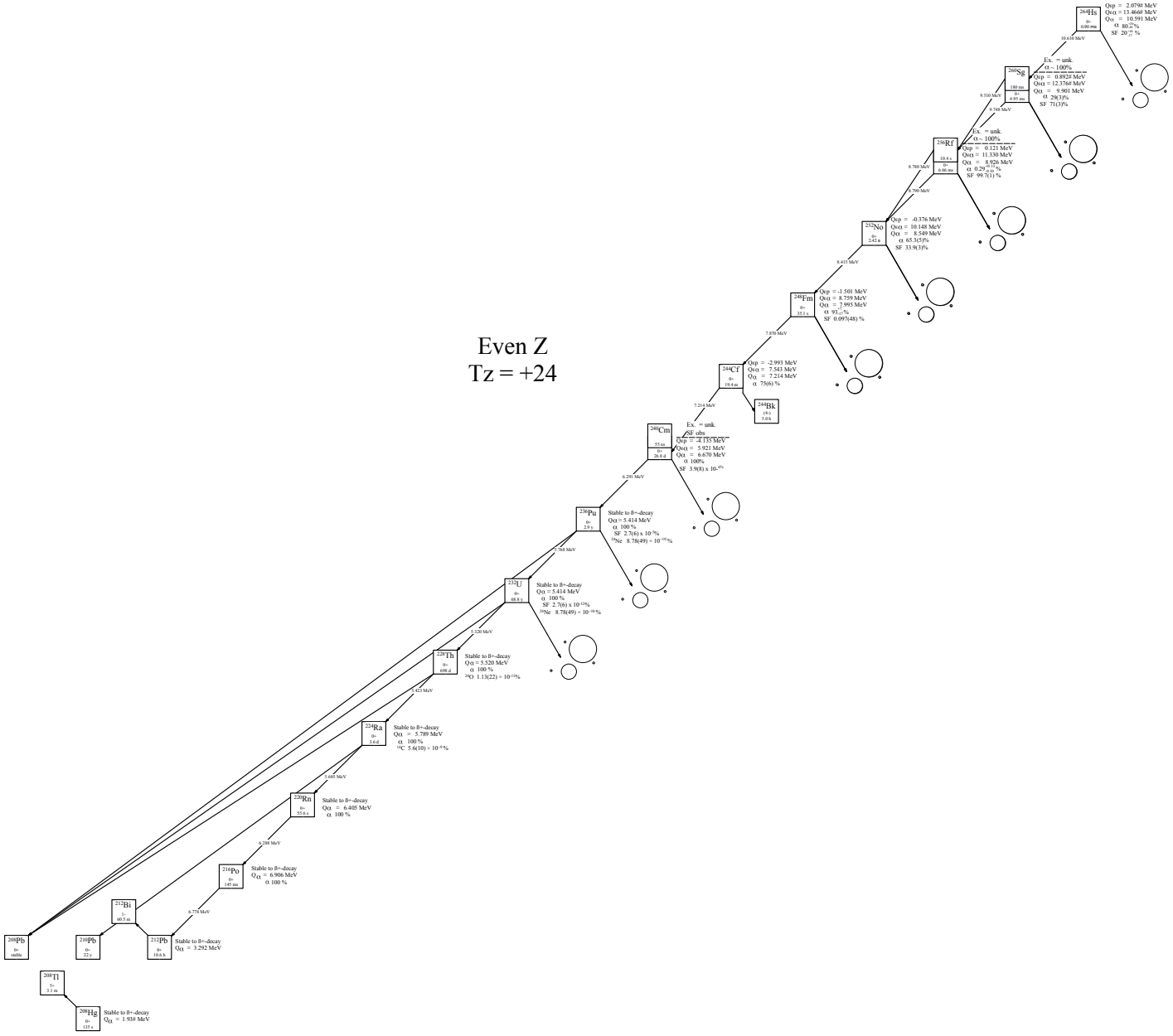

Fig. 1: Known experimental values for heavy particle emission of the even-Z T_z= +24 nuclei.

Last updated 10/21/2024

Table 1
Observed and predicted β-delayed particle emission from the even-Z, T_z = +24 nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein.

Nuclide		J^π	$T_{1/2}$	Q_ε	Q_{β^-}	$Q_{\beta^- \alpha}$	Experimental
^{208}Hg		0^+	135(10) s	-7.36(30)#	3.480(30)	4.70(20)#	[**2020Ca25**]
^{212}Pb		0^+	10.622(7) h	-6.00(20)#	0.569(2)	6.785(3)	[**2017Ko16**]
^{216}Po		0^+	145(2) ms	-4.092(11)	-0.474(4)	——	[**1963Di05**]
^{220}Rn		0^+	55.61(4) s	-3.764(14)	-0.870(4)	——	[**1966Hu20**]
^{224}Ra		0^+	3.6313(14) d	-2.923(11)	-1.408(0)	——	[**2021Be13**]
^{228}Th		0^+	698.3(6) d	-2.124(3)	-2.153(4)	——	[**2014Un01**]
^{232}U		0^+	68.81(38) y	-1.337(7)	-2.75(10)#	——	[**1979Ag04**]
^{236}Pu		0^+	2.862(8) y*	-0.480(50)	-3.14(12)#	——	[**1957Ho66, 1984Na30**]
					$Q_{\varepsilon p}$	$Q_{\varepsilon \alpha}$	
^{240}Cm		0^+	26.8(3) d	0.214(14)	-4.153(2)	5.921(50)	[**1949Se01**]
^{240m}Cm	x		55(12) ns	0.214(14)+x	-4.153(2)+x	5.921(50)+x	[**1976Si01**]
^{244}Cf		0^+	19.4(6) m	0.764(15)	-2.993(3)	7.543(14)	[**1967Si08**]
^{248}Fm		0^+	35.1(8) s	1.600(50)#	-1.501(17)	8.759(17)#	[**2011Ga19**]
^{252}No		0^+	2.42(6) s	2.400(90)	-0.376(17)	10.148(53)	[**2007Su19**]
^{256}Rf		0^+	6.66(10) ms**	2.480(80)	0.121(23)	11.330(93)	[**2023Is03, 2020Ku23, 1997He29, 2012Gr12**]
^{256m}Rf	x		$10.4^{+8.4}_{-3.2}$ s	2.480(80)+x	0.121(23)+x	11.330(93)+x	[**2009SaZV**]
^{260}Sg		0^+	4.95(33) ms	2.88(10)#	0.892(75)#	12.376(85)#	[**2009He20**]
^{260m}Sg	x		180^{+150}_{-60} ms	2.88(10)#	0.892(75)#	12.376(85)#	[**2009SaZV**]
^{264}Hs***			$0.90^{+0.40}_{-0.20}$ ms	3.61(18)#	2.079(99)#	13.466(98)#	[**2009SaZV**]
^{268}Ds				4.50(38)#	3.702(316)#	15.265(350)#	

* Weighted average of 2.851(8) y [1957Ho66] and 1046.9(31) d [1984Na30] (365.2424 d = 1 y).
** Weighted average of 6.7(2) ms [2023Is01], 6.90(23) ms [2020Ku23], 6.2(2) ms [1997He29] and 6.9(2) ms [2012Gr12].
*** Possibly an isomer.

Table 2
Particle separation, Q-values, and measured values for direct particle emission of the even-Z, T_z = +24 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
^{208}Hg	9.91(30)#	1.93(20)#					
^{212}Pb	8.760(42)	3.292(31)					
^{216}Po	7.136(6)	6.906(1)	100%				[**1977Ku15, 1971Gr17, 1962Wa28**, 2021Az03, 2017Na22, 2003Da24, 1963Di05, 1942Wa04, 1911Mo01]
^{220}Rn	7.073(3)	6.405	100%				[**1971Gr17, 1962Wa28**, 2003Da24, 1989Po03, 1966Hu20, 1963Gi17, 1961Ro14, 1956Ma28, 1955Sc81]
^{224}Ra	6.845(2)	5.789	100%		$5.6(10)\times10^{-9}$%*	^{14}C	[**1992Ar02, 1991Ho15, 1985Pr01, 1977Ku15, 1962Ba19, 1971Gr17**, 2021Be13, 2004Sc04, 1991Ho24, 1991HoZX, 1984Bo15, 1984AlZP, 1982Sa36, 1971Jo14, 1969Pe17, 1962Wa28, 1953As31, 1953AsZZ, 1938Le07]
^{228}Th	6.368(2)	5.520	100%		$1.13(22)\times10^{-11}$%	^{20}O	[**1993Bo20, 1977Ku15, 1971Gr17**, 1993BoZN, 1992BoZT 1990Sa38, 1984Ge07, 1982Sa36, 1972DaYV, 1971Jo14, 1970Ba20, 1957St92, 1954Ne01, 1953As31, 1953AsZZ, 1951Be42]
^{232}U	6.104(2)	5.414	100%	$2.7(6)\times10^{-12}$%	$8.78(49)\times10^{-10}$%**	^{24}Ne	[**2000Bo46, 1991Bo20, 1990Bo16, 1977Ku15, 1972Go33, 1966Ba49**, 1987BaZS, 1985Ba18, 1979Ag04, 1974KaZM, 1971So15, 1968Ba25, 1966Ba15, 1965Be15, 1964Ch05, 1963Le17, 1957Hy90, 1955As28, 1955Go32, 1954Se26, 1953AsZZ
^{236}Pu	5.431(2)	5.867	100%	$1.25(3)\times10^{-7}$%***	$2.7(7)\times10^{-12}$%@	^{28}Mg	[**1995Hu21, 1994Ar08, 1988SeZY, 1984Ry02, 1952Gh27** 1997De11, 1990Og01, 1989Wa29, 1984Na30, 1957Ho66, 1956Cr69, 1956Hu96, 1952Du04, 1949Ja01]
^{240}Cm	4.955(2)	6.398(1)	≈ 100%	3.9(8)×10^{-6}%			[**1971Bb10, 1967Ba42, 1952Gh27**, 1960Gl01, 1952Hi11, 1949Se01]
^{240m}Cm	4.955(2)-x	6.398(1)+x		obs			[**1976Sl01**]
^{244}Cf	4.501(5)	7.329(2)#	75(6)%				[**2018Ko05, 1967Si08**, 1967Fi04, 1956Ch43]
^{248}Fm	3.970(21)	7.995(8)	93^{+7}_{-17}%	0.097(48)%			[**1993An10, 1967Nu01**, 2024PoXY, 2011Ga19, 2010KeZY, 2006Ni09, 1980Ho25, 1970Dr05, 1966Ak01]
^{252}No	3.384(21)	8.549(5)	65.3(5)%	33.9(3)%			[**2012Su22, 2007Su19, 1977Be09**, 2024PoXY, 2015Sv02, 2015SvZZ, 2012Sv02, 2012SvZZ, 2006Le29, 2003Be18, 2002He01, 1994Wi17, 1967Gh01, 1967Mi03]
^{256}Rf	3.014(25)	8.926(15)	$0.29^{+0.13}_{-0.10}$%	$99.71^{+0.10}_{-0.13}$%			[**2020Ku23, 1997He29, 2010St14, 1986He28**, 2023Is03, 2021Te08, 2020Mo11, 2019MoZV, 2018Mo20, 2016KhZZ, 2016Sv02, 2013Ri07, 2012Gr12, 2011Ro20, 1994Hu18, 1994Wi17, 1985So03, 1984Og03, 1976FlZN, 1975Og01, 1975Og04]
^{256m}Rf	3.014(25)-x	8.926(15)+x	≈ 100%				[**2009SaZV**]
^{260}Sg	2.732(60)	9.901(10)	29(3)%	71(3)%			[**2009He20, 2009SaZV, 1985Mu11**, 1985Ho29, 1984De07, 1984Og03]
^{260m}Sg	2.732(60)-x	9.901(10)+x	≈ 100%				[**2009SaZV**]
^{264}Hs	2.22(31)#	10.591(20)	80^{+20}_{-40}%	20^{+46}_{-17}%			[**2011Sa41, 2009SaZV**, 1987Mu15, 1987MuZX, 1986Mu10, 1984Og03]
^{268}Ds	1.43(59)#	11.66(30)#					

* Weighted average of $6.5(10)\times10^{-9}$% [1991Ho15] and $4.3(12)\times10^{-9}$% [1985Pr01].
** Weighted average of $8.88(71)\times10^{-10}$% [1991Bo20] and $8.68(93)\times10^{-10}$% [1990Bo16].
*** Weighted average of SF partial $T_{1/2}$ of $3.5(1)\times10^{9}$ y [1952Gh27], $2.09(6)\times10^{9}$ y [1988SeZY] and $1.13(13)\times10^{9}$ y [1995Hu21].
@ [1995Hu21].

Table 3
direct α emission from ^{216}Po, $J^\pi = 0^+$, $T_{1/2}$ = 145(2) ms*, BR_α = 100%.

E_α(c.m.)	E_α(lab)	I_α(abs)	J^π_f	$E_{daughter}$(^{212}Pb)	coincident γ-rays	R_0 (fm)	HF	
6.097	5.984**	$1.91(24)\times10^{-3}$%@	$1.91(24)\times10^{-3}$%	(2^+)@@	0.8049@@	0.8049@@	1.54117(28)	35^{+6}_{-4}
6.9062(5)	6.7783(5)***	100%	99.99809(24)%	0^+	——	1.54117(28)	1.006(14)	

* [1963Di05].
** [1962Wa28].
*** [1971Gr17], modified by 0.2 keV as reccommended by [1991Ry01].
@ Weighted average of $1.8(3)\times10^{-3}$% [1977Ku15] and $2.1(4)\times10^{-3}$% [1962Wa28].
@@ [2020Au03].

Table 4
direct α emission from ^{220}Rn, $J^\pi = 0^+$, $T_{1/2}$ = 55.61(4)s*, BR_α = 100%.

E_α(c.m.)	E_α(lab)	I_α(abs)	J_f^π	$E_{daughter}$(^{216}Po)	coincident γ-rays	R_0 (fm)	HF	
5.853	5.747**	0.07(2)%**	0.07(2)%	$2^{+@}$	0.5498$^@$	0.5498$^@$	1.55548(10)	$5.2^{+2.1}_{-1.2}$
6.40474(10)	6.28829(10)***	100%	99.93(2)%	0^+	0.0	——	1.55548(10)	1.0018(7)

* [1966Hu20].
** [1962Wa28].
*** [1971Gr17]. E_α is reduced by -0.21 keV as reccomended in [1991Ry01].
$^@$ [2007Wu02].

Table 5
direct α emission from ^{224}Ra, $J^\pi = 0^+$, $T_{1/2}$ = 3.6313(14) d**, BR_α = 100%.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	J_f^π	$E_{daughter}$(^{220}Rn)	coincident γ-rays	R_0 (fm)	HF
5.1257(10)	5.0342(10)	$3.1(5) \times 10^{-3}$%	$2.9(5) \times 10^{-3}$%		0.6630(10)	0.2410, 0.4220	1.542177(86)	$7.7^{+1.6}_{-1.1}$
5.1433(20)	5.0515(20)	$7.7(11) \times 10^{-3}$%	$7.3(10 \times 10^{-3}$%	$(1^-,2^+)$	0.6454(20)	0.2410, 0.4042, 0.8456	1.542177(86)	$3.9^{+0.6}_{-0.5}$
5.2550(10)	5.1612(10)	$7.3(8) \times 10^{-3}$%	$6.9(8) \times 10^{-3}$%		0.5337(10)	0.2927	1.542177(86)	$18.7^{+2.5}_{-2.0}$
5.5477(9)	5.4486(9)***	5.3(2)%	5.00(16)%	2^+	0.24098(1)	0.2410	1.542177(86)	1.088(35)
5.78874(20)	5.68537(20)$^@$	100%	94.96(16)%	0^+	0.0	——	1.542177(86)	0.9976(17)

* All values from [1977Ku15], except where noted. E_α(c. m.) values determined from level energies fed by α decay relative to the value to the ground state.
** [2021Be13].
*** Value of 5.4472(5) MeV reported in [1971Gr17], modified by +1.6 keV in [1991Ry01].
$^@$ Value of 5.68556(20) MeV reported in [1971Gr17], modified by -0.19 keV in [1991Ry01].

Table 6
direct ^{14}C emission from ^{224}Ra, $J^\pi = 0^+$, $T_{1/2}$ = 3.6313(14) d*, $BR_{14C} = 5.6(10) \times 10^{-9}$%**.

E_{14C}(c.m.)	E_{14C}(lab)	I_{14C}(abs)	J_f^π	$E_{daughter}$(^{210}Pb)	coincident γ-rays
30.54	28.63	$5.6(10) \times 10^{-9}$%*	0^+	0.0	——

* [2021Be13].
** Weighted average of $6.5(10) \times 10^{-9}$% [1991Ho15] and $4.3(12) \times 10^{-9}$% [1985Pr01].
*** [1992Ar02].

Table 7
direct α emission from ^{228}Th, $J^\pi = 0^+$, $T_{1/2}$ = 698.3(6) d*, BR_α = 100%.

E_α(c.m.)	E_α(lab)***	I_α(rel)	I_α(abs)	J_f^π	$E_{daughter}$(^{224}Ra)	coincident γ-rays	R_0 (fm)	HF
4.5271(10)	4.4477(10)	$\approx 4 \times 10^{-6}$%	$\approx 3 \times 10^{-6}$%	(2^+)	0.9929(10)	0.08437, 0.16641, 0.7422, 0.9929	1.53389(32)	≈ 10.8
4.6036(3)	4.5228(3)	2.3(4)% $\times 10^{-5}$%	$1.7(3) \times 10^{-5}$%	0^+	0.9164(2)	.08437, 0.13161, 0.21598, 0.7006, 0.8320	1.53389(32)	$7.0^{+1.5}_{-1.1}$
5.0407(3)	4.9523(3)	$3.3(6) \times 10^{-5}$%	$2.4(4) \times 10^{-5}$%	6^+	0.4793(2)	0.08437, 0.16641, 0.2285	1.53389(32)	$4.6^{+9}_{-7} \times 10^3$
5.0872(3)	4.9979(3)	$1.4(3) \times 10^{-5}$%	$9.80(23) \times 10^{-6}$%	5^-	0.4328(2)	0.08437, 0.1420, 0.16641, 0.1822, 0.20593	1.53389(32)	$2.19(5) \times 10^4$
5.22966(23)	5.13791(23)	0.05(8)%	0.036(6)%	3^-	0.29033(5)	0.08437, 0.20593	1.53389(32)	44^{+9}_{-6}
5.26921(22)	5.17677(22)	0.290(16)%	0.210(11)%	4^+	0.25078(4)	0.08437, 0.16641	1.53389(32)	13.0(7)
5.30401(22)	5.21096(22)	0.55(3)%	0.395(17)%	1^-	0.21598(5)	0.08437, 0.13161, 0.21598	1.53389(32)	11.1(5)
5.43562(22)	5.34026(22)	37.3(21)%	27.0(14)%	2^+	0.08437(3)	0.08437	1.53389(32)	0.92(5)
5.51999(22)	5.42315(22)**	100.0(19)%	72.4(1)%	0^+	0.0	——	1.53389(32)	1.0117(17)

* [2014Un01].
** Taken from [1971Gr17], modified by -0.18 keV by [1991Ry01].
*** All values from [1977Ku15], except where noted. E_α(c. m.) values determined from level energies fed by α decay relative to the value to the ground state.

Table 8
direct α emission from ^{232}U*, $J^{\pi} = 0^+$, $T_{1/2}$ = 68.81(38) y**, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J^{π}_f	$E_{daughter}$(^{228}Th)	coincident γ-rays	R_0 (fm)	HF
4.539(1)	4.461(1)	$4.7(23) \times 10^{-5}$%	$3.2(16) \times 10^{-5}$%	2^+	0.874(1)	0.0578, 0.1291, 0.2095, 0.2702, 0.3279, 0.3381, 0.478, 0.547, 0.817	1.52885(29)	$3.3^{+3.4}_{-1.1}$
4.5822(5)	4.5032(5)	$3.1(6) \times 10^{-5}$%	$2.1(4) \times 10^{-5}$%	0^+	0.8313(5)	0.0578 , 0.2702, 0.3279, 0.5036, 0.7734, 0.831	1.52885(29)	$10.7^{+2.6}_{-1.8}$
4.8944(3)	4.8100(3)	$7.9(4) \times 10^{-5}$%	$5.4(3) \times 10^{-5}$%	5^-	0.5191(3)	0.0578, 0.1291, 0.1410, 0.1910, 0.3323	1.52885(29)	700(40)
5.0176(5)	4.9310(5)	$7.0(3) \times 10^{-5}$%	$4.8(2) \times 10^{-5}$%	3^-	0.3959(5)	0.0578, 0.1291, 0.2095, 0.3381	1.52885(29)	$5.2(2) \times 10^3$
5.0356(3)	4.9487(3)	$7.5(6) \times 10^{-5}$%	$5.1(4) \times 10^{-5}$%	6^+	0.3779(2)	0.0578, 0.1291, 0.1910	1.52885(29)	$6.4(5) \times 10^3$
5.0856(2)	4.9979(2)	$8.2(25) \times 10^{-3}$%	$5.6(17) \times 10^{-3}$%	1^-	0.3279(2)	0.0578 , 0.2702, 0.3279	1.52885(29)	80^{+40}_{-20}
5.2266(2)	5.1364(2)	0.47(2)%	0.32 (1)%	4^+	0.1869(7)	0.0578, 0.1291	1.52885(29)	16.3(6)
5.35568(15)	5.26334(15)	45.8(6)%	31.3(4)%	2^+	0.05778(5)	0.0578	1.52885(29)	0.996(14)
5.41346(14)	5.32012(14)***	100%	68.4(4)%	0^+	0.0	——	1.52885(29)	0.993(8)

* All values from [1977Ku15], except where noted. E_{α}(lab) values are deduced from level energies and the E_{α} value to the ground state of ^{228}Th.
** [1979Ag04].
*** Value from [1972Go33], modified by -0.18 keV as recommended by [1991Ry01].

Table 9
direct α emission from ^{236}Pu*, $J^{\pi} = 0^+$, $T_{1/2}$ = 2.862(8) y**, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J^{π}_f	$E_{daughter}$(^{232}U)	coincident γ-rays	R_0 (fm)	HF
4.89917(16)	4.81613(16)	$2.12(3)\times10^{-5}$%	$1.47(2)\times10^{-5}$%	(2^+)	0.9678(14)	0.0476, 0.1090, 0.3385, 0.4045, 0.4723, 0.5156, 0.5632, 0.5814, 0.8113, 0.9202	1.51022(22)	6.99(19)
4.93948(13)	4.85576(13)	$2.02(3)\times10^{-5}$%)	$1.40(2)\times10^{-5}$%		0.92749(10)	0.0476, 0.3640, 0.5156, 0.5632, 0.8799, 0.9277***	1.51022(22)	13.89(21)
5.00013(13)	4.91538(13)	$1.68(2)\times10^{-5}$%	$1.17(1)\times10^{-5}$%	2^+	0.86684(10)	0.0476, 0.1090, 0.7101, 0.8193, 0.8669	1.51022(22)	42.8(4)
5.03344(22)	4.94813(22)	$1.44(3)\times10^{-7}$%	$9.96(2)\times10^{-8}$%	4^+	0.83353(20)	0.0476, 0.1090, 0.6770	1.51022(22)	$8.40(3)\times10^3$
5.12016(13)	5.03136(13)	$3.63(5)\times10^{-6}$%	$2.52(3)\times10^{-6}$%	5^-	0.74681(10)	0.0476, 0.1090, 0.166, 0.4239, 0.5903	1.51022(22)	$1.23(2)\times10^3$
5.13233(13)	5.04534(13)	$3.54(6)\times10^{-4}$%	$2.45(4)\times10^{-4}$%	2^+	0.73464(10)	0.0476, 0.1090, 0.5780, 0.6870, 0.7345	1.51022(22)	15.16(25)
5.17553(9)	5.08781(9)	$3.41(6)\times10^{-4}$%	$2.36(3)\times10^{-4}$%	0^+	0.69144(4)	0.0476, 0.6439	1.51022(22)	29.8(4)
5.30382(8)	5.21392(8)	$3.89(5)\times10^{-4}$%	$2.70(3)\times10^{-4}$%	1-	0.56315(2)	0.0476, 0.5156, 0.5632	1.51022(22)	164.7(19)
5.32636(14)	5.23608(14)	$1.92(3)\times10^{-4}$%	$1.33(2)\times10^{-4}$%	8^+	0.54061(11)	0.0476, 0.1090, 0.1661, 0.2180	1.51022(22)	459(7)
5.54436(10)	5.45039(10)	$2.55(4)\times10^{-3}$%	$1.77(3)\times10^{-3}$%	6^+	0.32261(5)	0.0476, 0.1090, 0.1661	1.51022(22)	668(12)
5.71035(8)	5.61356(8)	0.328(5)%	0.227(3)%	4^+	0.15662(3)	0.0476, 0.1090	1.51022(22)	44.2(6)
5.81940(8)	5.72077(8)	44.0(7)%	30.51(47)%	2^+	0.04757(2)	0.0476	1.51022(22)	1.270(20)
5.86697(8)	5.76753(8)	100.0(9)%	69.26(45)%	0^+	0.0	——	1.51022(22)	0.997(7)

* All values from [1994Ar08], except where noted. E_{α}(lab) values are deduced from level energies and the E_{α} value to the ground state of ^{232}U. I_{α}(abs) values were deduced from γ intensities.
** Weighted average of 2.851(8) y [1957Ho66] and 1046.9(31) d [1984Na30] (365.2424 d = 1 y).
*** tentative γ transition assignment.

Table 10
direct α emission from ^{240}Cm*, $J^\pi = 0^+$, $T_{1/2}$ = 26.8(3) d**, $BR_\alpha = \approx 100\%$.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	$J_f^{\pi@}$	$E_{daughter}$(^{236}Pu)$^@$	coincident γ-rays$^@$	R_0 (fm)	HF
6.091	5.989	0.020%	0.014%	6^+	0.3058(1)	0.0446, 0.1028, 0.1584	1.4947(17)	160
6.251	6.147	0.073%	0.052%	4^+	0.14745(9)	0.0446, 0.1028	1.4947(17)	270
6.3536	6.2477***	40.6%	28.9%	2^+	0.04463(9)	0.0446	1.4947(17)	1.5
6.3971	6.2905***	100%	71.1%	0^+	0.0	——	1.4947(17)	0.98

* All values from [1967Ba42], except where noted.
** [1949Se01].
*** Values from [1971BB10], E_α(lab) values are modified by +0.4 keV as recommended in [1991Ry01].
$^@$ [2022Zh25].

Table 11
direct α emission from ^{244}Cf*, $J^\pi = 0^+$, $T_{1/2}$ = 19.4(6) m, BR_α = 75(6)%**.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	J_f^π	$E_{daughter}$(^{236}Pu)	coincident γ-rays	R_0 (fm)	HF
7.296(4)	7.176(4)	30(3)%	17(2)%	(2^+)	0.038(6)		1.498(60)	$2.4^{+0.6}_{-0.4}$
7.334(4)	7.214(4)	100%	58(5)%	0^+	0.0	——	1.498(60)	1.01(10)

* All values from [1967Si08], except where noted. E_α(lab) values are adjusted by +1.9 keV as reccommended in [1991Ry01].
** [2018Ko05].

Table 12
direct α emission from ^{248}Fm*, $J^\pi = 0^+$, $T_{1/2}$ = 35.1(8) s**, $BR_\alpha = 93^{+7}_{-17}$%***.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	J_f^π	$E_{daughter}$(^{244}Cf)	coincident γ-rays	R_0 (fm)	HF
7.958(20)	7.830(20)	25%	19^{+1}_{-2}		0.041(28)		1.4945(65)	3.1
7.999(20)	7.870(20)	100%	74^{+6}_{-14}	0^+	0.0	——	1.4945(65)	1.07

* All values from [1967Nu01], except where noted.
** [2011Ga19].
*** [1993An10].

Table 13
direct α emission from ^{252}No, $J^\pi = 0^+$, $T_{1/2}$ = 2.42(6) s*, BR_α = 65.3(5)%**.

E_α(c.m.)	E_α(lab)***	I_α(rel)***	I_α(abs)	J_f^π	$E_{daughter}$(^{248}Fm)	coincident γ-rays	R_0 (fm)	HF
8.507(8)	8.372(8)	≈33%	≈16%	(2^+)	0.044(10)		1.4787(75)	≈ 2.3
8.551(6)	8.415(6)	100%	≈49%	0^+	0.0	——	1.4787(75)	≈ 1.04

* [2007Su19].
** [2012Su22].
*** [1977Be09].

Table 14
direct α emission from ^{256}Rf, $J^\pi = 0^+$, $T_{1/2}$ = 6.66(10) ms*, $BR_\alpha = 0.29^{+0.13}_{-0.10}$%**.

E_α(c.m.)	E_α(lab)	I_α(abs)	J_f^π	$E_{daughter}$(^{248}Fm)	coincident γ-rays	R_0 (fm)	HF
8.930(8)	8.790(8)***	$0.29^{+0.13}_{-0.10}$%**	0^+	0.0	——	1.466(26)	$1.1^{+1.0}_{-0.4}$

* Weighted average of 6.7(2) ms [2023Is01], 6.90(23) ms [2020Ku23], 6.2(2) ms [1997He29] and 6.9(2) ms [2012Gr12].
** [2020Ku23].
*** Weighted average of 8.786(10) MeV [2010St14], 8.790(20) MeV [1997He29] and 8.812(23) MeV [1986He28].

Table 15
direct α emission from ^{256m}Rf*, Ex. = unk., $T_{1/2} = 10.4^{+8.4}_{-3.2}$ s, $BR_\alpha = \approx 100\%$.

E_α(c.m.)	E_α(lab)***	I_α(rel)***	I_α(abs)	J^π_f	$E_{daughter}$(^{248}Fm)	coincident γ-rays	R_0 (fm)	HF
8.604(40)	8.470(40)	$\approx 25\%$	$\approx 80\%$		0.315(57)+x	1.466(26)	≈ 2.5	
8.919(40)	8.780(40)	100%	$\approx 20\%$		x	1.466(26)	≈ 6	

* All values from [2009SaZV].

Table 16
direct α emission from ^{260}Sg*, $J^\pi = 0^+$, $T_{1/2}$ = 4.95(33) ms, BR_α = 29(3)%.

E_α(c.m.)	E_α(lab)	I_α(abs)	J^π_f	$E_{daughter}$(^{256}Rf)	coincident γ-rays	R_0 (fm)	HF	
9.872(30)	9.720(30)**	20(12)%**	5.8(35)%	(2^+)	0.028(32)	1.4562(75)	4^{+7}_{-2}	
9.900(10)	9.748(10)	100%	24.1(16)%	0^+	0.0	——	1.4562(75)	$1.0^{+0.3}_{-0.2}$

* All values from [2009He20], except where noted.
** [1985Mu11].

Table 17
direct α emission from ^{260m}Sg*, Ex. = unk., $T_{1/2} = 180^{+150}_{-60}$ ms, $BR_\alpha = \approx 100\%$.

E_α(c.m.)	E_α(lab)	I_α(abs)	J^π_f	$E_{daughter}$(^{256}Rf)	coincident γ-rays	R_0 (fm)	HF
8.897(80)	8.760(80)	25%	$\approx 20\%$	0.76(10)+x		1.4562(75)	≈ 0.06**
9.659(60)	9.510(60)	100%	$\approx 80\%$	x		1.4562(75)	≈ 2.5

* All values from [2009SaZV].
** The unphysically low HF value indicates that there is an issue with the interpretation of the data.

Table 18
direct α emission from ^{264}Hs*, $T_{1/2} = 0.90^{+0.40}_{-0.20}$ ms**, $BR_\alpha = 80^{+20}_{-40}\%$.

E_α(c.m.)	E_α(lab)	I_α(rel)	I_α(abs)	J^π_f	$E_{daughter}$(^{248}Fm)	coincident γ-rays	R_0 (fm)	HF***
10.499(40)	10.340(40)	50%	24%	0.468(57)+x		1.485(24)	3.1	
10.773(40)	10.610(40)	100%	48%		0.194(57)+x		1.485(24)	7
10.967(40)	10.800(40)	17%	13%		x		1.485(24)	110

* All values from [2011Sa41], except where noted. Based on the HF values, it is doubtful that these transitions are from the 0^+ ground state.
** [2009SaZV].

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