

Table 1

Observed and predicted β -delayed particle emission from the even- Z , $T_z = -1$ nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein.

Nuclide	Ex	J^π	$T_{1/2}$	Q_ε	$Q_{\varepsilon p}$	$BR_{\beta p}$	$Q_{\varepsilon 2p}$	Experimental
³⁰ S		0 ⁺	1.178(5) s	6.1416(2)	0.5471(4)		-11.7866(2)	[1980Wi13]
³⁴ Ar		0 ⁺	846.46(35) ms	6.06179(6)	0.9186(1)		-8.6514(1)	[2020Ia01]
³⁸ Ca		0 ⁺	443.63(35) ms	6.74226(6)	1.6002(3)		-7.1145(2)	[2015Bi02]
⁴² Ti		0 ⁺	211.7(19) ms	7.01648(22)	2.7446(2)		-6.1469(3)	[2015Mo01]
⁴⁶ Cr		0 ⁺	224.3(13) ms	7.604(11)	2.250(11)		-6.234(11)	[2015Mo01]
⁵⁰ Fe		0 ⁺	152.1(6) ms	8.151(8)	3.567(9)		-4.576(5)	[2017Ku12, 2017RuZX]
⁵⁴ Ni		0 ⁺	114.2(3) ms	8.732(5)	4.380(5)		-3.145(5)	[2012MoZW]
^{54m} Ni	6.4574(9)	10 ⁺	155(3) ns	15.189(5)	10.837(5)		3.312(5)	[2021Gi18, 2008Ru09]
⁵⁸ Zn		0 ⁺	86(2) ms*	9.370(50)	6.500(50)	0.7(1)%**	-0.838(50)	[2020Ci04, 2017Ku12, 2012OrZY, 2009Fu15, 2005Ka46, 2002Lo13, 1998Jo18]
⁶² Ge		0 ⁺	82.9(14) ms	10.25(14)#	6.92(14)#		1.63(14)#	[2014Gr10]
⁶⁶ Se		0 ⁺	42(12) ms	10.37(20)#	7.53(20)#		2.60(20)#	[2002Bi17]
⁷⁰ Kr		0 ⁺	40(6) ms	10.33(20)#	8.05(20)#	<1.3%	3.22(20)#	[2014Ro14]
⁷⁴ Sr		0 ⁺	27(8) ms	11.09(10)#	8.44(10)#		3.65(10)#	[2014He29]
⁷⁸ Zr		0 ⁺	>170 ns	11.32(50)#	9.67(40)#		5.05(40)#	[2001Ki13]
⁸² Mo		0 ⁺	>400 ns	11.44(50)#	9.80(41)#		6.20(40)#	[2017Su26]
⁸⁶ Ru		0 ⁺	>400 ns	11.80(50)#	10.45(40)#		6.85(40)#	[2017Su26]
⁹⁰ Pd		0 ⁺	>760 ns	11.92(45)#	11.26(50)#		7.38(40)#	[2016Ce02]
⁹⁴ Cd		0 ⁺	>760 ns	11.96(64)#	11.57(58)#		7.98(50)#	[2016Ce02]
⁹⁸ Sn		0 ⁺		11.55 ^c	10.66 [@]		7.40 ^b	

* [2017Ku12]

** [2020Ci04]

@ Predictions taken from [1995Mo29].

Table 2

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

Nuclide	S_p	BR_p	S_{2p}	Q_α	$Q_{\varepsilon\alpha}$	$BR_{\beta\alpha}$	Experimental
³⁰ S	4.3954(4)		7.14440(21)	-9.34317(23)	-4.2742(2)	—	
³⁴ Ar	4.6639(4)		6.94070(8)	-6.74395(22)	-0.6024(1)	—	
³⁸ Ca	4.54727(22)		6.4049(2)	-6.10513(21)	-0.0434(2)	—	
⁴² Ti	3.75096(27)		4.83589(27)	-5.4708(3)	1.2714(4)		
⁴⁶ Cr	4.874(11)		6.501(11)	-6.792(11)	0.224(11)		
⁵⁰ Fe	4.146(9)		6.233(11)	-7.430(14)	0.175(8)		
⁵⁴ Ni	3.908(5)		5.524(5)	-7.227(10)	0.924(5)		
^{54m} Ni**	-2.549(5)	49.5(21)%	-0.933(5)	-0.779(10)	7.381(5)		[2021Gi18, 2008Ru09]
⁵⁸ Zn	2.280(50)		2.970(50)	-5.450(50)	3.285(50)		
⁶² Ge	2.29(15)#		2.54(14)#	-2.27(15)#	7.10(14)#		
⁶⁶ Se	2.01(22)#		1.92(20)#	-1.95(24)#	7.90(20)#		
⁷⁰ Kr	2.13(21)#		1.49(20)#	-1.87(28)#	8.50(20)#		
⁷⁴ Sr	2.11(11)#		1.47(10)#	-2.15(22)#	8.17(10)#		
⁷⁸ Zr	1.70(45)#		1.18(40)#	-2.45(41)#	8.64(40)#		
⁸² Mo	1.30(57)#		0.19(50)#	-1.95(57)#	9.38(50)#		
⁸⁶ Ru	1.21(57)#		0.18(50)#	-1.83(57)#	9.62(50)#		
⁹⁰ Pd	1.35(54)#		-0.50(500)#	-2.36(57)#	9.44(50)#		
⁹⁴ Cd	1.33(64)#		0.24(61)#	-3.16(64)#	8.77(54)#		
⁹⁸ Sn	1.65*		1.31*	-4.57*	7.02*		

* Predictions taken from [1995Mo29].

** Excitation energy = 6.4574(9) MeV [2008Ru09].

Table 3Direct proton emission from $^{54m}\text{Ni}^*$, Ex. = 6.4574(9) MeV, $T_{1/2} = 155(3)$ ns, $\text{BR}_p = 49.5(21)\%$.

$E_p(\text{lab})$	$E_p(\text{c.m.})$	$I_p(\text{rel})$	$I_p(\text{abs})$	$E_{\text{daughter}}(^{53}\text{Co})$	coincident γ -rays
1.1979(44)	1.2205(45)	100(5) %	28.4(13) %	1.3270(9)	1.327
2.5002(43)	2.5477(44)***	74(7) %	21.1(16) %	0.0	—

* All values taken from [2021Gi18].

** [2008Ru09].

*** [2021Gi18] uses the masses of ^{53}Co and ^{53m}Co From [2010Ka26] to get this value.**References used in the Tables**

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