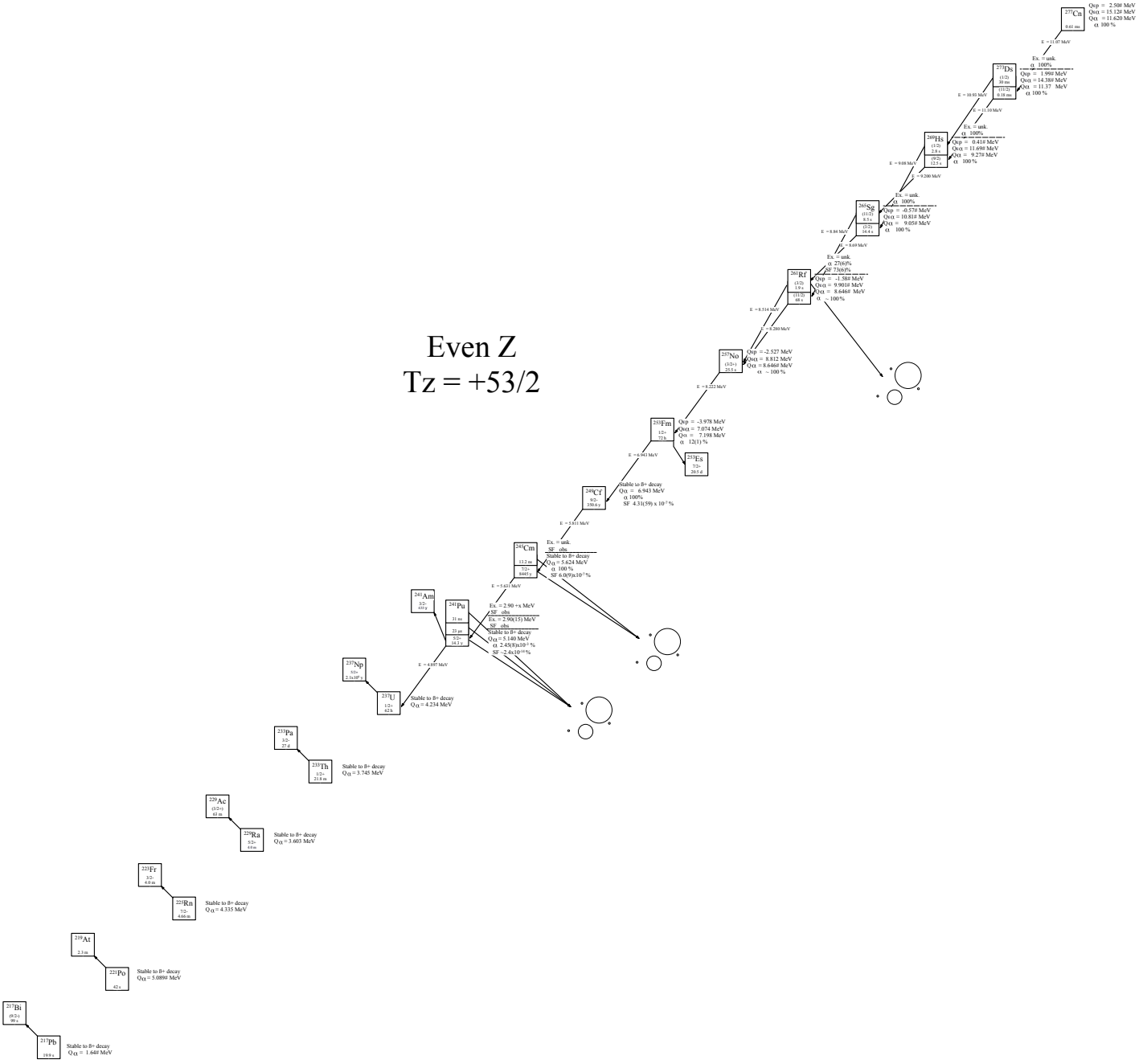

Fig. 1: Known experimental values for heavy particle emission of the even-Z T_z= +53/2 nuclei.

Last updated 3/14/2025

Table 1
Observed and predicted β-delayed particle emission from the even-Z, T_z = +53/2 nuclei. Unless otherwise stated, all Q-values are taken from [2021Wa16] or deduced from values therein. J^π values are taken from ENSDF.

Nuclide	Ex.	J^π	$T_{1/2}$	Q_ε	Q_{β^-}	$Q_{\beta^- \alpha}$	Experimental
^{217}Pb			19.9(53) s	-6.40(50)#	3.53(30)#	8.23(30)#	[**2017Ca12**]
^{221}Po			42^{+58}_{-28} s	-4.43(30)#	2.991(24)	8.799(27)	[**2010Ch19**]
^{225}Rn		$7/2^-$	4.66(4) m	-3.77(30)#	2.714(16)	7.506(18)	[**1977Bu03**]
^{229}Ra		$5/2^+$	4.0(2) m	-3.106(16)	1.872(20)	6.496(19)	[**1975Ra03**]
^{233}Th		$1/2^+$	21.83(4) m	-2.576(13)	1.242(1)	5.797(12)	[**1998Us01**]
^{237}U		$1/2^+$	162.04(5) h	-2.137(13)	0.519(1)	5.656(2)	[**1958Ca16**]
^{241}Pu		$5/2^+$	14.327(19) y**	-1.36(10)	0.0208(2)	5.839(2)	[**2013Cr05, 2009Dr05**]
^{241m1}Pu	2.90(15)		23(1) μs	1.54(18)	2.92(15)	8.74(15)	[**1970Ga10**]
^{241m2}Pu	2.90(15) + x		31(4) ns***	1.54(18) + x	2.92(15) + x	8.74(15) + x	[**2013Cr05, 2009Dr05**]
				$Q_{\varepsilon p}$	$Q_{\varepsilon \alpha}$		
^{245}Cm		$7/2^+$	8445(20) y	-0.896(2)	—	—	[**1982Po14**]
^{245m}Cm	x		13.2(18) ns	-0.896(2)+x	—	—	[**1972Wo07**]
^{249}Cf		$9/2^-$	350.6(21) y	-0.1236(4)	—	—	[**1973St15**]
^{253}Fm		$1/2^+$	72(3) h	0.335(1)	-3.978(3)	7.074(2)	[**1967Ah02**]
^{257}No		$(3/2^+)$	25.5(5) s	1.255(6)	-2.527(7)	8.812(6)	[**2005As05**]
^{261}Rf$^{@}$		$(11/2)^{@@@}$	68(3) s	1.76(21)#	-1.58(21)#	9.901(66)#	[**2008Du09**]
^{261m}Rf$^{@}$	x	$(3/2)^{@@@}$	1.9(4) s	1.76(21)#+x	-1.58(21)#+x	9.901(66)#+x	**2011Ha13**]
^{265}Sg$^{@}$		$(3/2)^{@@@}$	$14.4^{+3.7}_{-2.5}$ s	2.41(26)#	-0.57(39)#	10.81(24)#	[**2012Ha05**]
^{265m}Sg$^{@}$	x	$(11/2)^{@@@}$	$8.5^{+2.6}_{-1.6}$ s	2.41(26)#+x	-0.57(39)#+x	10.81(24)#+x	[**2012Ha05**]
^{269}Hs$^{@}$		$(9/2)^{@@@}$	$12.5^{+6.7}_{-2.8}$ s$^{@@}$	3.02(40)#	0.41(49)#	11.69(26)#	[**2024Og02, 2013Su04**]
^{269m}Hs$^{@}$	x	(1/2)	$2.8^{+13.6}_{-1.3}$ s	3.02(40)#+x	0.41(49)#+x	11.69(26)#+x	[**2024Og02**]
^{273}Ds$^{@}$		(11/2)	$0.18^{+0.11}_{-0.05}$ ms	3.50(45)#	1.99(53)#	14.38(40)#	[**2024Og02**]
^{273m}Ds$^{@}$	x	(1/2)	30^{+140}_{-15} ms	3.50(45)#+x	1.99(53)#+x	14.38(40)#+X	[**2024Og02**]
^{277}Cn			$0.61^{+0.46}_{-0.18}$ ms	3.93(49)#	2.50(57)#	15.12(45)#	[**2013Su04**]

* 100% β^- emitter.
** Weighted average of 14.329(29) y [2013Cr05] and 14.325(24) y [2009Dr05].
*** Weighted average of 30(5) ns [1969La14] and 34(7) ns [1981Gu04].
$^{@}$ The relative ordering of the two isomers is unclear.
$^{@@}$ Weighted average of 13^{+10}_{-9} s [2024Og02] and 12^{+9}_{-4} s [2013Su04].
$^{@@@}$ [2024Og02].

Table 2
Particle separation, Q-values, and measured values for direct particle emission of the even-Z, T_z = +53/2 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}	Experimental
^{217}Pb	9.90(42)#	1.64(42)#			
^{221}Po	8.475(30)#	5.089(30)#			
^{225}Rn	8.466(25)	4.335(23)			
^{229}Ra	8.111(17)	3.603(19)			
^{233}Th	7.712(13)	3.745(16)			
^{237}U	7.233(14)	4.234(1)			
^{241}Pu	6.650(17)	5.140	2.45(8)$\times10^{-3}$%	$\approx$2.4$\times10^{-14}$%*	[**1968Ah01, 1985Dr09, 1976GuZN, 1965Ba26**, 2009Dr05, 1985He02, 1985HeZY, 1985Wi04, 1984WiZW, 1979VaZF, 1977VaYR, 1971Cl03, 1971GuZY, 1966Be24, 1963Iv01, 1962Dz09, 1961Sm03, 1960Br15, 1953AsZZ, 1950Th54, 1949SeZU]
^{241m1}Pu	3.75(15)	8.04(15)		obs	[**1981Gu04, 1970Ga10, 1970Do01**, 1970GaZV]
^{241m2}Pu	3.75(15) - x	8.04(15) + x		obs	[**1981Gu04**, 1969La14]
^{245}Cm	6.164(1)	5.624	100%	6.0(9)$\times10^{-7}$%	[**1985Dr10, 1975Ba65, 1966Fr03**, 2009KoZV, 2008KoZP, 1998Wh01, 1994Sh31, 1991Po17, 1982Po14, 1980Di13, 1975BaXK, 1971Ma32, 1969Me01,1966Ba07, 1963Bo48, 1963Dz07, 1961Ca01, 1955Br02, 1954Fr19, 1954Hu50]
^{245m}Cm	6.164(1)-x	5.624+x		obs	[**1972Wo07, 1971Br39**, 1971BrZU]
^{249}Cf	5.697(50)	6.293	100%	4.31(59)$\times10^{-7}$%	[**2015Ah03, 1997Ar31, 1987Ta26**, 1996Ko29, 1996Lo73, 1991Po17, 1986Ah02, 1977Ba67, 1976Ba68, 1973AhZM, 1973Ba80, 1973St15, 1971Bb10, 1971Sc14, 1971ScZW, 1970BaZZ, 1969Ba57, 1969Ba59, 1969Me01, 1969Mi08, 1967Ko03, 1966Ah02]
^{253}Fm	5.238(50)	7.198(1)	12(1)%		[**1967Ah02**, 1959Si88, 1957Am59]
^{257}No	4.50(12)#	8.477(6)	$\approx$100%		[**2005As05**, 2012Ha05, 2000La34, 1994Og01, 1970Es02, 1967Gh01]
^{261}Rf**	4.245(14)#	8.646(65)#	$\approx$ 100%		[**2011Ha13, 1970Gh01**, 2013Mu08, 2012Ha05, 2008Du09, 2006Ni10, 2008Dv02, 2008Ga08, 2002Ho11, 2000La34, 1998Tu01, 1996Ho13, 1996La12, 1970GhZY]
^{261m}Rf**	4.245(14)#-x	8.646(65)#+x	27(6)%	73(6)%	[**2011Ha13, 2008Dv02**, 2013Mu08, 2013Su04, 2012Ha05, 2008Dv02, 2002Ho11]
^{265}Sg**	3.76(27)#	9.05(12)#	100%		[**2024Og02, 2013Su04, 2012Ha05, 2009Mo09, 2002Ho11**, 2012Tu01, 2010Gr04, 2009Dv01, 2009Mo34, 2007MoZZ, 2007Mo09, 2006Dv01, 2006MoZV, 2005MoZQ, 2005MoZT, 2004MoZU, 2004Vo24, 2003Du27, 2003Tu06, 2002Du21, 2001HoZY, 1998Tu01, 1998TuZZ, 1997Sc48, 1997Sc49, 1996No13, 1995NoZW, 1995NoZZ, 1995Og02, 1994LaZX, 1994LaZZ, 1994Lo27, 1994Og04]
^{265m}Sg**	3.76(27)#-x	9.05(12)#+x	100%		[**2024Og02**, 2012Tu01, 2010Gr04, 2009Mo09, 2009Mo34, 2007MoZZ, 2007Mo09, 2006MoZV, 2005MoZQ, 2005MoZT, 2004MoZU, 2003Du27, 2003Tu06, 2002Du21, 2002TuZY, 2002TuZZ, 1998Tu01, 1998TuZZ]
^{269}Hs**	3.50(40)#	9.27(17)#	100%		[**2024Og02, 2013Su04, 2008Mo09, 2002Ho11**, 2012Ha05, 2012Tu01, 2010Gr04, 2009Mo34, 2007MoZZ, 2007Mo09, 2006MoZV, 2005MoZQ, 2005MoZT, 2004MoZU, 2004Vo24, 2003Tu06, 2002Du21, 2002TuZY, 2002TuZZ, 2001HoZY]
^{269m}Hs**	3.50(40)#-x	9.27(17)#+x	100%		[**2024Og02**, 2012Tu01, 2010Gr04, 2009Mo34, 2008Mo09, 2007MoZZ, 2007Mo09, 2006Dv01, 2006MoZV, 2005MoZQ, 2005MoZT, 2004MoZU, 2003Tu06, 2002Du21, 2002TuZY, 2002TuZZ]
^{273}Ds**	2.49(51)#	11.37(54)	100%		[**2024Og02, 2013Su04, 2008Mo09, 2002Ho11**, 2009Mo34, 2007MoZZ, 2007Mo09, 2006MoZV, 2005MoZQ, 2005MoZT, 2004MoZU, 2001HoZY, 1996La12, 1996LaZY]
^{273m}Ds**	2.49(51)#-x	11.37(54)+x	100%		[**2024Og02, 2013Su04, 2008Mo09, 2002Ho11**, 2009Mo34, 2007MoZZ, 2007Mo09, 2006MoZV, 2005MoZQ, 2005MoZT, 2004MoZU]
^{277}Cn	2.34(65)#	11.620(58)	100%		[**2013Su04, 2008Mo09, 2002Ho11**, 2009Mo34, 2007MoZZ, 2007Mo09, 2006MoZV, 2005MoZQ, 2005MoZT, 2004MoZU, 2001HoZY]

* [1985Dr09].
** The relative ordering of the two isomers is unclear.

Table 3
direct α emission from ^{241}Pu*, J^{π} = 5/2$^+$, $T_{1/2}$ = 14.327(19) y**, BR_{α} =2.45(8)$\times10^{-3}$%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}@	$E_{daughter}$(^{237}U)@	coincident γ-rays (keV)@	R_0(fm)	HF
4.772(6)	4.693(6)	≈0.04%	≈7.34$\times10^{-7}$%	(11/2$^-$)	0.3670	11.4, 44.9, 56.3, 71.6, 77.1, 93, 103.7, 114.0, 148.6, 160.0	1.51540(43)	≈131
4.823(5)	4.743(5)	≈0.08%	≈1.7$\times10^{-6}$%%	13/2$^+$	0.3173	155	1.51540(43)	≈127
4.865(5)	4.784(5)	0.24(12)%	4.9(25)$\times10^{-6}$%	(7/2)$^-$	0.2740	11.4, 44.9, 56.3, 71.6, 77.1, 103.7, 114.0, 148.6, 160.0	1.51540(43)	90^{+90}_{-30}
4.879(3)	4.798(3)	1.68(12)%	3.42(3)$\times10^{-5}$%	9/2$^+$	0.2609	11.4, 44.9, 56.3, 56.8, 71.6, 77.1, 101, 103.7, 121.2, 148.6, 160.0	1.51540(43)	15.8(13)
4.936(3)	4.854(3)	14.54(26)%	3.0(1)$\times10^{-4}$%	7/2$^+$	0.2042	11.4, 44.2, 44.9, 56.3, 71.6, 77.1, 103.7, 148.6, 160.0	1.51540(43)	4.5(2)
4.980(3)	4.897(3)	100.0(6)%	2.0(7)$\times10^{-3}$%	5/2$^+$	0.160	11.4, 44.9, 56.3, 71.6, 77.1, 103.7, 148.6, 160.0	1.51540(43)	1.31(5)
5.057(3)	4.973(3)	1.56(12)%	3.(3)$\times10^{-5}$%	7/2$^+$	0.0829	11.4, 71.6	1.51540(43)	274(23)
5.084(4)	5.000(4)	0.49(6)%	1.0(1)$\times10^{-5}$%	5/2$^+$	0.0563	11.4, 44.9, 56.3	1.51540(43)	1.14(2)$\times10^3$
5.128(3)	5.043(3)	1.23%***	2.5(1)$\times10^{-5}$%	3/2$^+$	0.0114	11.4	1.51540(43)	1.0$\times10^3$
5.141(5)	5.056(5)	0.42%***	8.6(3)$\times10^{-6}$%	1/2$^+$	0.0	——	1.51540(43)	3.5$\times10^3$

* All values from [1968Ah01], except where noted. E_{α} values are adjusted by +0.6 keV as recomended in [1991Ry01].
** Weighted average of 14.329(29) y [2013Cr05] and 14.325(24) y [2009Dr05].
*** Values from [1965Ba26]. [1968Ah01] reports 1.8(1)% for the sum of the two intensities.
@ [2006Ba41].

Table 4
direct α emission from ^{245}Cm*, J^{π} = 7/2$^+$, $T_{1/2}$ = 8445(20) y**, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}@	$E_{daughter}$(^{241}Pu)@	coincident γ-rays (keV)@	R_0(fm)	HF
≈5.236	≈5.151	≤5$\times10^{-3}$%	≤5$\times10^{-3}$%	(13/2$^+$)	0.3843		1.49615(36)	≥960
≈5.245	≈5.159@@	≤4$\times10^{-3}$%	≤4$\times10^{-3}$%		0.3761		1.49615(36)	≥1.35$\times10^3$
5.3213	5.2344	0.35%	0.32%	11/2$^+$	0.3012	42.0, 53.8, 65.5, 69.2, 79.3, 95.8, 126.1, 133.1, 136.1, 139.9, 175.1, 190.0, 205.4, 232.0	1.49615(36)	50
5.361	5.273@@@	0.08%	0.07%		0.2602		1.49615(36)	410
5.3923(12)	5.3043(12)***	5.5(4)%	5.1(4)%***	5/2$^+$	0.2284	42.0, 52.0, 53.8, 61.3, 65.5, 95.8, 170.9, 181.0, 223.0	1.49615(36)	8.8(7)
5.4501(11)	5.3611(11)***	100%	92.7(9)%***	7/2$^+$	0.1751	42.0, 53.8, 79.3, 95.8, 133.1, 175.1	1.49615(36)	1.083(14)
≈5.459	≈5.370			11/2$^+$	0.1613	42.0, 53.8, 65.5, 95.8		
5.5263	5.4361	0.04%	0.04%	9/2$^+$	0.0958	42.0, 53.8, 95.8	1.49615(36)	7$\times10^3$
5.5796	5.4885	0.90%	0.83%	7/2$^+$	0.0420	42.0	1.49615(36)	700
5.6208(5)	5.5290(5)***	0.76(22)%	0.7(2)%***	5/2$^+$	0.0	——	1.49615(36)	$1.4^{+0.6}_{-0.3}\times10^3$

* All values from [1975Ba65], except where noted. E_{α} values are adjusted by -0.2 keV as recommended in [1991Ry01].
** [1982Po14].
*** Value recommended in [1991Ry01], based on adjusted values from [1975Ba65] and [1966Fr03].
@ ensdf
@@ Typo in [1975Ba65] lists this transition as 5.119 MeV going to 376 keV level.
@@@ Possibly contamination from ^{243}Am [1975Ba65].

Table 5
direct α emission from ^{249}Cf*, J^{π} = 9/2$^-$, $T_{1/2}$ = 350.6(21) y**, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J^{π}_f***	$E_{daughter}$(^{245}Cm)***	coincident γ-rays (keV)***	HF$^{@}$
5.1909(5)	5.1075(5)***	4.0(16)×10^{-6}%	3.3(13)×10^{-6}%***		1.1026(5)	1102.6	$2.3^{+1.5}_{-0.7}\times10^3$
5.2388(8)	5.1546(8)***	2.4(16)×10^{-6}%	2.0(13)×10^{-6}%***		1.0547(8)	1054.7	$8^{+15}_{-3}\times10^3$
5.3217(10)	5.2362(10)	1.8(4)×10^{-3}%	1.5(3)×10^{-3}%		0.9714	54.8, 198.1, 66.8, 121.6, 252.9 718.5, 849.9, 916.6, 971.3	30^{+9}_{-6}
5.3869(5)	5.3004(5)***	9.0(16)×10^{-6}%	7.4(13)×10^{-6}%	(3/2$^+$)	0.9066(5)	906.6	1.9(4)×10^4
5.3935(5)	5.3069(5)***	9.7(35)×10^{-5}%	8.0(29)×10^{-5}%***		0.9000(5)	42.9, 54.8, 54.9, 65.9, 66.8, 121.6, 198.1, 229.2, 241.0, 252.9, 295.7 483.5	$1.9^{+1.1}_{-0.5}\times10^3$
5.4029(5)	5.3161(5)***	3.0(3)×10^{-5}%	2.5(2)×10^{-5}%***	(9/2$^+$)	0.8906(5)	890.6	7.0(6)×10^3
5.4407(10)	5.3533(10)	2.4(4)×10^{-3}%	2.0(3)×10^{-3}%	(11/2$^+$)	0.8526(1)	54.8, 66.8, 121.6, 731.0, 798.0	149^{+28}_{-21}
5.4443(5)	5.3568(5)***	1.2(2)×10^{-4}%	1.0(2)×10^{-4}%***		0.8492(5)	54.8, 198.1, 252.9, 596.1, 849.3	$3.1^{+0.8}_{-0.6}\times10^3$
5.4524(5)	5.3648(5)***	9.0(16)×10^{-6}%	7.4(14)×10^{-6}%***		0.8411(5)	841.1	$4.8^{+1.2}_{-0.8}\times10^4$
5.5083(5)	5.4198(5)***	1.7(2)×10^{-4}%	1.4(2)×10^{-4}%***	(9/2$^+$)	0.7852(1)	54.8, 66.8, 121.6, 663.7	$5.5^{+1.0}_{-0.8}\times10^3$
5.5192(5)	5.4305(5)***	2.4(12)×10^{-5}%	2.0(10)×10^{-5}%***		0.7743(5)	54.8, 66.8, 121.6, 652.7	$5^{+5}_{-2}\times10^4$
5.5215(5)	5.4328(5)	0.0125(9)%	0.0103(7)%	(11/2$^-$)	0.7719(1)	42.9, 54.8, 54.9, 65.9, 66.8, 121.6, 198.1, 229.2, 241.0, 252.9, 295.7 356.1, 421.0, 650.3, 717.1	90(7)
5.5571(5)	5.4678(5)***	9.7(35)×10^{-5}%	8.0(29)×10^{-5}%***		0.7364(5)	54.8, 198.1, 252.9, 483.5	$1.9^{+1.1}_{-0.5}\times10^4$
5.5918(5)	5.5020(5)	0.053(2)%	0.044(2)%	(9/2$^-$)	0.7018	42.9, 54.8, 66.8, 121.6, 198.1, 241.0, 252.9, 295.7, 405.9, 580.3, 647.0, 701.8	55.2(32)
5.6193(10)	5.5290(10)	2.7(4)×10^{-3}%	2.2(3)×10^{-3}%*		0.6742(10)*		$1.6^{+0.3}_{-0.2}\times10^3$
5.6501(5)	5.5593(5)	0.140(6)%	0.115(5)%	(7/2$^-$)	0.6436	37.6, 42.9, 54.8, 54.9, 66.8, 92.5, 121.6, 198.1, 229.2, 241.0, 252.9, 255.6, 266.7, 295.7, 333.4, 388.2 390.8, 588.8, 643.6	46(3)
5.7081(5)	5.6164(5)	0.027(1)%	0.022(1)%	(11/2$^+$)	0.5547	42.9, 54.8, 198.1, 241.0, 252.9, 259.0, 295.7	780(50)
5.7392(10)	5.6470(10)	3.2(5)×10^{-3}%	2.6(4)×10^{-3}%*		0.5543(10)*		$6.7^{+1.3}_{-1.0}\times10^3$
5.7852(5)	5.6922(5)	0.35(1)%	0.29(1)%	13/2$^-$	0.5088	37.6, 42.9, 54.7, 54.8, 54.9, 65.9, 66.9, 92.5, 121.6, 198.1, 229.2, 241.0, 252.9, 266.7, 295.7, 321.3, 333.4, 388.2	108(5)
5.7977(10)	5.7046(10)	0.058(4)%	0.048(3)%*		0.4958(10)*		770(60)
5.8509(5)	5.7569(5)	5.68(9)%	4.68(7)%	11/2$^-$	0.4429	37.6, 42.9, 54.7, 54.8, 54.9, 66.8, 92.5, 121.6, 198.1, 229.2, 241.0, 252.9, 266.7, 295.7, 321.3, 333.4, 388.2	15.5(6)
5.8768(5)	5.7824(5)	0.42(1)%	0.35(1)%	11/2$^+$	0.4165	42.9, 54.8, 54.9, 65.9, 66.8, 121.6, 198.1, 229.2, 241.0, 252.9, 295.7	290(13)
5.9054(5)	5.8105(5)	100%	82.4(3)%	9/2$^-$	0.3882	37.6, 42.9, 54.8, 54.9, 66.8, 92.5, 121.6, 198.1, 229.2, 241.0, 252.9, 266.7, 295.7, 333.4, 388.2	1.76(6)
5.9430(5)	5.8475(5)	1.75(4)%	1.44(3)%	9/2$^+$	0.3506	42.9, 54.8, 54.9, 66.8, 121.6, 198.1, 229.2, 241.0, 252.9, 295.7	161(7)
5.9979(5)	5.9015(5)	3.85(6)%	3.17(5)%	7/2$^+$	0.2957	42.9, 54.8, 198.1, 241.0, 252.9, 295.7	143(5)
6.0408(5)	5.9438(5)	3.99(6)%	3.29(5)%	5/2$^+$	0.2529	54.8, 198.1, 252.9	232(9)
6.0937(5)	5.9958(5)	0.049(4)%	0.040(3)%	13/2$^+$	0.2003		3.6(3)×10^4
6.1719(5)	6.0728(5)	0.41(1)%	0.34(1)%	11/2$^+$	0.1216	54.8, 66.8, 121.6	1.07(5)×10^4
6.2387(5)	6.1385(5)	1.602(74)%	1.320(3)	79/2$^+$	0.0548	54.8	6.0(2)×10^3
6.2935(5)	6.1924(5)	2.96(6)%	2.44(5)%	7/2$^+$	0.0	——	6.01(24)×10^3

* All values from [2015Ah03], except where noted.
** [1973St15].
*** [1997Ar31].
$^{@}$ R_0 = 1.4839(14) fm.

Table 6
direct α emission from ^{253}Fm*, J^{π} = 1/2^{+}, $T_{1/2}$ = 72(3) h, BR_{α} = 12(1)%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{249}Cf)**	coincident γ-rays (keV)**	HF***
≈6.591	≈6.487	≈0.7%	≈0.036%		≈0.606		≈31
6.646(5)	6.541(5)	3.5(9)%	0.18(5)%		0.5506	134, 145.0, 271.8	11^{+5}_{-3}
6.737(4)	6.630(4)	6.1(12)%	0.31(7)%	5/2^{+}	0.460		17^{+6}_{-4}
6.757(4)	6.650(4)	5.6(9)%	0.29(5)%	3/2^{+}	0.4376	43.0, 55.1, 58.0, 62.5, 135.4, 145.0, 191.6, 234.6, 375.1, 379.5, 437.6	23^{+7}_{-5}
6.780(3)	6.673(3)	54.3(25)%	2.80.3%	1/2^{+}	0.4168	145.0, 271.8	3.0(3)
6.956(3)	6.846(3)	19.7(13)%	1.0(1)%	9/2^{+}	0.243.1	43.0, 55.1, 145.0	47^{+8}_{-6}
≈6.977	≈6.867	≈2.1%	≈0.11%	15/2^{-}**	0.221.7	62.5, 159.3	≈550
7.013(4)	6.902(4)	23.0(13)%	1.2(1)%	7/2^{+}	0.1880	43.0, 145.0	70(8)
7.055(3)	6.943(3)	100(4)%	5.1(4)%	5/2^{+}	0.1450	145.0	24.3(24)
7.136(4)	7.023(4)	15.7(10)%	0.80(8)%	11/2^{-}	0.0625	62.5	340^{+60}_{-50}
7.197(4)	7.083(4)	3.0(5)%	0.16(3)%	9/2^{-}	0.0	——	$3.2^{+0.9}_{-0.6}\times10^{3}$

* All values from [1967Ah02], except where noted. E_{α} is adjusted by -8.8 keV as recommended in [1991Ry01].
** [2024Ne04].
*** R_0 = 1.47787(78) fm.

Table 7
direct α emission from ^{257}No*, J^{π} = (3/2^{+}), $T_{1/2}$ = 25.5(5) s, BR_{α} = ≈100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(rel)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{253}Fm)	coincident γ-rays (keV)	R_0 (fm)	HF
8.318	8.188**	<4.8%	<4%	(5/2^{+})	0.1587	22.3, 136.4	1.477(13)	>28
8.352(6)	8.222(6)	100(2)%	83(2)%	3/2^{+}	0.1241	22.3, 24.8, 47.1, 77.0, 101.8, 124.1	1.477(13)	1.8^{+7}_{-5}
8.455(7)	8.323(7)	20.5(25)%	17(2)%	(3/2^{+})	0.0223	22.3	1.477(13)	19^{+8}_{-5}

* All values from [2005As05].
** Deduced from γ energies.

Table 8
direct α emission from ^{261}Rf, J^{π} = (11/2)*, $T_{1/2}$ = 68(3) s**, BR_{α} = ≈100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{257}No)	coincident γ-rays (keV)	R_0 (fm)	HF
8.409(20)	8.280(20)***	≈100%				1.486(14)	$1.6^{+0.7}_{-0.5}$

* [2024Og02].
** [2008Du09].
*** [1970Gh01].

Table 9
direct α emission from ^{261m}Rf, Ex. = unk., J^{π} = (3/2)*, $T_{1/2}$ =1.9(4) s**, BR_{α} = ≈100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J_f^{π}	$E_{daughter}$(^{257}No)	coincident γ-rays (keV)	R_0 (fm)	HF
8.647(30)	8.514(30)***	≈100%				1.486(14)	$1.0^{+0.7}_{-0.5}$

* [2024Og02].
** [2011Ha13].
*** Weighted average of 8.520(50) MeV [2011Ha13], 8.510(60) MeV [2012Ha05] and 8.510(50) MeV [2008Dv02],

Table 10
direct α emission from ^{265}Sg, J^{π} = (3/2)*, $T_{1/2}$ = $14.4^{+3.7}_{-2.5}$ s**, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J^{π}_{f}	$E_{daughter}$(^{261}Rf)	coincident γ-rays (keV)	R_0 (fm)	HF
8.823(50)	8.690(50)**	100%	3/2*	x		1.457(60)	$0.7^{+2.6}_{-0.6}$

* [2024Og02].
** [2012Ha05].

Table 11
direct α emission from ^{265m}Sg, Ex. = unk., J^{π} = (11/2)*, $T_{1/2}$ = $8.5^{+2.6}_{-1.6}$ s, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J^{π}_{f}	$E_{daughter}$(^{261}Rf)	coincident γ-rays (keV)	R_0 (fm)	HF
8.975(50)	8.840(50)**	100%	(11/2)*	0.0*	——	1.457(60)	1^{+5}_{-1}

* [2024Og02].
** [2012Ha05].

Table 12
direct α emission from ^{269}Hs*, J^{π} = (9/2), $T_{1/2}$ = $12.5^{+6.7}_{-2.8}$ s**, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J^{π}_{f}	$E_{daughter}$(^{265}Sg)	coincident γ-rays (keV)	R_0 (fm)	HF
9.339(40)	9.200(40)	100%	(9/2)	x		1.465(38)	6^{+10}_{-5}

* All values from [2024Og02], except where noted.
** Weighted average of 13^{+10}_{-9} s [2024Og02] and 12^{+9}_{-4} s [2013Su04].

Table 13
direct α emission from ^{269}Hs*, Ex. = unk., J^{π} = (1/2), $T_{1/2}$ = $2.8^{+13.6}_{-1.3}$ s, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J^{π}_{f}	$E_{daughter}$(^{265}Sg)	coincident γ-rays (keV)	R_0 (fm)	HF
9.22(15)	9.08(15)	100%	(1/2)	x		1.465(38)	$0.6^{+34}_{-3.1}$

* All values from [2024Og02].

Table 14
direct α emission from ^{273}Ds*, J^{π} = (11/2), $T_{1/2}$ = $0.18^{+0.11}_{-0.05}$ ms, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J^{π}_{f}	$E_{daughter}$(^{269}Hs)	coincident γ-rays (keV)	R_0 (fm)	HF
11.265(70)	11.100(70)	100%	(11/2)	x			

* All values from [2024Og02].

Table 15
direct α emission from ^{273m}Ds*, Ex. = unk., J^{π} = (1/2), $T_{1/2}$ = 30^{+140}_{-15} ms, BR_{α} = 100%.

E_{α}(c.m.)	E_{α}(lab)	I_{α}(abs)	J^{π}_{f}	$E_{daughter}$(^{269}Hs)	coincident γ-rays (keV)	R_0 (fm)	HF
11.093(20)	10.930(20)	100%	(1/2)	x			

* All values from [2024Og02].

Table 16
direct α emission from ^{277}Cn, $T_{1/2} = 0.61^{+0.46}_{-0.18}$ ms, $BR_\alpha = 100\%$.

E_α(c.m.)	E_α(lab)	I_α(abs)	J^π_f	$E_{daughter}(^{261}Rf)$	coincident γ-rays (keV)	R_0 (fm)	HF
11.232(80)	11.070(80)	100%					

* All values from [2013Su04].

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