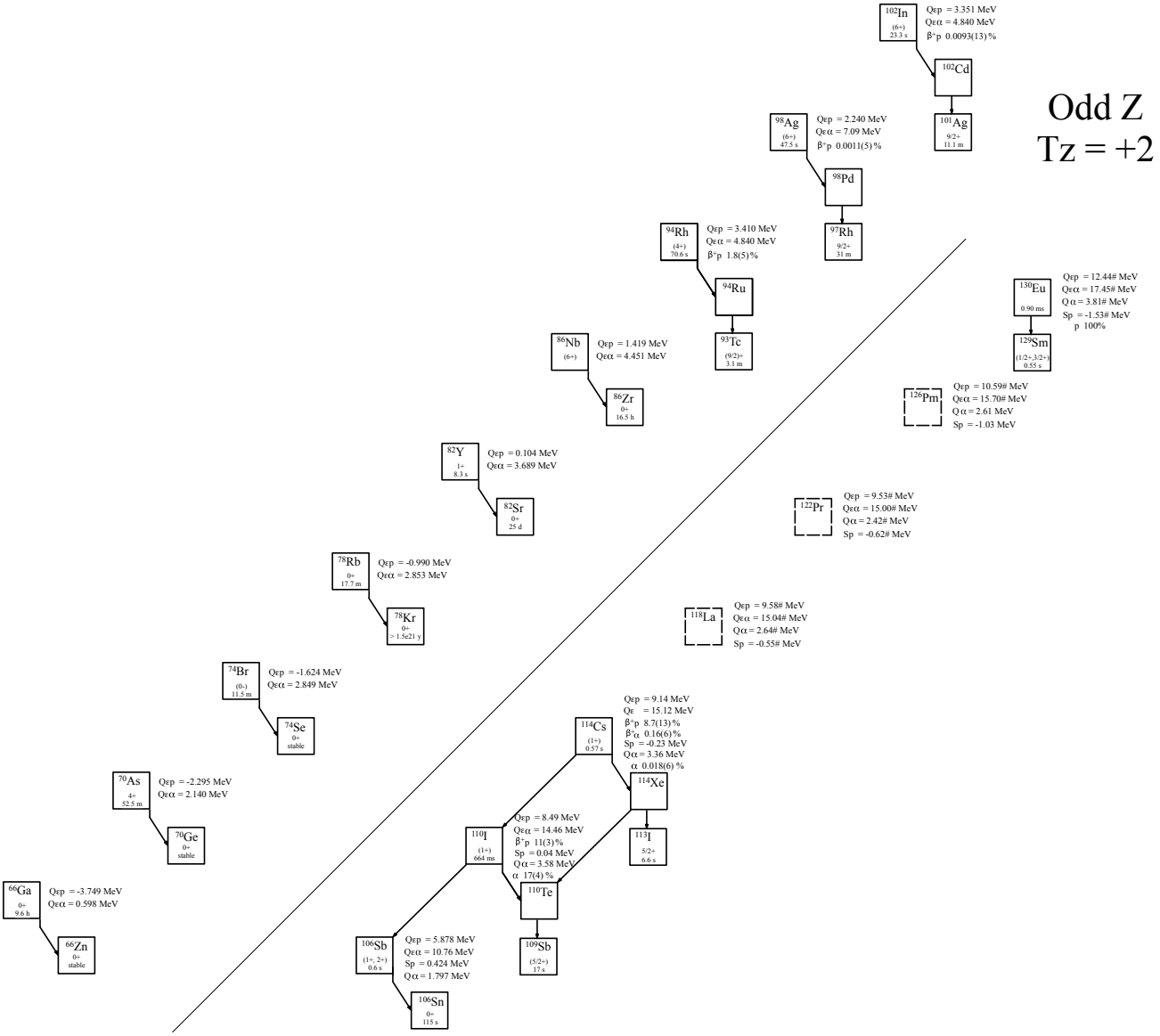

Fig. 1: Known experimental values for heavy particle emission of the odd-Z T_z= +2 nuclei.

Last updated 3/21/23

Table 1
Observed and predicted β-delayed particle emission from the odd-Z, T_z = +2 nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein. J^πvalues for ^{66}Ga, ^{70}As, ^{74}Br, ^{78}Rb, ^{82}Y, ^{86}Nb ^{90}Tc, are taken from ENSDF.

Nuclide	J^π	$T_{1/2}$	Q$_\varepsilon$	$Q_{\varepsilon p}$	$BR_{\beta p}$	$Q_{\varepsilon 2p}$	$Q_{\varepsilon\alpha}$	BR$_{\beta\alpha}$	Experimental
^{66}Ga	0^+	9.57(6) h	5.1755(8)	-3.7490(12)	——	-11.203(1)	0.598(1)		[**1956Ru45**]
^{70}As	4^+	52.5(3) m	6.2281(16)	-2.295(2)	——	-8.905(2)	2.140(2)		[**1968Bo40**]
^{74}Br	(0^-)	11.5(1) m	6.925(6)	-1.624(7)	——	-7.280(6)	2.849(6)		[**1975Sc07**]
^{78}Rb	0^+	17.66(3) m	7.243(3)	-0.990(4)	——	-6.261(3)	2.853(3)		[**1981Ba40**]
^{82}Y	1^+	8.3(2) s	7.946(8)	0.104(7)		-4.749(5)	3.689(5)		[**1998Oi02**]
^{86}Nb	(6^+)	88(1) s	8.835(7)	1.419(20)		-3.062(5)	4.451(8)		[**1985Wa10**]
^{90}Tc	(8^+)	49.2(4) s	9.448(4)	2.612(24)		-1.674(5)	4.819(4)		[**1981Ox01**]
^{94}Rh	(4^+)	70.6(6) s	9.676(5)	3.410(4)	1.8(5)%	-0.677(3)	4.840(4)		[**1982Ku15**]
^{98}Ag	(6^+)	47.5(3) s	8.250(30)	2.240(50)	0.0011(5)%	-1.568(30)	7.089(30)		[**1996He25, 1997Ra22**, 1982Ku15]
^{102}In	(6^+)	23.3(1) s	8.965(5)	3.351(7)	0.0093(13)%	-0.060(19)	8.201(7)		[**1995Sz01**]
^{106}Sb	$(1^+, 2^+)$	0.6(2) s	10.880(9)	5.878(13)		2.917(7)	10.76(7)		[**2005So06**]
^{110}I	(1^+)	664(24) ms	11.760(60)	8.490(60)	11(3)%	7.022(60)	14.459(60)	1.1(3)%	[**1977Ki11, 1981Sc17**, 1994Pa11, 1985Ti02]
^{114}Cs	(1^+)	0.57(2) s	12.400(90)	9.140(90)	8.7(13)%	8.300(90)	15.115(90)	0.16(6)%	[**1985Ti02, 1978Ro19**]
^{118}La			12.58(36)#	9.58(31)#		8.85(30)#	15.04(30)#		
^{122}Pr			13.09(64)#	10.12(58)#		9.53(58)#	15.00(54)#		
^{126}Pm			13.63(5)#	11.03(58)#		10.59(58)#	15.70(64)#		
^{130}Eu		$0.90^{+0.49}_{-0.29}$ ms	14.19(67)#	12.38(62)#		12.44(58)#	17.45(62)#		[**2004Da04**]

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

Nuclide	S$_p$	BR$_{1p}$	S$_{2p}$	Q$_\alpha$	BR$_\alpha$	Experimental
^{66}Ga	5.101(1)	——	12.877(1)	-3.361(1)	——	
^{70}As	7.781(1)	——	17.921(2)	-5.077(1)	——	
^{74}Br	4.350(9)	——	11.636(7)	-3.379(6)	——	
^{78}Rb	4.055(4)	——	11.224(10)	-4.072(7)	——	
^{82}Y	3.825(6)	——	10.467(6)	-3.554(6)	——	
^{86}Nb	3.248(8)	——	9.818(7)	-3.495(8)	——	
^{90}Tc	2.999(4)	——	9.130(60)	-4.015(6)	——	
^{94}Rh	2.980(4)	——	8.560(5)	-4.608(4)	——	
^{98}Ag	2.550(30)	——	7.960(30)	-2.580(30)	——	
^{102}In	2.147(5)	——	7.135(7)	-0.050(30)	——	
^{106}Sb	0.424(8)	——	4.869(9)	1.797(9)		
^{110}I	0.040(60)	——	2.600(50)	3.536(10)*	17(4)%	[**1981Sc17, 1991He21, 1978Ro19**, 1994Pa11, 1985Ti02]
^{114}Cs	-0.230(90)		2.200(90)	3.360(60)	0.018(6)%	[**1994Pa11, 1985Ti02, 1981Sc17**, 1980Ro04, 1978Ro19, 1996He25]
^{118}La	-0.55(39)#		2.16(32)#	2.64(31)#		
^{122}Pr	-0.62(64)#		1.79(58)#	2.42(58)#		
^{126}Pm	-1.03(64)#		1.18(64)#	2.610(71)#		
^{130}Eu	-1.028(15)**	100%	-0.13(62)#	3.81(74)#		[**2004Da04**, 2003SeZZ, 2002Ma61]

* From α decay to ground state of ^{106}Sb [1991He21, 1978Ro19], 3.580(50) in [2021Wa16].
** From p emission to the ground state of ^{129}Sm [2004Da04], -1.53(20)# in [2021Wa16].

Table 3
direct α emission from ^{110}I, $J^\pi = (1^+)$, $T_{1/2}$ = 664(24) ms*, BR_α = 17(4)%**.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	J^π_f	$E_{daughter}$(^{106}Sb)	coincident γ-rays
3.536(10)	3.447(10)***	100%	17(4)%**	$(1^+, 2^+)$	0.0	——

*Weighted average of 0.69(4) s [1977Ki11] and 0.65(3) s [1981Sc17].
** [1981Sc17]
*** Weighted average of 3.457(10) [1991He21], and 3.424(15) [1978Ro19].

Table 4
direct α emission from ^{114}Cs, $J^{\pi} = (1^{+})$, $T_{1/2} = 0.57(2)$ s*, $BR_{\alpha} = 0.018(6)\%$*

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J^{π}_{f}	$E_{daughter}(^{110}I)$	coincident γ-rays
3.351(30)**	3.233(30)	100%	0.018(6)%***	(1^{+})	0.0	——

* [1978Ro19].
** Weighted average of 3.239(30) [1981Sc17], and 3.226(30) MeV [1980Ro04].
*** [1994Pa11]

Table 5
β-p emission from ^{114}Cs*, $BR_{\beta p} = 8.7(13)\%$.

E_{p}(c.m.)	I_{p}(rel)	I_{p}(abs)	$E_{emitter}$ (^{114}Xe)	$E_{daughter}(^{113}I)$	coincident γ-rays
	14.4(43)%	1.25(19)%			0.0307(5)
	11.7(1.2)%	1.02(15)%			0.121.2(5)
	7.5(8)%	0.65(10)%			0.2388(5)
	3.2(8)%	0.28(14)%			0.4004(5)
	3.9(10)%	0.34(5)%			0.4035(5)

* All values from [1985Ti02].

Table 6
β-α emission from ^{114}Cs*, $BR_{\beta p} = 0.16(6)\%$.

E_{α}(c.m.)	I_{α}(rel)	I_{α}(abs)	$E_{emitter}$ (^{114}Xe)	$E_{daughter}(^{110}Te)$	coincident γ-rays
	17(8)%	0.027(10)%		0.6572(3)	0.6572(3)

* All values from [1985Ti02].

Table 7
direct proton emission from ^{130}Eu*, $J^{\pi} = T_{1/2} = 0.90^{+0.49}_{-0.29}$ ms, $BR_{p} = 100\%$.

E_{p}(c.m.)	E_{p}(lab)	I_{p}(abs)	J^{π}_{f}	$E_{daughter}(^{129}Sm)$	coincident γ-rays
1.028(15)	1.020(15)	100%	$(1/2^{+}, 3/2^{+})$	0.0	——

*All values from [2004Da04].

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