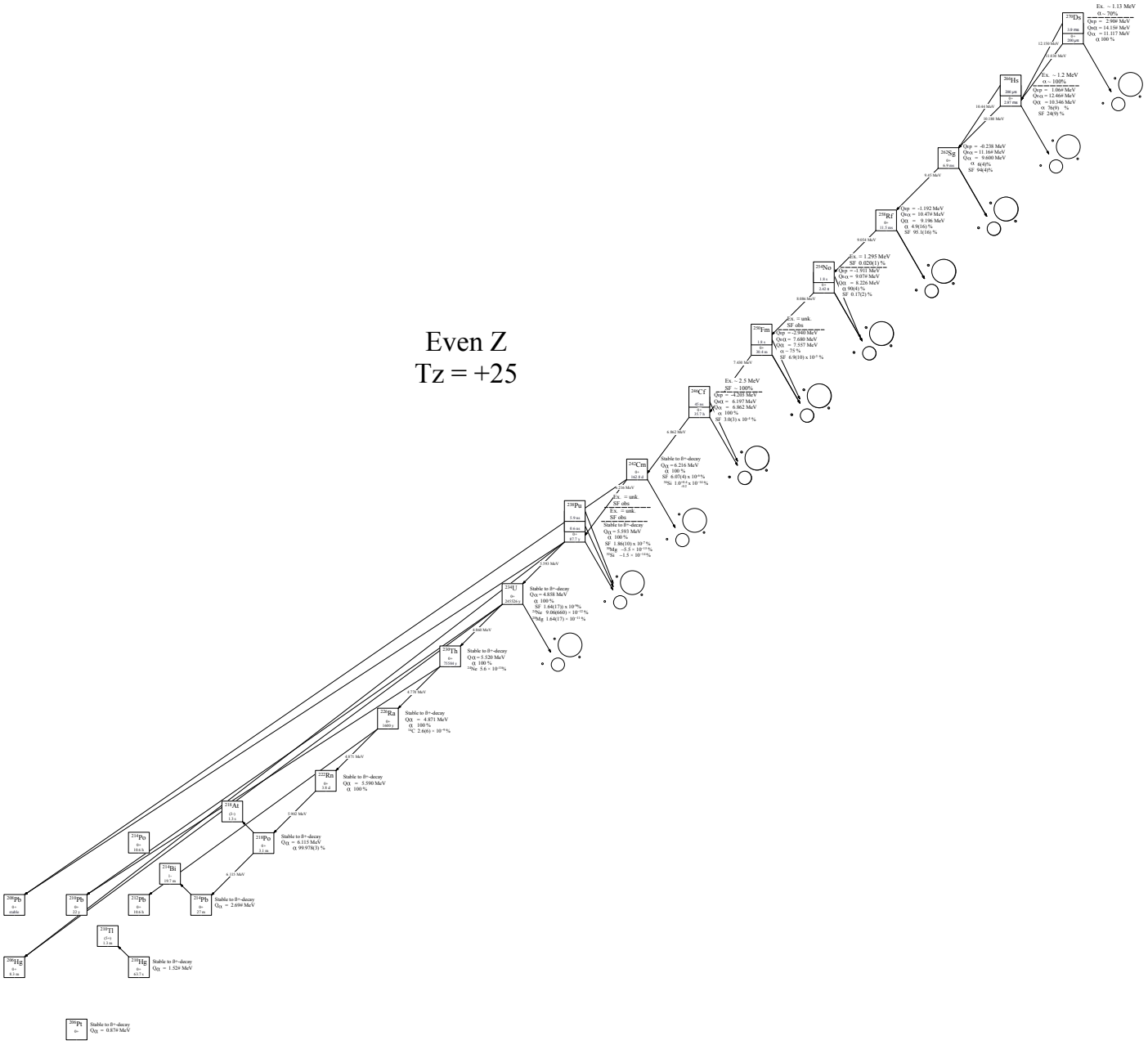

Fig. 1: Known experimental values for heavy particle emission of the even-Z T_z= +25 nuclei.

Last updated 11/18/24

Table 1
Observed and predicted β-delayed particle emission from the even-Z, T_z = +25 nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein. J^π values for XX are taken from ENSDF.

Nuclide	Ex.	J^π	$T_{1/2}$	Q_ε	Q_{β^-}	$Q_{\beta^- \alpha}$	Experimental
^{206}Pt*		0^+	obs		4.950(42)#	5.16(42)#	[**2012Ku26**]
^{210}Hg*		0^+	63.7(116) s	-7.98(45)#	3.95(20)#	6.65(36)#	[**2017Ca12**]
^{214}Pb(RaB)*		0^+	27.06(7) m	-6.65(20)#	1.018(11)	6.809(23)	[**2011Vo01**]
^{218}Po(RaA)		0^+	3.062(8) m**	-4.859(27)	0.256(12)	7.313(11)	[**1989Ma67, 1986Po17, 1982Va09**]
^{222}Rn		0^+	3.82146(16) d	-4.581(16)	-0.006(8)	——	[**2015Be07**]
^{226}Ra		0^+	1600(5) y***	-3.853(7)	-0.642(3)	——	[**1966Ra13, 1959Ma12**]
^{230}Th(Io)		0^+	75584(110) y	-2.976(16)	-1.311(3)	——	[**2013Ch53**]
^{234}U(U_{II})		0^+	245526(260) y[@]	-2.194(4)	-1.810(8)	——	[**2013Ch53, 2016Va13**]
^{238}Pu		0^+	87.71(3) y	-1.291(1)	-2.260(20)	——	[**1977Di04**]
^{238m1}Pu	2.40(20)		0.60(14) ns[@@]	1.11(20)	-0.14(20)	-4.12(20)	[**1974MeYP, 1973Li01**]
^{238m2}Pu	3.70(20)		5.9(12) ns[@@@]	2.41(20)	1.44(20)	-2.82(20)	[**1973Li01, 1970Bu02**]
^{242}Cm		0^+	162.80(11) d[a]	-0.664(1)	-2.95(14)#	——	[**1982Ag02, 1981Us03**]
					$Q_{\varepsilon p}$	$Q_{\varepsilon \alpha}$	
^{246}Cf		0^+	35.7(5) h	0.120(60)	-4.203(1)	6.197(2)	[**1951Hu39**]
^{246m}Cf	$\approx$ 2.5	0^+	45(10) ns	$\approx$ 2.6	$\approx$ -1.8	$\approx$ 8.7	[**1968Ga04**, 1966Ga26]
^{250}Fm		0^+	30.4(15) m	0.85(10)#	-2.940(8)	7.680(61)#	[**2006Ba09**]
^{250m}Fm	x		1.8(1) s	0.85(10)#+x	-2.940(8)+x	7.680(61)#+x	
^{254}No		0^+	51.2(4) s	1.27(10)#	-1.911(10)	9.07(10)#	[**2006He19**]
^{254m}No	1.295(2)	8^-	275(7) ms	2.57(10)#	-0.616(10)	10.37(10)#	[**2010He10**]
^{258}Rf		0^+	11.5(12) ms[b]	1.56(10)#	-1.192(17)	10.47(10)#	[**2020Mo11, 2008Ga08**]
^{262}Sg		0^+	$6.9^{+3.8}_{-1.8}$ ms	2.12(15)#	-0.238(69)	11.16(10)#	[**2001Ho06**]
^{266}Hs		0^+	$2.97^{+0.78}_{-0.51}$ ms	3.04(17)#	1.06(14)#	12.46(15)#	[**2012Ac04**]
^{266m}Hs	$\approx$1.2		74^{+354}_{-34} ms	$\approx$4.2#	$\approx$2.3#	12.46(15)#	[**2015Ac04, 2012Ac04**]
^{270}Ds		0^+	200^{+70}_{-40} μs	3.97(20)#	2.90(14)#	14.15(17)#	[**2012Ac04**]
^{270m}Ds	$\approx$1.13	9^-,10^-	$3.9^{+1.3}_{-0.8}$ ms	$\approx$5.10#	$\approx$4.03#	$\approx$15.28#	[**2015Ac04, 2012Ac04**]

* 100% β^- emitter.
** Weighted average of 3.040(8) m [1989Ma67], 3.093(12) m [1986Po17] and 3.11(2) m [1982Va09].
*** Weighted average of 1599(7) y [1966Ra13] and 1602(8) y [1959Ma12].
[@] Weighted average of 245620(260) y [2013Ch53] and 244900(670) [2016Va13].
[@@] Weighted average of 0.7(2) ns [1974MeYP] and 0.5(2) ns [1973Li01].
[@@@] Weighted average of 5(2) ns [1973Li01] and 6.5(15) ns [1970Bu02].
[a] Weighted average of 163.00(11) d [1982Ag02] and 161.35(30) d [1981Us03].
[b] Weighted average of 8.8(11) ms [2020Mo11] and $4.7^{+1.2}_{-1.0}$ ms [2008Ga08].

Table 2
(1 of 2). Particle separation, Q-values, and measured values for direct particle emission of the even-Z, T_z = +25 nuclei. Unless otherwise stated, all S and Q-values are taken from [2021Wa16] or deduced from values therein.

Nuclide	S_p	Q_α	BR_α	BR_{SF}	$BR_{cluster}$	type	Experimental
^{206}Pt	10.93(58)#	0.87(50)#					
^{210}Hg	10.36(45)#	1.52(36)#					
^{214}Pb(RaB)	9.256(27)	2.69(20)#					
^{218}Po(RaA)	7.662(18)	6.115	99.978(3)%				[**1971Gr17, 1958Wa16, 1952Hi60**, 2023Ch30, 1989Ma67, 1986Po17, 1982Va09, 1949Wa05, 1944Ka01, 1943Ka04, 1933Ro03, 1911Ru02, 1904Ru05]
^{222}Rn	7.700(14)	5.590	100%				[**1971Gr17, 1958Wa16**, 1998Mo14, 1996Wi27, 1989Po03, 1987Er06, 1968Bi08, 1963Ba62, 1956Ma28, 1953Ba29, 1936Br05]
^{226}Ra	7.442(12)	4.871	100%		$2.6(6)\times10^{-9}$%	^{14}C	**2017Ma22, 1990We01, 1986Ba26, 1985Ho21, 1971Lo19, 1963Ba62**, 2001La14, 1986HoZU, 1985Al28, 1984AlZP, 1971DiZI, 1971Gr17, 1969Gr33, 1968Bi08, 1967Ma51, 1966Ra13, 1959Ma12, 1958Wa16, 1953AsZZ, 1953Ba29, 1949Ko01, 1931Cu01, 1949Ro08, 1912Fa01, 1911Cu01]

Table 3
(2of 2). Particle separation, Q-values, and measured values for direct particle emission of the even-Z, T_z = +25 nuclei. Unless otherwise stated, all S and Q-values are taken from [2021Wa16] or deduced from values therein.

Nuclide	S_p	Q_α	BR_α	BR_{SF}	$BR_{cluster}$	type	Experimental
^{230}Th(Io)	7.116(12)	4.770(2)	100%		5.6×10^{-11}%	^{24}Ne	[**1985TrZY, 1966Ba14, 1954Ro12**, 2013Ch53, 2000Ch56] 1980Me10, 1977Ku25, 1962At01, 1957Cl17, 1956Hu96, 1955St97, 1953Ra13, 1953Va01, 1949Hy03, 1948RoXX, 1931So01, 1930Cu02, 1912Fa01]
^{234}U(U_{II})	6.633(1)	4.858(1)	100%	$1.64(17)\times10^{-9}$%	$9.06(660)\times10^{-12}$ $1.64(17)\times10^{-11}$	^{24}Ne ^{28}Mg	[**2000Ho27, 1991Bo20, 1984Va41, 1967Ba43, 1963Bj03**, 2016Va13, 2013Ch53, 1989Ho24, 1989Mo07, 1989Tr11, 1987Sh27, 1986LoZT, 1981Vo02, 1980Ge13, 1980VaZP, 1978ReZX, 1973JaYS, 1973Ta25, 1971Cl03, 1971DeYN, 1971LoZL, 1970Cl11, 1970DeZM, 1970LoZZ, 1970MeZN, 1961Ko11, 1957Ha08, 1955Go57, 1953As40, 1953AsZZ, 1953Va03, 1952Fl20, 1952Gh27, 1952Ki19, 1952Se67, 1949Ba41, 1949Go18, 1940Fl02, 1939Ni03]
^{238}Pu	5.997	5.593	100%	$1.86(10)\times10^{-7}$%	$\approx5.5\times10^{-15}$% $\approx1.5\times10^{-14}$%	^{30}Mg ^{32}Si	**1999Ka70, 1998Ya17, 1989Wa10, 1984Bo41, 1971Gr17, 1970Ba72**, 1996Sa24, 1992Sc15, 1989Wa29, 1988SeZY, 1986LoZT, 1984Ah06, 1984He19, 1984Ov01, 1983OvZZ, 1981Ag06, 1980VaZO, 1977Di04, 1976JaZG, 1976Po08, 1972Ha11, 1971Ma68, 1971So15, 1970Cl11, 1969LeZX, 1968Ba25, 1968Jo15, 1963Ei09, 1962Le11, 1961Dr04, 1957Ho71, 1957Ko33, 1956Hi33, 1954As07, 1953AsZZ, 1949JaZX, 1949JaZZ, 1947Ch01, 1946FaZZ, 1943ChZZ]
^{238m1}Pu	3.60(20)	7.99(20)		≈100%			[**1973Li01**, 1974MeYP]
^{238m2}Pu	2.30(20)	9.29(20)		≈100%			[**1973Li01**, 1971Br39, 1970Bu02]
^{242}Cm	5.420	6.216	100%	$6.07(4)\times10^{-6}$%*	$1.0^{+0.4}_{-0.2}\times10^{-14}$	^{34}Si	[**2000Og01, 1989Us04, 1982Ra33, 1981Le15, 1979Ch41, 1971Gr17,1967Ar09, 1966Ba07, 1951Ha87**, 1998Ya17, 1989Fo10, 1984Zh01, 1982Ag02, 1982UmZZ, 1981Us03, 1981Zh06, 1980Ha28, 1977Di04, 1975Ke02, 1971Bb10, 1971Re11, 1970BaZZ, 1963Bj03, 1963Dz07, 1963Le17, 1962Iv01, 1956Cr69, 1954Gl37, 1954St95, 1953As14, 1953AsZZ, 1952As40, 1950Ha14, 1949MaZZ]
^{246}Cf	5.013(2)	6.862(1)	100%	$3.0(3)\times10^{-4}$%**			[**1977Ba69, 1968Sk01, 1963Fr04, 1956Ch77, 1953Hu85**, 1973Da16, 1968Ga02, 1968Ga04, 1966Ma72, 1955Hu31, 1951Hu39]
^{246m}Cf	≈2.5	≈9.3		≈100%			[**1968Ga04**, 1966Ga26]
^{250}Fm	4.392(31)#	7.557(8)	≈75%***	$6.9(10)\times10^{-3}$%			[**2006Fo02, 1989La07, 1981Mu06**, 2018Mi11, 2006Ba09, 2006Ni09, 1970Dr05, 1966Ak01, 1957Am47, 1954At35]
^{250m}Fm	4.392(31)#-x	7.557(8)+x		obs			[**1980Ga07,1970Dr05**]
^{254}No	3.738(33)#	8.226(8)	90(4)%	0.17(2)%			[**2010He10, 1994Wi17, 1988Tu07, 1985He22**, 2020Ku23, 2009Ne02, 2008Ga08, 2006Fo02, 1989TuZZ, 1973Gh03, 1970KoZM, 1967GH01, 1967Mi03, 1966Do04, 1966Za04, 1958Gh40]
^{254m}No	2.443(33)#	9.521(8)	≤0.01%	0.020(12)%			[**2010He10**, 2022Br08, 2021Is09, 2021Te08]
^{258}Rf	3.610(47)#	9.196(13)	4.9(16)%	95.1(16)%			[**2016He15, 2008Ga08**, 2019MoZV, 2018Mo20, 1994Hu18, 1994Ni17, 1984Og03, 1969Gh01]
^{262}Sg	3.23(11)#	9.600(15)	6(4)%	94(4)%			[**2012Ac04**, 2011Ac01, 2006Gr24, 2001Ho06]
^{266}Hs	2.54(24)#	10.346(16)	76(9)%	24(9)%			[**2012Ac04**, 2015Ac04, 2011Ac01, 2001Ho06]
^{266m}Hs	≈3.7#	≈11.5	≈100%				[**2012Ac04**, 2015Ac04]
^{270}Ds	1.91(31)#	11.117(28)	100%				[**2012Ac04, 2001Ho06**, 2017Ac02, 2015Ac04, 2011Ac01, 1990Sc11]
^{270m}Ds	≈0.78#	≈12.24	≈70%				[**2012Ac04, 2001Ho06**, 2017Ac02, 2015Ac04, 2011Ac01]

* Weighted average of $6.96(18)\times10^6$ y [1989Us04), $7.15(15)\times10^6$ y [1982Ra33], $7.46(6)\times10^6$ y [1979Ch41] and $7.1(2)\times10^6$ y [1960Ar09] and$7.2(2)\times10^6$ y [1951Ha87].

** Weighted average of $2.0(2)\times10^3$ y [1968Sk01], $1.34(16)\times10^3$ y [1963Fr04] and $2.1(3)\times10^3$ y [1953Hu85].

*** The BR for α-decay has not been measured. A 0^+ even-even to a 0^+ even-even α-decay is expected to be unhindered. Setting the BR to 75% gives a HF = 1.0. A 100% BR would result in HF = 0.76.

Table 4
direct α emission from ^{218}Po, $J^{\pi} = 0^+$, $T_{1/2}$ = 3.062(8) m*, BR_{α} = 99.978(3)%**.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}@	$E_{daughter}$(^{214}Pb)@	coincident γ-rays (keV)@	R_0 (fm)	HF
5.278(2)	5.181(2)**	1.1×10^{-3}%**	1.1×10^{-3}%	(2^+)	0.835(1)	835	1.53788(19)	11.7
6.11454(10)	6.00235(10)***	100%	99.978(3)%	0^+	0.0	——	1.53788(19)	0.9867(26)

* Weighted average of 3.040(8) m [1989Ma67], 3.093(12) m [1986Po17] and 3.11(2) m [1982Va09].
** [1952Hi60].
*** Value from [1971Gr17] modified by -0.20 keV in [1991Ry01].
@ [2021Zh35].

Table 5
direct α emission from ^{222}Rn, $J^{\pi} = 0^+$, $T_{1/2}$ = 3.82146(16) d*, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{218}Po)	coincident γ-rays (keV)	R_0 (fm)	HF
4.915(4)	4.826(4)**	$\approx5\times10^{-4}$%	$\approx5\times10^{-4}$%		0.676		1.54863(17)	≈ 30
5.077(1)	4.986(1)**	0.078%	0.078%	2^+@	0.5097@	509.7	1.54863(17)	2.0
5.59020(30)	5.48948(30)***	100%	99.9%	0^+	0.0	——	1.54863(17)	0.99798(4)

* [2015Be07].
** [1958Wa16], modified by -1.2 keV in [1991Ry01].
*** [1971Gr17], modified by -0.18 keV in [1991Ry01].
@ [2019Si39].

Table 6
direct α emission from ^{226}Ra, $J^{\pi} = 0^+$, $T_{1/2}$ = 1600(5) y*, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)**	I_{α}(rel)	I_{α}(abs)	J_f^{π}@	$E_{daughter}$(^{222}Rn)@@	coincident γ-rays (keV)@@	R_0 (fm)	HF
4.238(2)	4.163(2)	$2.9(5)\times10^{-4}$%	$2.7(5)\times10^{-4}$	3^-	0.6363	186.0, 449.4	1.53945(26)	$8.5^{+2.0}_{-1.4}$
4.270(1)	4.194(1)	$1.1(1)\times10^{-3}$%	$1.0(1)\times10^{-3}$%	1^-	0.6007	186.0, 414.6, 600.7	1.53945(26)	$4.4^{+0.5}_{-0.4}$
4.421(1)	4.343(1)	$6.3(16)\times10^{-3}$%	$5.9(15)\times10^{-3}$%%	4^+	0.4482	186.0, 262.3	1.53945(26)	11^{+4}_{-2}
4.684(1)	4.601(1)	6.30(1)%	5.93(1)%	2^+	0.1860	186.0	1.53945(26)	0.893(15)
4.87054(25)	4.78434(25)***	100%	94.07(1)%	0^+	0.0	——	1.53945(26)	0.9979(31)

* Weighted average of 1599(7) y [1966Ra13] and 1602(8) y [1959Ma12].
** E_{α} values from [1963Ba62], adjusted by +3.3 keV as recommended in [1991Ry01].
*** From [1971Gr17], adjusted by -0.16 keV as recommended in [1991Ry01].
@ [2023Si22].
@@ [1971Lo19].

Table 7
direct α emission from ^{230}Th, $J^{\pi} = 0^+$, $T_{1/2}$ = 75584(110) y*, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)**	J_f^{π}@	$E_{daughter}$(^{226}Ra)@	coincident γ-rays (keV)@	R_0 (fm)	HF
4.324	4.249	$\approx6.6\times10^{-6}$	$\approx5\times10^{-6}$	5^-	0.4463	67.7, 110.0, 124.8, 143.9, 186.1, 234.8, 253.7, 253.9	1.5332(11)	7.4×10^3
4.353	4.277	$\approx6.6\times10^{-6}$	$\approx5\times10^{-6}$	6^+	0.4165	67.7, 143.9, 204.9	1.5332(11)	1.3×10^4
4.449	4.372	1.3×10^{-3}%	1×10^{-3}	3^-	0.3215	67.7, 110.0, 143.9, 186.1, 253.7, 253.9	1.5332(11)	350
4.520	4.441	0.039%	0.03%	1^-	0.2537	67.7, 186.1, 253.7	1.5332(11)	38
4.554	4.475	0.16%	0.12%	4^+	0.2115	67.7, 143.9	1.5332(11)	20
4.7023(15)	4.6205(15)	31.8%	24.3%	2^+	0.0677	67.7	1.5332(11)	1.07
4.7700(15)	4.6870(15)	100%	76.3%	0^+	0.0	——	1.5332(11)	1.01

* [2013Ch53].
** [1954Ro12]. α's at 4.249, 4.277 and 4.372 were not observed, their energies were deduced from γ-rays following the α decay of ^{230}Th. Energy values are adjusted by +3.9 keV as recommended in [1991Ry01].
*** [1966Ba14]. Energy values are adjusted by +3.0 keV as recommended in [1991Ry01].
@ [1996Ak02].

Table 8
direct α emission from ^{234}U, $J^{\pi} = 0^+$, $T_{1/2}$ = 245526(260) y*, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}@@	$E_{daughter}$(^{230}Th)@@	coincident γ-rays (keV)@@	R_0 (fm)	HF
4.079**	4.009	2.8×10^{-5}%	2×10^{-5}%**	2^+	0.7814	53.2, 120.9, 607.4, 728.1, 781.4	1.52224(19)	2.8
4.225**	4.153	1.7×10^{-5}%	1.2×10^{-5}%**	0^+	0.6349	53.2, 581.7, 634.9	1.52224(19)	90
4.352**	4.278	5.6×10^{-5}%	4×10^{-5}%**	1^-	0.5081	53.2, 454.9, 508.2	1.52224(19)	300
4.686**	4.605	0.29(1)%	0.206(4)%***	4^+	0.1741	53.2, 120.9	1.52224(19)	21.5(4)
4.8067(20)	4.7245(20)@	39.82(8)%	28.42(5)%***	2^+	0.0532	53.2	1.52224(19)	1.1260(23)
4.8603(20)	4.7772(20)@	100%	71.38(5)%***	0^+	0.0	—	1.52224(19)	1.0454(13)

* Weighted average of 245620(260) y [2013Ch53] and 244900(670) [2016Va13].
** α not observed, inferred from observation of γ's in [1963Bj03]. E_{α} deduced from level energy and the 4.8603(20) MeV ground state α transition. I_{α} values from [1963Bj03].
*** [1984Va41].
@ Values from [1967Ba43]. E_{α} values adjusted by +0.4 keV as recommended in [1991Ry01].
@@ [2024Mo17].

Table 9
direct α emission from ^{238}Pu, $J^{\pi} = 0^+$, $T_{1/2}$ = 87.71(3) y*, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{234}U)@@	coincident γ-rays (keV)@@	R_0 (fm)	HF
≈4.656	≈4.578**	2.8×10^{-5}	2.0×10^{-5}**			43.5, 99.9, 804.4, 904.4		≈2.4
≈4.668	≈4.590**	1.7×10^{-5}	1.2×10^{-5}**	2^+	0.9267	43.5, 99.9, 783.4, 883.4, 926,7		≈5.7
4.7411(20)	4.6614(20)**	$<2.8\times10^{-6}$	$<2.0\times10^{-6}$**	2^+	0.8517	43.5, 99.9, 708.3	1.50745(13)	> 123
4.7848(20)	4.7044(20)**	7×10^{-5}	5×10^{-5}**	0^+	0.8099	43.5, 766.4, 810.0	1.50745(13)	9.9
4.8052(20)	4.7244(20)**	3.1×10^{-5}	2.2×10^{-5}**	1^-	0.7863	43.5, 742.8, 786.3	1.50745(13)	33
≈5.101	≈5.015**	≈5.6×10^{-6}	≈4.00×10^{-6}**	8^+	0.4970	43.5, 99.9, 152.7, 201.0		≈1.7×10^4
5.2946(20)	5.2056(20)**	2.5×10^{-3}	1.80×10^{-3}**	6^+	0.2961	43.5, 99.9, 152.7	1.50745(13)	710
5.4493(20)	5.3577(20)**	0.151(10)%	0.107(7)%@	4^+	0.1434	43.5, 99.9	1.50745(13)	99(7)
5.54955(40)	5.45628(40)***	40.63(15)%	28.86(10)%@	2^+	0.0435	43.5	1.50745(13)	1.387(5)
5.59303(20)	5.49903(20)***	100%	71.03(7)%@	0^+	0.0	—	1.50745(13)	0.9954(10)

* [1977Di04].
** [1970Ba72]. E_{α} values are adjusted by +0.4 keV as recommended in [1991Ry01].
*** [1971Gr17]. E_{α} values are adjusted by -0.18 keV as recommended in [1991Ry01].
@ Weighted average of values from [1998Ya17] and [1984Bo41].
@@ [2007Br04].

Table 10
direct α emission from ^{242}Cm, $J^\pi = 0^+$, $T_{1/2}$ = 162.80(11) d*, BR_α = 100%.

E_α(c.m.)	E_α(lab)**	I_α(rel)	I_α(abs)**	J^π_f	$E_{daughter}$(^{238}Pu)***	coincident γ-rays (keV)***	R_0 (fm)	HF
4.930	4.849	6.5×10^{-7}%	4.80×10^{-5}%	2^+	1.2643	44.1, 101.9, 1118.3, 1.2202	1.501258(57)	6.4
4.966	4.884	6.9×10^{-7}%	5.10×10^{-5}%	0^+	1.2287	44.1, 1184.6	1.501258(57)	10.7
5.071	4.987	4.6×10^{-7}%	3.40×10^{-5}%	4^+	1.1258	44.1, 101.9, 979.8, 1081.7	1.501258(57)	80
5.170	5.084	4.6×10^{-6}%	3.40×10^{-4}%	2^+	1.0285	44.1, 984.5, 1028.5	1.501258(57)	35
5.216	5.130	2.2×10^{-6}%	1.60×10^{-4}%	2^+	0.9831	44.1, 101.9, 837.0, 938.9, 983.0	1.501258(57)	150
5.2367	5.150	1.5×10^{-6}%	1.10×10^{-4}%	1^-	0.9628	44.1, 918.7, 982.8	1.501258(57)	290
5.258	5.172	7.0×10^{-5}%	5.20×10^{-3}%	0^+	0.9414	44.1, 561.0, 605.4, 336.4, 897.3, 941.5	1.501258(57)	8.2
5.440	5.350	2.7×10^{-7}%	2.00×10^{-5}%	5^-	0.7633	44.1, 101.9, 157.4, 459.8, 617.2	1.501258(57)	2.7×10^4
5.543	5.451	1.6×10^{-5}%	1.20×10^{-3}%	3^-	0.6615	44.1, 101.9, 561.0, 605.4	1.501258(57)	1.8×10^3
5.600	5.508	3.2×10^{-4}%	2.40E-04%	1^-	0.6052	44.1, 561.0, 605.4	1.501258(57)	190
5.693	5.599	2.7×10^{-5}%	2.00×10^{-3}%	8^+	0.514		1.501258(57)	7.5×10^3
5.906(2)	5.809(2)[@]	6.2×10^{-3}%	0.0046%	6^+	0.3034	44.1, 101.9, 157.4	1.501258(57)	460
6.067(2)	5.967(2)[@]	0.047%	0.035%	4^+	0.1460	44.1, 101.9	1.501258(57)	400
6.17164(12)	6.06963(12)[@@]	35%	26%	2^+	0.0441	44.1	1.501258(57)	1.7
6.215656(12)	6.112918(12)[@@]	100%	74%	0^+	0.0	——	1.501258(57)	1.00

* Weighted average of 163.00(11) d [1982Ag02] and 161.35(30) d [1981Us03].
** E_α(lab) deduced from Q_α (determined by the ground state to ground state decay) and $E_{daughter}$ from [1981Le15], except where noted. Note that the α's were not measurd in [1981Le15].
*** [1981Le15].
[@] [1958Ko87].
[@@] [1971Gr17].

Table 11
direct α emission from ^{246}Cf, $J^\pi = 0^+$, $T_{1/2}$ = 35.7(5) h*, BR_α = 100%.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	J^π_f	$E_{daughter}$(^{242}Cm)	coincident γ-rays (keV)***	R_0 (fm)	HF
6.576(5)	6.469(5)**	≈0.06%	≈0.05%**		0.286	146(5)	1.49528(88)	≈ 85
6.7249(10)	6.6156(10)	≈0.19%	≈0.15%	4^+	0.1366	96(3)	1.49528(88)	≈130
6.8191(10)	6.7082(10)	26.0(13)%	20.6(10)%	2^+	0.0425	4293)	1.49528(88)	2.53(13)
6.8616(10)	6.7500(10)	100%	79.3(10)%	0^+	0.0	——	1.49528(88)	1.000(19)

* [1951Hu39].
** Value from [1963Fr04], E_α(lab) modified by +4.4 keV as recommended in [1991ry01]. I_α estimated by evaluator from Fig. 2 in [1963Fr04].
*** [1956Ch77].

Table 12
direct α emission from ^{250}Fm, $J^\pi = 0^+$, $T_{1/2}$ = 30.4(15) m*, BR_α = ≈ 75%***.

E_α(c.m.)	E_α(lab)	I_α(abs)	J^π_f	$E_{daughter}$(^{250}Fm)	coincident γ-rays (keV)	R_0 (fm)	HF
7.551(25)	7.430(25)**	≈ 100%	0^+	0.0	——	1.4789(48)	1.0***

* [2006Ba09].
** Weighted average of 7.424(35) MeV and 7.435(35) MeV [1981Mu06].
*** The BR for α-decay has not been measured. A 0^+ even-even to a 0^+ even-even α-decay is expected to be unhindered. Setting the BR to 75% gives a HF = 1.0. A 100% BR would result in HF = 0.76.

Table 13
direct α emission from ^{254}No, $J^\pi = 0^+$, $T_{1/2}$ = 51.2(4) s*, BR_α = 90(4)%**.

E_α(c.m.)	E_α(lab)	I_α(abs)	J^π_f	$E_{daughter}$(^{250}Fm)	coincident γ-rays (keV)	R_0 (fm)	HF
8.215(20)	8.086(20)	90(4)%**	0.0	——	1.4672(33)	0.79(4)	

* [2006He19].
** [1988Tu07].
*** [1985He22].
[@] This HF is < 1, indicating that the BR_α is too high. A value of 70% gives a HF = 1.0.

Table 14
direct α emission from ^{258}Rf, $J^{\pi} = 0^{+}$, $T_{1/2}$ = 11.5(12) ms*, BR_{α} = 4.9(16)%**.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{254}No)	coincident γ-rays (keV)	R_0 (fm)	HF
9.101(30)	8.960(30)***	≈33%***	≈1.2%		0.096(34)			≈0.6
9.197(16)	9.054(16)**	100%***	≈3.7%	0^{+}	0.0	——		≈1.2

* Weighted average of 8.8(11) ms [2020Mo11] and $4.7^{+1.2}_{-1.0}$ ms [2008Ga08].
** [2016He15].
*** [2008Ga08], I_{α}(rel) determined from 3 events at 9.05 MeV and 1 event at 8.96 MeV.

Table 15
direct α emission from ^{262}Sg*, $J^{\pi} = 0^{+}$, $T_{1/2} = 6.9^{+3.8}_{-1.8}$ ms**, BR_{α} = 6(4)%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{262}Sg)	coincident γ-rays (keV)	R_0 (fm)	HF
9.60	9.45	94(4)%	0^{+}	0.0	——	1.462(37)	$1.1^{+4.1}_{-0.8}$

* All values from [2012Ac04], except where noted.
** [2001Ho06].

Table 16
direct α emission from ^{266}Hs, $J^{\pi} = 0^{+}$, $T_{1/2} = 2.97^{+0.78}_{-0.51}$ ms*, BR_{α} = 76(9)%*.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{262}Sg)	coincident γ-rays (keV)	R_0 (fm)	HF
10.335(20)	10.180(20)**	76(9)%*	0^{+}	0.0	——	1.481(12)	$1.3^{+0.6}_{-0.4}$

* [2012Ac04].
** [2001Ho06].

Table 17
direct α emission from ^{270m}Hs, Ex. = ≈ 1.2 MeV*, $T_{1/2} = 74^{+354}_{-34}$ ms**, BR_{α} = ≈ 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{262}Sg)	coincident γ-rays (keV)	R_0 (fm)	HF
10.60	10.44	≈ 100%			332**	1.481(12)	100(50)

* [2015Ac04].
** [2012Ac04].
*** [2001Ho06].

Table 18
direct α emission from ^{270}Ds, $J^{\pi} = 0^{+}$, $T_{1/2} = 200^{+70}_{-40}$ μs*, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{266}Hs)	coincident γ-rays (keV)	R_0 (fm)	HF
11.196(50)	11.030(50)**	100%	0^{+}	0.0	——	1.472(12)	1.5(5)

* [2012Ac04].
** [2001Ho06[.

Table 19
direct α emission from ^{270m}Ds, Ex. = ≈ 1.2 MeV*, $J^{\pi} = 9^{-}$,10^{-}*, $T_{1/2} = 3.9^{+1.3}_{-0.8}$ ms**, BR_{α} = ≈ 70%***.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{266}Hs)	coincident γ-rays (keV)	R_0 (fm)	HF
11.115(20)	10.950(20)			≈1.21				
11.318(20)	11.150(20)			≈1.01				
12.333(50)	12.150(50)			≈0.01				

* [2015Ac04].
** [2012Ac04].
*** [2001Ho06].

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