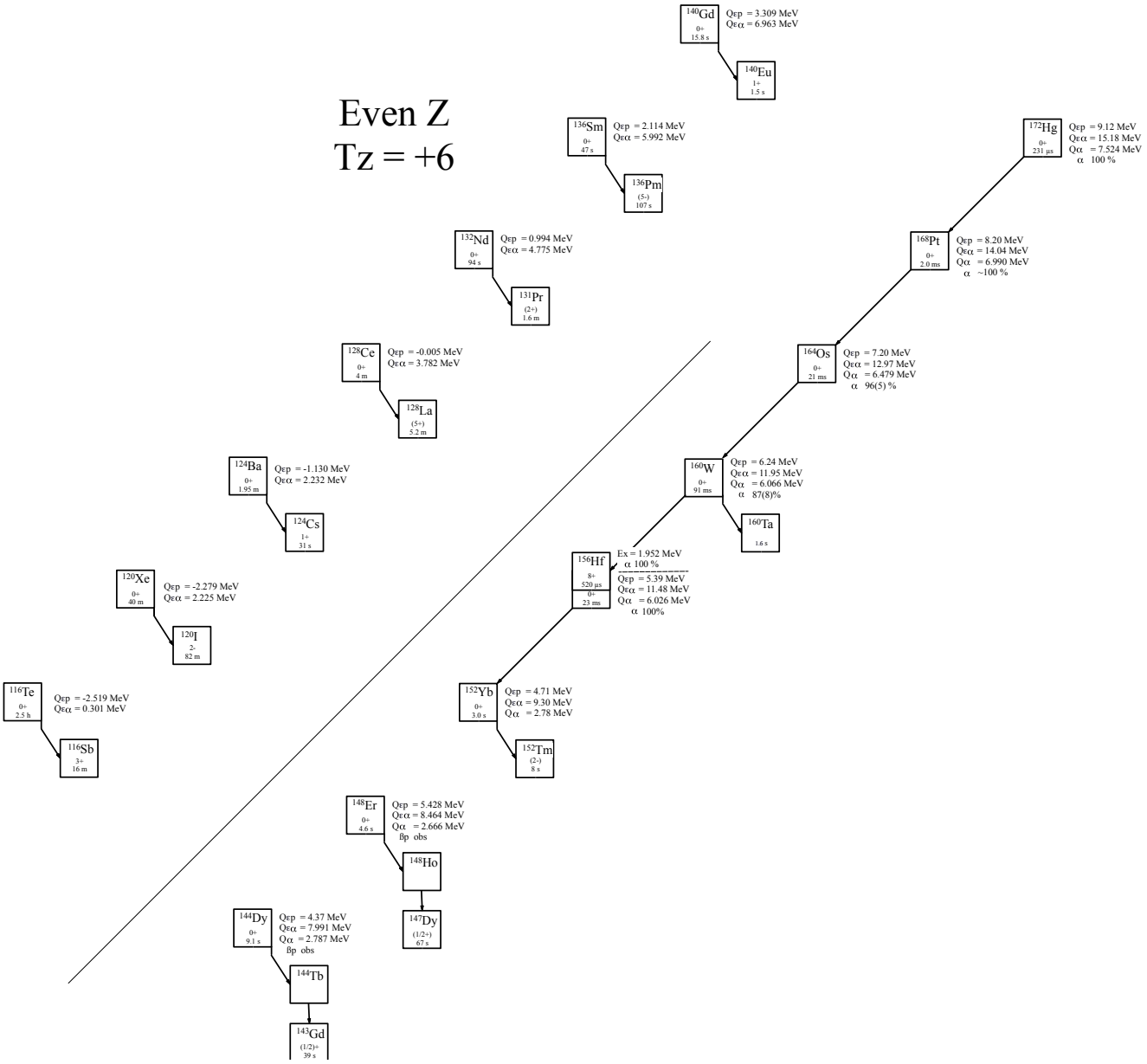

Fig. 1: Known experimental values for heavy particle emission of the even-Z T_z= +6 nuclei.

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Table 1
Observed and predicted β-delayed particle emission from the even-Z, T_z = +6 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	$Q_{\varepsilon p}$	$BR_{\beta p}$	$Q_{\varepsilon 2p}$	$Q_{\varepsilon\alpha}$	Experimental
^{116}Te		0^+	2.50(2) h	1.558(25)	-2.519(24)	——	-11.272(24)	0.301(25)	[**1961Fi05**]
^{120}Xe		0^+	40(1) m	1.575(19)	-2.279(14)	——	-8.754(12)	2.225(13)	[**1965An05**]
^{124}Ba		0^+	10.5(5) m	2.651(15)	-1.130(16)	——	-7.588(14)	2.232(20)	[**1975Ra03**]
^{128}Ce		0^+	4.0(1) m	3.090(60)	-0.005(30)	——	-5.761(30)	3.782(29)	[**2000Li08**]
^{132}Nd		0^+	94(6) s*	3.800(40)	0.994(41)		-4.376(35)	4.775(60)	[**1992Le09, 1995Bu11**]
^{136}Sm		0^+	47(2) s	4.360(70)	2.114(23)		-2.861(24)	5.992(31)	[**1988Ke03**]
^{140}Gd		0^+	15.8(4) s	5.200(60)	3.309(30)		-1.446(30)	6.963(75)	[**1991Fi03**]
^{144}Dy		0^+	9.1(5) s	5.798(29)	4.37(20)	obs	0.161(31)	7.991(52)	[**1986Wi05**]
^{148}Er		0^+	4.6(2) s	6.510(80)	5.428(14)	obs	1.707(46)	8.464(30)	[**1988To03**]
^{152}Yb		0^+	3.03(6) s	5.45(14)	4.71(15)		1.010(15)	9.30(17)	[**1987To02**]
^{156}Hf		0^+	23(1) ms	5.88(14)	5.39(15)		2.03(15)	11.48(16)	[**1996Pa01**]
^{156m}Hf	1.952(6)**	8^+	520(10) μs	7.83(15)	7.34(16)		3.98(16)	13.43(17)	[**2018Pa37**]
^{160}W		0^+	91(5) ms	6.49(14)	6.24(15)		3.31(15)	11.95(16)	[**1996Pa01**]
^{164}Os		0^+	21(1) ms	7.05(14)	7.20(16)		4.78(16)	12.97(16)	[**1996Pa01**]
^{168}Pt		0^+	2.04(16) ms***	7.66(14)	8.20(17)		6.25(17)	14.04(16)	[**2009Gi06, 2004Ke06, 1998Ki20, 1996Bi07**]
^{172}Hg		0^+	231(9) μs	8.26(14)	9.12(17)		7.54(18)	15.18(16)	[**2009Sa27**]

* Weighted average of 105(10) s [1992Le09] and 88(7) s [1995Bu11].

** Deduced from α center of mass energies of the isomer (7980(5) MeV) [2018Pa37] and ground state (6.028(4)MeV) [1996Pa01] decays, that both feed the ground state of ^{152}Yb.

*** Weighted average of 1.98(16) ms [2009Gi06], 2.1(2) ms [2004Ke06], 2.0(2) ms [1998Ki20], and 2.0(4) ms [1996Bi07].

Table 2
Particle separation and emission from the even-Z, T_z = +6 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	BR_α	Experimental
^{116}Te	5.549(29)	——	9.282(248)	0.966(24)		
^{120}Xe	5.684(25)	——	9.060(22)	0.666(27)		
^{124}Ba	5.335(17)	——	8.313(17)	0.658(17)		
^{128}Ce	4.927(38)	——	7.442(31)	1.131(31)		
^{132}Nd	4.414(53)	——	6.581(37)	1.683(37)		
^{136}Sm	4.038(84)	——	5.742(17)	2.190(27)		
^{140}Gd	3.673(31)	——	4.862(30)	2.604(31)		
^{144}Dy	3.440(52)	——	4.189(29)	2.787(29)		
^{148}Er	3.011(11)	——	3.502(12)	2.666(13)		
^{152}Yb	2.79(15)	——	3.02(15)	2.78(15)		
^{156}Hf	2.56(15)	——	2.47(15)	6.026(3)	100%	[**1996Pa01**, 2018Pa37, 2011Da12, 1981HoZM, 1979Ho10, 1978ReZZ]
^{156m}Hf	0.61(16)	——	0.52(16)	7.978(7)	100%	**2018Pa37**, 1996Pa01, 2011Da12, 1981HoZM]
^{160}W	2.18(15)	——	1.81(15)	6.066(5)	87(8)%	[**1996Pa01**, 1981Ho10, 1979Ho10, 1978ReZZ]
^{164}Os	1.71(15)	——	1.00(15)	6.479(5)	96^{+4}_{-5}%	[**2008Bi15, 1996Pa01**, 1996Bi07, 1981Ho10]
^{168}Pt	1.23(15)	——	0.16(15)	6.990(3)	$\approx$ 100%*	[**2009Gi06, 2004Ke06**, 1998Ki20, 1996Bi07, 1981Ho10]
^{172}Hg	0.79(15)	——	-0.66(15)	7.524(6)	100%*	[**2009Sa27**, 2004Ke06, 1999Se14, 1998NiZW]

* Not measured, deduced from half-life.

Table 3
direct α emission from ^{156}Hf*, $J^\pi = 0^+$, $T_{1/2}$ = 23(1) ms, BR_α = 100%.

E_α(c.m.)	E_α(lab)	I_α(abs)	J^π_f	$E_{daughter}$(^{152}Yb)	coincident γ-rays	R_0 (fm)	HF
6.028(4)	5.873(4)	100%	0^+	0.0	——	1.5536(31)	0.99(4)

* All values from [1996Pa01].

Table 4
direct α emission from ^{156m}Hf*, Ex = 1.952(6) MeV**, $J^\pi = 8^+$, $T_{1/2}$ = 520(10) μs, BR_α = 100%.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	J_f^π	$E_{daughter}$(^{152}Yb)***	coincident γ-rays***	R_0 (fm)	HF
6.098(15)	5.942(15)	0.0038(23)%	0.0038(23)%	3^-	1.8901(6)	1.531, 0.359	1.5536(31)	$1.0^{+1.6}_{-0.4}\times10^3$
6.439(15)	6.274(15)	0.0064(30)%	0.0064(30)%	2^+	1.5314(5)	1.531	1.5536(31)	$1.1^{+1.0}_{-0.4}\times10^4$
7.980(5)	7.775(5)	100%	99.990(4)%	0^+	0.0	——	1.5536(31)	$1.65(3)\times10^4$

* All values from [2018Pa37], unless otherwise noted.
** Deduced from α center of mass energies of the isomer (7980(5) MeV) [1996Pa37] and ground state (6.028(4)MeV) [1996Pa01] decays, that both feed the ground state of ^{152}Yb.
*** Values taken from [2013Ma77].

Table 5
direct α emission from ^{160}W*, $J^\pi = 0^+$, $T_{1/2}$ = 91(5) ms, BR_α = 87(8)%.

E_α(c.m.)	E_α(lab)	I_α(abs)	J_f^π	$E_{daughter}$(^{156}Hf)	coincident γ-rays	R_0 (fm)	HF
6.072(10)	5.920(10)	100%	0^+	0.0	——	1.5533(77)	1.06(11)

* All values from [1996Pa01].

Table 6
direct α emission from ^{164}Os*, $J^\pi = 0^+$, $T_{1/2}$ = 21(1) ms, $BR_\alpha = 96^{+4}_{-5}$%**.

E_α(c.m.)	E_α(lab)	I_α(abs)	J_f^π	$E_{daughter}$(^{160}W)	coincident γ-rays	R_0 (fm)	HF
6.479(7)	6.321(7)	96^{+4}_{-5}%	0^+	0.0	——	1.5504(56)	0.95(6)

* All values from [1996Pa01], except where noted.
** [2008Bi05].

Table 7
direct α emission from ^{168}Pt, $J^\pi = 0^+$, $T_{1/2}$ = 2.04(16) ms*, $BR_\alpha = \approx 100\%$***.

E_α(c.m.)	E_α(lab)**	I_α(abs)	J_f^π	$E_{daughter}$(^{164}Os)	coincident γ-rays	R_0 (fm)	HF
6.987(3)	6.821(3)	$\approx$ 100%	0^+	0.0	——	1.5578^{+45}_{-42}	0.97(8)

* Weighted average of 1.98(16) ms [2009Gi06], 2.1(2) ms [2004Ke06], 2.0(2) ms [1998Ki20], and 2.0(4) ms [1996Bi07].
** Weighted average of 6.823(3) MeV [2009Gi06], and 6.820(4) MeV [2004Ke06].
*** Not measured, deduced from half-life.

Table 8
direct α emission from ^{172}Hg*, $J^\pi = 0^+$, $T_{1/2}$ = 231(9) μs, BR_α = 100%**.

E_α(c.m.)	E_α(lab)	I_α(abs)	J_f^π	$E_{daughter}$(^{168}Pt)	coincident γ-rays	R_0 (fm)	HF
7.523(7)	7.348(7)	100%	0^+	0.0	——	1.5574(32)	0.99(4)

* All values from [2009Sa27].
** Not measured, deduced from half-life.

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