

Even Z  
 $T_z = +3/2$

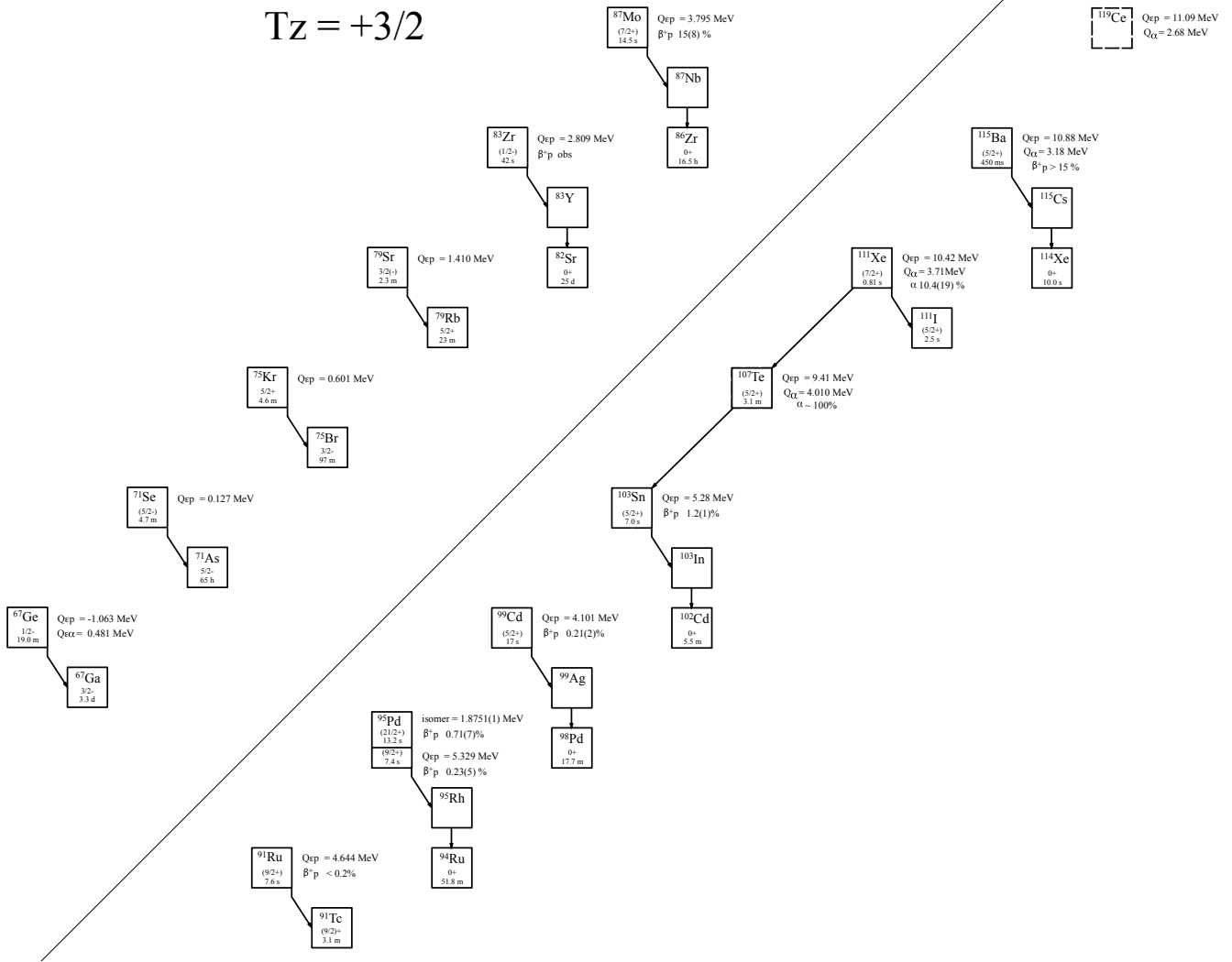


Fig. 1: Known experimental values for heavy particle emission of the even-Z  $T_z = +3/2$  nuclei.

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**Table 1**

Observed and predicted  $\beta$ -delayed particle emission from the even- $Z$ ,  $T_z = +3/2$  nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein.  $J^\pi$  values for  $^{67}\text{Ge}$ ,  $^{71}\text{Se}$ ,  $^{75}\text{Kr}$ ,  $^{79}\text{Sr}$ ,  $^{83}\text{Zr}$  are taken from ENSDF.

Nuclide	Ex	$J^\pi$	$T_{1/2}$	$Q_\epsilon$	$Q_{\epsilon p}$	$BR_{\beta p}$	$Q_{\epsilon 2p}$	$Q_{\epsilon\alpha}$	Experimental
$^{67}\text{Ge}$		$1/2^-$	19.0(3) m	4.205(4)	-1.063(4)	—	-9.988(4)	0.481(4)	[1969Ba07]
$^{71}\text{Se}$		$(5/2^-)$	4.74(5) m	4.747(5)	0.1266(29)	—	-8.397(3)	1.308(3)	[1980Te01]
$^{75}\text{Kr}$		$5/2^+$	4.60(7) m	4.783(9)	0.601(8)	—	-7.949(9)	1.144(9)	[1995BeZS]
$^{79}\text{Sr}$		$3/2^{(-)}$	2.31(6) m	5.323(8)	1.410(7)	—	-6.823(8)	1.202(8)	[1981Li12]
$^{83}\text{Zr}$		$(1/2^-)$	42(2) s	6.294(20)	2.809(9)	obs	-5.033(8)	2.466(6)	[2015Mc011983Ha06]
$^{87}\text{Mo}$		$(7/2^+)$	14.5(3) s	6.990(7)	3.795(5)	15(8)%	-3.621(19)	2.896(19)	[1997Hu07, 1983Ha06, 1981Mi15]
$^{91}\text{Ru}$		$(9/2^+)$	7.6(2) s	7.747(3)	4.644(4)	<0.2%*	-2.192(24)	3.209(7)	[2019Pa16, 1983Ha06]
$^{95}\text{Pd}$		$(9/2^+)$	7.4(5) s	8.375(5)	5.329(4)	0.23(5)%	-0.938(3)	3.596(4)	[2019Pa16]
$^{95m}\text{Pd}$	1.8751(1)	$(21/2^+)$	13.2(4) s	10.250(5)	7.204(4)	0.71(7)%	-0.937(3)	5.471(4)	[2019Pa16, 1982Ku15, 1982No06,
$^{99}\text{Cd}$		$(5/2^+)$	17(1) s	6.781(6)	4.101(5)	0.21(2)%	-1.909(40)	5.985(4)	[2019Pa16, 1978El09, 1982Ku15]
$^{103}\text{Sn}$		$(5/2^+)$	7.0(2) s	7.54(10)#	5.28(10)#	1.2(1)%	-0.33(10)#	7.20(10)#	[2005Ka34, 2004Mu32, 1981Ti03]
$^{107}\text{Te}$		$(5/2^+)$	3.1(1) ms	10.00(10)#	9.41(10)#	—	4.40(10)#	11.55(10)#	[1994Pa11, 2019Au02, 2020Ca01,
									2004Ha59, 2002Se10, 1981Sc17,
									1991He21, 1979Sc22]
$^{111}\text{Xe}$		$(7/2^+)$	0.81(20) s	10.43(12)#	10.42(12)#	—	7.15(12)#	13.71(12)#	[2010Da17, 1994Pa11, 2012Ca03
									2020Ca01, 1993HeZS, 1991He21,
									1981Sc17]
$^{115}\text{Ba}$		$(5/2^+)$	0.45(5) s	10.78(23)#	10.88(20)#	>15%	7.62(20)#	13.61(20)#	[1997Ja12, 1995Gu01]
$^{119}\text{Ce}$				11.20(58)#	11.09(54)#	—	8.09(50)#	13.46(51)#	

\* Combination of ground state and  $(1/2^-)$  isomer.

\*\* Excitation energy = 1.8751(1) MeV.

**Table 2**

Particle emission from the even- $Z$ ,  $T_z = +3/2$  nuclei. Unless otherwise stated, all Q-values and separation energies are taken from [2021Wa16] or deduced from values therein.

Nuclide	$S_p$	$S_{2p}$	$Q_\alpha$	$BR_\alpha$	Experimental
$^{67}\text{Ge}$	6.239(4)	11.340(4)	-2.885(5)	—	
$^{71}\text{Se}$	6.102(3)	10.624(3)	-2.898(5)	—	
$^{75}\text{Kr}$	6.324(10)	10.674(11)	-3.602(9)	—	
$^{79}\text{Sr}$	5.833(8)	9.888(8)	-3.581(11)	—	
$^{83}\text{Zr}$	5.137(8)	8.961(7)	-2.857(10)	—	
$^{87}\text{Mo}$	5.040(6)	8.288(7)	-3.398(7)	—	
$^{91}\text{Ru}$	4.8041(24)	7.803(4)	-3.780(4)	—	
$^{95}\text{Pd}$	4.347(5)	7.327(4)	-4.151(4)	—	
$^{95m}\text{Pd}$	2.472(5)	5.419(4)	-2.276(4)	—	
$^{99}\text{Cd}$	4.150(30)	6.703(5)	-2.390(3)	—	
$^{103}\text{Sn}$	3.69(10)#	5.83(10)#	0.41(10)#	—	
$^{107}\text{Te}$	1.47(10)#	1.90(10)#	4.010(5)#	70(30)%*	[2019Au02, 2002Se10, 1991He21,
					1981Sc17, 1979Sc22, 2020Ca01,
					2004Ha59, 1994Pa11 ]
$^{111}\text{Xe}$	1.34(13)#	1.38(12)#	3.719(10)**	10.4(19)%	[2012Ca03, 2020Ca01, 2010Da17,
					1994Pa11, 1993HeZS, 1991He21,
					1981Sc17]
$^{115}\text{Ba}$	1.52(22)#	1.30(20)#	3.18(23)#	—	
$^{119}\text{Ce}$	1.49(58)#	0.94(56)#	2.68(54)#	—	

\* The short half-life suggests  $BR_\alpha$  is  $\approx 100\%$ .

\*\* From [2010Da070], 3.710(60)# in [2021Wa16].

**Table 3**direct  $\alpha$  emission from  $^{107}\text{Te}$ ,  $J^\pi = (5/2^+)$ ,  $T_{1/2} = 3.1(1) \text{ ms}^\oplus$ ,  $BR_\alpha = 70(30)\%^*$ .

$E_\alpha(\text{c.m.})$	$E_\alpha(\text{lab})$	$I_\alpha(\text{rel})$	$I_\alpha(\text{abs})$	$J_f^\pi$	$E_{\text{daughter}}(^{110}\text{Xe})$	coincident $\gamma$ -rays	$R_0$ (fm)	HF
3.836(7)**	3.692(7)	0.67(13)%	0.47(9)%	(7/2 <sup>+</sup> )	0.1680(1)	0.1680(1)	1.672(31)	$50^{+5}_{-2}$
4.004(6)***	3.854(6)	100%	70(30)%	(5/2 <sup>+</sup> )	0.0	—	1.672(31)	$2.4^{+2.3}_{-1.2}$

<sup>⊕</sup> [1994Pa11].

\* [1981Sc17].

\*\* [2002Se10].

\*\*\* Weighted average of 3.982(15) [1979Sc22], 4.012(10) [1991He21] and 4.007(10) [2019Au02].

**Table 4**direct  $\alpha$  emission from  $^{111}\text{Xe}^*$ ,  $J^\pi = (7/2^+)$ ,  $T_{1/2} = 0.81(20) \text{ s}^{**}$ ,  $BR_\alpha = 10.4(19)\%^{***}$ .

$E_\alpha(\text{c.m.})$	$E_\alpha(\text{lab})^{**}$	$I_\alpha(\text{rel})^*$	$I_\alpha(\text{abs})$	$J_f^\pi$	$E_{\text{daughter}}(^{107}\text{Te})$	coincident $\gamma$ -rays	$R_0$ (fm)	HF
3.631(15)	3.500(15)	58(32)%	3.8(22)%	(7/2 <sup>+</sup> )	0.0903(4)	0.0903(4)	1.663(61)	$7^{+11}_{-5}$
3.719(10)	3.582(10)	100(32)%	6.5(24)%	(5/2 <sup>+</sup> )	0.0	—	1.663(61)	$14^{+21}_{-9}$

\* All values from [2012Ca03] except where noted.

\*\* [2010Da17]

\*\*\* [1979Sc22]

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