

Table 1

Observed and predicted β -delayed particle emission from the even- Z , $T_z = +51/2$ nuclei. Unless otherwise stated, all Q -values are taken from [2021Wa16] or deduced from values therein. J^π values for all nuclei are taken from ENSDF.

Nuclide	Ex.	J^π	$T_{1/2}$	Q_ϵ	Q_{β^-}	$Q_{\beta^- \alpha}$	Experimental
$^{207}\text{Pt}^*$					6.50(50)#	7.99(57)#	[2012Ku26]
$^{211}\text{Hg}^*$				26.4(81) s	5.69(21)#	8.01(36)#	[2017Ca12]
$^{215}\text{Pb}^*$		(9/2 ⁺)	147(12) s	-5.69(31)#	2.710(50)#	8.175(64)	[2013De20]
^{219}Po		(9/2 ⁺)	620(59) s	-3.64(20)#	2.285(16)#	8.807(17)	[2015Fi07]
$^{223}\text{Rn}^*$		7/2	24.3(3) m ^{**}	-3.038(16)	2.007(8)	7.749(9)	[1992Ku03, 1986Bo35]
$^{227}\text{Ra}^*$		3/2 ⁺	41.2(2) m	-2.505(6)	1.328(2)	6.550(3)	[1953Bu63]
$^{231}\text{Th}^*$		5/2 ⁺	25.52(10) h	-1.947(13)	0.392(2)	5.721(2)	[1958Ca19]
^{235}U		7/2 ⁻	7.04(1) $\times 10^8$ y	-1.370(14)	-0.124(1)	—	[2004Sc03]
^{235m}U	2.5(3)		3.6(18) ms	1.1(3)	2.4(3)	7.8(3)	[2007Ob02]
^{239}Pu		1/2 ⁺	24085(13) y ^{***}	-0.773(1)	-0.802(2)	—	[1975Al15, 1978Ja20, 1978Se12, 1978Pr07]
^{239m}Pu	2.5(10)		7.0(4) $\mu\text{s}^{\text{@}}$	1.7(10)	1.7(10)	7.8(10)	[1970Po01, 1972Wo07, 1977GoYZ, 1980Gu20]
^{243}Cm		5/2 ⁺	29.20(14) y	0.007(2)	$Q_{\epsilon p}$ -4.824(1)	$Q_{\epsilon \alpha}$ 5.446(2)	[1986Ti03, 1958Ch38]
^{243m}Cm	1.50(30)		42(6) ns	0.151(30)	-3.32(30)	6.75(30)	[1973Br04, 1972Wo07]
^{247}Cf		(7/2 ⁺)	3.11(3) h	0.620(15)	-3.796(14)	6.509(14)	[1984Ah02]
^{251}Fm		(9/2 ⁻)	5.30(8) h	1.447(15)	-2.500(14)	8.044(15)	[1973Ah02]
^{255}No		(1/2 ⁺)	3.52(18) m	1.970(015)	-1.380(14)	9.875(15)	[2011As02]
^{259}Rf			2.4(4) s ^{@@}	2.52(10)#	-0.40(12)#	11.100(73)#	[1973Dr10, 1981Be03, 1985So03, 1994Gr08, 2004Fo08, 2006Gr24]
^{263}Sg			0.9(2) s	3.09(19)#	0.51(24)#	11.92(12)#	[1974Gh04]
^{263m}Sg	x		560 ⁺¹⁶⁰ ₋₁₀₀ ms	3.09(19)#+x	0.51(24)#+x	11.92(12)#+x	[2006Ni10]
$^{267}\text{Hs}^{\text{@@@}}$			0.80 ^{+3.80} _{-0.37} s	3.89(28)#	1.75(26)#	13.12(19)#	[2004Mo40]
$^{267m}\text{Hs}^{\text{@@@}}$	x		52 ⁺¹³ ₋₈ ms	3.89(28)#+x	1.75(26)#+x	13.12(19)#+x	[2004Mo40]
$^{271}\text{Ds}^{\text{@@@}}$			1.63 ^{+0.44} _{-0.29} ms	4.85(34)#	3.55(27)#	14.76(28)#	[2015Mo25]
$^{271m}\text{Ds}^{\text{@@@}}$	x		69 ⁺⁵⁶ ₋₂₁ ms	4.85(34)#+x	3.55(27)#+x	14.76(28)#+x	[2015Mo25]

* 100% β^- emitter.

** Weighted average of 25.3(4) m [1992Ku03] and 23.2(4) m [1986Bo35].

*** Weighted average of 24060(16) y [1975Al15], 24131(16) y [1978Ja20], 24101(20) y [1978Se12], 24089(13) y and 24019(21) [1978Pr07].

@ Weighted average of 8(1) μs [1970Po01], 8.1(8) μs [1972Wo07], 7.5(10) μs [1977GoYZ], and 6.5(4) μs [1980Gu20].

@@ Weighted average of 3.2(8) s [1973Dr10], 3.0(1.3) s [1981Be03], 3.4(17) s [1985So03], 1.7^{+0.8}_{-0.5} s [1994Gr08], 2.2⁺¹⁷_{-0.8} s [2004Fo08] and 1.9^{+1.3}_{-0.5} s [2006Gr24].

@@@ Unclear which is the ground state.

Table 2

Particle separation, Q-values, and measured values for direct particle emission of the even-Z, $T_z = +51/2$ 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}	$BR_{cluster}$	type	Experimental
^{207}Pt		0.71(57)#					
^{211}Hg	10.36(45)#	1.32(45)#					
^{215}Pb	9.41(20)#	2.31(21)					
^{219}Po	7.824(31)	5.914(5)	28.2(20)%				[2015Fi07]
^{223}Rn	7.852(18)	5.283(18)					
^{227}Ra	7.632(7)	4.363(8)					
^{231}Th	7.312(16)	4.213(2)					
^{235}U	6.709(4)	4.678(1)	100%	$7.2(21)\times 10^{-9}\%$	$8.06(432)\times 10^{-12}\%$	Ne*	2005Ga36, 2004Da24, 1991Bo20, 1981Vo02, 1975Va11, 2025Da18, 2020FoZZ, 2018Ma03, 2017Le03, 2006Al28, 2005Ga36, 2004Sc03, 1999Yu01, 1997Tr17, 1989Tr11, 1986BaYK, 1986He12, 1984He12, 1983Ba77, 1983Ol01, 1982Va04, 1982VaZP, 1981VaZV, 1977Ba72, 1974GrZA, 1974Te03, 1973GrYU, 1971Cl03, 1971Ja07, 1971KrZH, 1974De19, 1966Al23, 1966Ba58, 1966Ga03, 1966Ga27, 1965De06, 1965Wh05, 1964Sc27, 1962De15, 1960Ba44, 1960Vo07, 1958Fi10, 1957Cl16, 1957Wu39, 1955St04, 1953Fr37, 1952Fl20, 1952Se67, 1951Gh22, 1951Sa30, 1944ChZX, 1940Fl02]
^{235m}U	4.2(3)	7.2(3)		obs			[2007Ob02]
^{239}Pu	6.1553(4)	5.2455(2)	100%	$3.1(6)\times 10^{-10}\%$			[2000Ho27, 1993Ga28, 1976GuZN, 1968Ba25, 1966Ah02, 2020Yo01, 2016Di11, 1992B113, 1986LoZT, 1985Dr09, 1984Iw02, 1982He02, 1981AhZV, 1980RyZX, 1979Ce04, 1978Ja20, 1978Lu10, 1978Ma45, 1978Pr07, 1978Se12, 1977Ja08, 1977MeYY, 1977VaYQ, 1977VaZW, 1976BaZZ, 1975Al15, 1971GuZY, 1970Cl11, 1968Cl02, 1966He11, 1965Ho04, 1965Tr03, 1963Ba09, 1963Le17, 1963Bj03, 1962Ba52, 1962Le11, 1961Dz05, 1959Do64, 1959Ma25, 1957No15, 1955Go57, 1953AsZZ, 1952As28, 1952Se67, 1950Ro09, 1949GaZZ, 1949SeZY, 1949SeZX, 1948Cr12, 1948Je02, 1945RoZZ]
^{239m}Pu	3.7(10)	7.7(10)		$\approx 100\%$			[1980Gu20, 1977GoYZ, 1973Na03, 1972Wo07, 1974Be52, 1974BeYO, 1973Na35, 1972GaZW, 1971Ta17, 1969Me11, 1969VaZX]
^{243}Cm	5.575(1)	6.169(1)	99.71(3)%	$5.3(9)\times 10^{-9}$			[1987Po19, 1966Ba07, 1963Dz07, 1958Ch38, 1957As70, 1989Ho24, 1986Ti03, 1976BaZZ, 1971Bb10, 1970BaZZ, 1970By01, 1969Ba57, 1963Le07, 1962Iv01, 1953As14, 1953AsZZ, 1951Hu39]
^{243m}Cm	4.08(30)	7.67(30)		100%			[1973Br04, 1972Wo07, 1974GaZD, 1971Re11, 1970Po01]
^{247}Cf	5.146(62)	6.503(14)	0.035(5)%				[1984Ah02]
^{251}Fm	4.56(10)#	7.424(1)	1.80(13)%				[1978Ah02, 1973Ah02, 1973AhZZ, 1967Ch17, 1957Am47]
^{255}No	3.93(10)#	8.428(3)	30(5)%				[2011As02, 2015Mo25, 2007AsZU, 2006AsZY, 2006Gr24, 2006He20, 2006Ni10, 2005HeZU, 2004Fo08, 2004Mo27, 2004Mo40, 2004Mo43, 1976SiZS, 1971BeYR, 1971BeZZ, 1970Es02, 1970GhZY, 1968Fl08, 1967Dr02, 1967Gh01]
^{259}Rf	3.70(13)#	9.130(71)#	92.1(23)%	$7.9(23)\%^{**}$			[1981Be03, 1985So03, 2015Mo25, 2006Gr24, 2006Ni10, 2004Fo08, 1994Gr08, 1983SoZZ, 1976GhZX, 1976GhZV, 1976GhZW, 1974DiZI, 1973Dr10, 1973DrZZ, 1970GhZY, 1970Og05]
^{263}Sg	3.35(17)#	9.403(61)#	87(8)%	13(8)%			[2006Ni10, 2006Gr24, 2015Mo25, 2010Ni14, 1997Ho03, 1997Ho13, 1996LaZY, 1994Gr08, 1976GhZV, 1976GhZW]
^{263m}Sg	3.35(17)#-x	9.403(61)#+x	$\approx 100\%$				[2006Ni10, 2015Mo25, 2010Ni14, 2004Fo08, 1997Ho03, 1997Ho13, 1996LaZY]
^{267}Hs	2.74(19)#	10.038(13)#	100%				[2015Mo15, 2004Mo40, 2011Ho10, 2010Ni14, 2004Fo08, 2004Mo14, 2004Mo27, 2004Mo43, 2003Gi05, 2003MoZT, 1998Ho13, 1997Ho03, 1997Ho13, 1995La20, 1995LaZX, 1995Og02, 1994HoZQ]
^{267m}Hs	2.74(19)#-x	10.038(13)#+x	100%				[2015Mo15, 2004Mo40, 2011Ho10, 2004Mo14, 2004Mo27, 2004Mo43, 2003MoZT, 1998Ho13, 1997Ho03]
^{271}Ds	2.05(21)#	10.870(18)#	100%				[2015Mo15, 2004Mo40, 2011Ho10, 2004Fo08, 2004Mo14, 2004Mo27, 2004Mo43, 2003Gi05, 2003MoZT, 1998Ho13, 1997Ho03, 1997Ho13, 1995Og02, 1994HoZQ]
^{271m}Ds	2.05(21)#-x	10.870(18)#+x	100%				[2015Mo15, 2012Zh04, 2004Mo40, 2011Ho10, 2004Mo14, 2004Mo27, 2004Mo43, 2003MoZT, 1998Ho13]

* Unclear which isotope of Ne [1991Bo20].

** Weighted average of 6.3(37)% [1981Be03] and 9(3)% [1985So03].

Table 3direct α emission from $^{219}\text{Po}^*$, $J^\pi = (9/2^+)$, $T_{1/2} = 620(59)$ s, $BR_\alpha = 28.2(20)\%$.

E_α (c.m.)	E_α (lab)	I_α (abs)	J_f^π	$E_{daughter}(^{215}\text{Pb})$	coincident γ -rays (keV)	R_0 (fm)	HF
5.914(5)	5.806(5)	28.2(20)%	(9/2 ⁺)	0.0	—	1.5434(12)	1.78(24)

* All values from [2015Fi07].

Table 4direct α emission from ^{235}U , $J^\pi = 7/2^-$, $T_{1/2} = 7.04(1)\times 10^8$ y*, $BR_\alpha = 100\%$.

E_α (c.m.)	E_α (lab)**	I_α (rel)	I_α (abs)**	J_f^π [@]	$E_{daughter}(^{231}\text{Th})$ [@]	coincident γ -rays (keV) [@]	R_0 (fm)	HF
4.045(5)	3.976(5)***	$\approx 0.12\%$	$\approx 0.07\%$ ***	(7/2 ⁻)	0.6324		≈ 1.3	
4.112(5)	4.042(5)***	$\approx 0.12\%$	$\approx 0.07\%$ ***		0.5658		≈ 4.9	
4.1513(4)	4.0806(4)***	0.04(2)%	0.026(12)%***	(11/2 ⁻)	0.5302	19.5, 31.6, 42.0, 51.2, 54.3, 74.9, 96.1, 109.2, 120.4, 142.4, 143.8, 144.5, 147.0, 150.9, 163.4, 185.7, 192.5, 202.1, 205.4, 291.7, 345.9, 387.8	1.52410(58)	27 ⁺²⁴ ₋₉
4.224(2)	4.152(2)	0.52(2)%	0.298(13)%	9/2 ⁻	0.4521	19.5, 31.6, 42.0, 51.2, 54.3, 74.9, 96.1, 109.2, 120.4, 143.8, 163.4, 185.7, 205.4, 215.3, 246.8, 266.5, 291.2, 356.0, 410.3	1.52410(58)	11.3(5)
4.2888(48)	4.2158(48)	13.9(1)%	8.02(6)%	7/2 ⁻	0.3878	19.5, 31.6, 42.0, 51.2, 54.3, 74.9, 96.1, 109.2, 120.4, 143.8, 144.5, 147.0, 150.9, 163.4, 185.7, 192.5, 202.1, 205.4, 291.7, 345.9, 387.8	1.52410(58)	1.45(2)
4.322(5)	4.248(5)***	0.12(1)%	0.07(1)%***	7/2 ⁺	0.3515	42.0, 54.3, 96.1, 255.4, 309.6, 351.5	1.52410(58)	330 ⁺⁶⁰ ₋₄₀
4.340(2)	4.266(2)	0.39(2)%	0.223(12)%	(13/2 ⁻)	0.337		136(8)	
4.3571(24)	4.2829(24)	0.19(1)%	0.112(8)%	5/2 ⁺	0.3171	42.0, 76.2, 95.7, 144.5, 221.4, 275.1, 317.1	1.52410(58)	394(29)
4.3979(6)	4.3230(6)	6.1(1)%	3.5(5)%	(11/2 ⁻)	0.2776	19.5, 31.6, 41.1, 42.0, 51.2, 54.3, 72.7, 74.9, 96.1, 109.2, 115.5, 120.4, 143.8, 163.4, 182.1, 185.7, 205.4	1.52410(58)	26 ⁺⁵ ₋₃
4.4399(4)	4.3643(4)	34.5(2)%	19.94(11)%	9/2 ⁻	0.23691	19.5, 31.6, 42.0, 51.2, 54.3, 74.9, 96.1, 109.2, 120.4, 143.8, 163.4, 185.7, 205.4	1.52410(58)	9.67(15)
4.4715(4)	4.3954(4)	100.0(3)%	57.79(19)%	(7/2 ⁻)	0.2053	19.5, 42.0, 54.3, 96.1, 109.2, 143.8, 163.4, 185.7, 205.4	1.52410(58)	5.90(9)
4.4913(5)	4.4149(5)	5.3(1)%	3.09(5)%	5/2 ⁻	0.1857	42.0, 143.8, 185.7	1.52410(58)	157(3)
4.516(2)	4.439(2)	0.40(2)%	0.230(12)%	11/2 ⁺	0.1621	42.0, 120.4	1.52410(58)	3.2(2) $\times 10^3$
4.5805(7)	4.5025(7)	2.2(1)%	1.28(3)%	9/2 ⁺	0.0961	42.0, 54.3, 96.1	1.52410(58)	1.82(5) $\times 10^3$
4.6349(4)	4.5560(4)	6.6(1)%	3.84(4)%	7/2 ⁺	0.0419	42.0	1.52410(58)	1.54(3) $\times 10^3$
4.6770(4)	4.5974(4)	8.3(1)%	4.78(6)%	5/2 ⁺	0.0	—	1.52410(58)	2.50(5) $\times 10^3$

* [2004Sc03].

** weighted average of [2005Ga36] and [2004Da24] except where noted. In addition to those listed, several α transitions were reported by [1966Ga03] (4.579, 4.559, 4.537, 4.552, 4.510, 4.478, 4.424, 4.368, 4.339, 4.184, 4.164, 4.131, 4.091, 3.945, 3.892, 3.825, and 3.769 MeV) and [1960Ba44] (4.578, 4.522, 4.426, 4.368 and 4.339). None of these lines were observed in [2005Ga36] or [2004Da24] despite having much more statistics.

*** [2004Da24].

[@] [2022Si29].

Table 5
direct α emission from ^{239}Pu , $J^\pi = 1/2^+$, $T_{1/2} = 24085(13)$ y*, $BR_\alpha = 100\%$. (1 of 3)

E_α (c.m.)	E_α (lab)**	I_α (rel)	I_α (abs)**	J_f^π @@@	$E_{\text{daughter}}(^{235}\text{U})$ @@@	coincident γ -rays (keV) @@@	HF
4.1282(2) ^b	4.0591(2)	$4.8(2)\times 10^{-8}$	$3.4(2)\times 10^{-8}$ ^b	(5/2 ⁻)	1.1162(1)	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 123.2, 129.3, 158.1, 171.4, 994.9, 986.9, 1102.9, 1115.6	25.3(15)
4.1870(4) ^b	4.1170(4)	$1.81(4)\times 10^{-7}$	$1.28(7)\times 10^{-7}$ ^b		1.0574(3)	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 54.0, 69.0, 77.6, 89.6, 96.1, 116.3, 119.7, 129.3, 123.2, 143.4, 158.1, 171.4, 173.7, 179.2, 225.4, 832.5, 886.0, 927.8, 1005.7, 1057.3	22.5(13)
4.2518(4) ^b	4.1807(4)	$5.1(2)\times 10^{-8}$	$3.6(2)\times 10^{-8}$ ^b	(5/2 ⁺)	0.9926(3)	13.0, 978.9, 992.6	293(17)
4.2760(2) ^b	4.2045(2)	$8.95(14)\times 10^{-8}$	$6.3(1)\times 10^{-8}$ ^b	(3/2 ⁺)	0.9684	13.0, 38.7, 51.6, 916.8, 955.4, 968.4	270(5)
4.3525(2) ^b	4.2797(2)	$2.6(6)\times 10^{-7}$	$1.8(4)\times 10^{-7}$ ^b	5/2 ⁺	0.8919	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 123.2, 129.3, 158.1, 171.4, 171.4, 720.6, 762.6, 840.3, 879.2, 891.0	42(1)
4.3792(2) ^b	4.3059(2)	$1.4(6)\times 10^{-7}$	$9.9(4)\times 10^{-8}$ ^b	3/2 ⁺	0.8652	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 123.2, 129.3, 158.1, 171.4, 693.8, 735.9, 783.4, 813.5	$1.26(5)\times 10^3$
4.3991(2) ^b	4.3255(2)	$4.6(7)\times 10^{-8}$	$3.2(5)\times 10^{-8}$ ^b	(7/2 ⁺)	0.8454	3.0, 30.0, 38.7, 51.6, 69.0, 763.6	$5.7^{+1.1}_{-0.8}\times 10^3$
4.4005(2) ^b	4.3269(2)	$3.00(9)\times 10^{-7}$	$2.13(6)\times 10^{-7}$ ^b	(1/2 ⁺)	0.8439	13.0, 30.0, 38.7, 47.6, 51.6, 69.0, 77.6, 116.3, 129.3, 714.7, 843.8	$1.83(3)\times 10^3$
4.4232(2) ^b	4.3492(2)	$3.74(9)\times 10^{-7}$	$2.64(6)\times 10^{-7}$ ^b	5/2 ⁺	0.8212	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 54.0, 68.7, 69.0, 77.6, 89.6, 96.1, 98.8, 116.3, 119.7, 129.3, 123.2, 143.4, 158.1, 171.4, 173.7, 179.2, 225.4, 264.0, 341.5, 380.2, 393.1, 428.0, 596.0, 670.8, 769.6, 808.2, 821.3	$1.08(3)\times 10^3$
4.4387(2) ^b	4.3644(2)	$1.24(6)\times 10^{-7}$	$8.8(4)\times 10^{-8}$ ^b	3/2 ⁻	0.8057(1)	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 129.3, 123.2, 158.1, 171.4, 172.6, 255.4, 264.0, 297.5, 345.0, 341.5, 375.1, 378.8, 380.2, 393.1, 412.3, 413.7, 426.7, 633.2, 792.6, 805.7	$4.3(2)\times 10^3$
4.4649(2) ^b	4.3902(2)	$8.6(3)\times 10^{-7}$	$6.1(2)\times 10^{-7}$ ^b	3/2 ⁺	0.7795	13.0, 30.0, 38.7, 51.6, 69.0, 697.8, 727.9, 766.5, 779.4	$1.01(3)\times 10^3$
4.4660(3) ^b	4.3913(3)	$9.0(2)\times 10^{-7}$	$6.4(1)\times 10^{-7}$ ^b	(1/2 ⁻)	0.7784(2)	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 57.8, 69.0, 77.6, 89.6, 103.1, 116.3, 119.7, 123.2, 129.3, 158.1, 171.4, 606.9, 674.4	$1.01(2)\times 10^3$
4.4751(2) ^b	4.4002(2)	$3.23(6)\times 10^{-5}$	$2.29(4)\times 10^{-5}$ ^b	1/2 ⁺	0.7693(1)	13.0, 30.0, 38.7, 47.6, 51.6, 69.0, 77.6, 116.3, 129.3, 640.0, 756.4, 769.2	35.8(7)
4.4942(2) ^b	4.4190(2)	$4.6(3)\times 10^{-7}$	$3.2(2)\times 10^{-7}$ ^b	(9/2 ⁻)	0.7502	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 68.7, 69.0, 77.6, 89.6, 98.8, 116.3, 119.7, 129.3, 123.2, 158.1, 171.4	$3.3(2)\times 10^3$
4.5242(2) ^b	4.4485(2)	$2.62(8)\times 10^{-6}$	$1.86(5)\times 10^{-6}$ ^b	(9/2 ⁻)	0.7202	46.2, 57.8, 103.1, 617.1, 674.1	$1.0^{+0.4}_{-0.2}\times 10^3$
4.5406(2) ^b	4.4646(2)	$1.56(2)\times 10^{-5}$	$1.11(1)\times 10^{-5}$ ^b	3/2 ⁻	0.7038	13.0, 38.7, 51.6, 652.1, 690.8, 703.6	219(2)

* Weighted average of 24060(16) y [1975Al15], 24131(16) y [1978Ja20], 24101(20) y [1978Se12], 24089(13) y and 24019(21) [1978Pr07].

** Values from [1993Ga28], except where noted.

*** Value from [1980RyZX], adjusted by -0.11 keV as recommended by [1991Ry01].

@ Value from [1968Ba25], adjusted by +1.0 keV as recommended by [1991Ry01].

@@ [1966Ah02].

@@@ [2014Br18].

^a R_0 (fm) = 1.51188(12).

^b Deduced from γ energies [1976GuZN] and $Q_\alpha = 5244.43(14)$ keV, using the levels and transitions from [2014Br18]. Conversion electron strength and strength from unobserved γ 's (in [1976GuZN]) decaying from a given level are taken into account.

Table 6direct α emission from ^{239}Pu , $J^\pi = 1/2^+$, $T_{1/2} = 24085(13)$ y*, $BR_\alpha = 100\%$. (2 of 3)

E_α (c.m.)	E_α (lab)**	I_α (rel)	I_α (abs)**	$J_f^{\pi @@@}$	$E_{\text{daughter}}(^{235}\text{U})^{@@@}$	coincident γ -rays (keV) ^{@@@}	HF
4.5433(2) ^b	4.4673(2)	$9.6(2) \times 10^{-6}$	$6.8(1) \times 10^{-6}$ ^b	(7/2) ⁻	0.7011	13.0, 30.0, 38.7, 46.2, 51.6, 57.8, 68.7, 69.0, 98.8, 103.1, 550.5, 598.0, 619.2, 649.3, 654.9, 701.0	376(6)
4.5735(2) ^b	4.4970(2)	$6.6(8) \times 10^{-7}$	$4.7(5) \times 10^{-7}$ ^b	(7/2) ⁻	0.6709	46.2, 624.8, 671.0	$9.3^{+1.1}_{-0.9} \times 10^3$
4.5799(2) ^b	4.5033(2)	$8.66(8) \times 10^{-6}$	$6.13(6) \times 10^{-6}$ ^b	(5/2) ⁻	0.6645	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 129.3, 123.2, 158.1, 171.4, 493.0, 582.9, 612.8, 618.3, 664.6	800(8)
4.5854(2) ^b	4.5087(2)	$3.70(4) \times 10^{-5}$	$2.62(3) \times 10^{-5}$ ^b	1/2 ⁻	0.659.0	13.0, 30.0, 38.7, 47.6, 51.6, 69.0, 77.6, 116.3, 129.3, 264.0, 265.7, 341.5, 380.2, 393.1, 645.9, 658.9	206(3)
4.6066(2) ^b	4.5295(2)	$4.56(4) \times 10^{-6}$	$3.23(3) \times 10^{-6}$ ^b	3/2 ⁻	0.6378	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 129.3, 123.2, 158.1, 171.4, 211.1, 244.6, 255.4, 264.0, 297.5, 341.5, 345.0, 375.1, 380.2, 393.1, 413.7, 426.7, 586.3, 624.8, 637.8	2429(24)
4.6362(2) ^b	4.5586(2)	$1.7(1) \times 10^{-5}$	$1.17(7) \times 10^{-5}$ ^b	11/2 ⁺	0.6082	13.0, 30.0, 38.7, 51.6, 68.7, 69.0, 115.3, 411.2, 457.6, 526.4	$1.1(1) \times 10^3$
4.709(3)	4.630(3) ^{@@}	$1.0(3) \times 10^{-3}\%$	$7(2) \times 10^{-4}\%$	9/2 ⁺	0.5332	13.0, 30.0, 38.7, 51.6, 65.7, 68.7, 69.0, 98.1, 115.3, 119.0, 188.2, 242.1, 244.9, 307.9, 336.1, 361.9, 382.8, 430.1, 451.5, 481.7, 487.1	68^{+27}_{-15}
4.7339(2) ^b	4.6547(2)	$1.29(7) \times 10^{-6}$	$9.1(5) \times 10^{-7}$ ^b	(9/2) ⁺	0.5105	46.2, 57.8, 103.1, 406.8, 463.9	$7.7(4) \times 10^4$
4.769(3)	4.689(3) ^{@@}	$7(3) \times 10^{-4}\%$	$5(2) \times 10^{-4}\%$	7/2 ⁺	0.4738	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 54.0, 68.7, 69.0, 77.6, 89.6, 96.1, 98.8, 116.3, 119.7, 123.2, 129.3, 143.4, 158.1, 171.4, 173.7, 179.2, 225.4, 249.0, 302.9, 323.8, 341.0, 392.5, 422.6, 428.4, 461.3, 473.9	260^{+170}_{-70}
4.7988(2) ^b	4.7185(2)	$7.2(1) \times 10^{-3}\%$	$5.11(8) \times 10^{-3}\%$ ^b	7/2 ⁺	0.4456	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 129.3, 123.2, 158.1, 171.4, 274.4, 336.4, 399.5, 445.7	$4.0(1) \times 10^3$
4.807(9)	4.727(9)	$7.2(11) \times 10^{-3}\%$	$5.1(8) \times 10^{-3}\%$	5/2 ⁺	0.4267	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 129.3, 123.2, 158.1, 171.4, 255.4, 297.5, 345.0, 375.1, 413.7, 426.7	55^{+10}_{-8}
4.830(5)	4.749(5) ^{@@}	$\approx 8 \times 10^{-4}\%$	$\approx 6 \times 10^{-4}\%$	9/2 ⁺	0.4148	13.0, 30.0, 38.7, 51.6, 65.7, 69.0, 115.3, 119.0, 123.6, 188.2, 189.4, 218.0, 244.9, 311.8, 368.6	≈ 570
4.851(9)	4.770(9)	$2.1(8) \times 10^{-3}\%$	$1.5(6) \times 10^{-3}\%$	3/2 ⁺	0.3932	13.0, 30.0, 38.7, 47.6, 51.6, 69.0, 77.6, 116.3, 129.3, 264.0, 341.5, 380.2, 393.1	320^{+220}_{-90}
4.877(9)	4.795(9)	$1.7(8) \times 10^{-3}\%$	$1.2(6) \times 10^{-3}\%$	7/2 ⁺	0.3670	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 54.0, 69.0, 77.6, 89.6, 96.1, 116.3, 119.7, 129.3, 123.2, 143.4, 141.7, 158.1, 171.4, 173.7, 179.2, 195.7, 225.4, 237.8, 285.3, 320.9, 354.0, 367.1	600^{+60}_{-20}
4.910(9)	4.828(9)	$03.4(10) \times 10^{-3}\%$	$2.4(7) \times 10^{-3}\%$	5/2 ⁺	0.3328	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 129.3, 123.2, 158.1, 161.5, 171.4, 203.6, 281.2, 319.7, 332.8	530^{+220}_{-120}

* Weighted average of 24060(16) y [1975Al15], 24131(16) y [1978Ja20], 24101(20) y [1978Se12], 24089(13) y and 24019(21) [1978Pr07].

** Values from [1993Ga28], except where noted.

*** Value from [1980RyZX], adjusted by -0.11 keV as recommended by [1991Ry01].

@ Value from [1968Ba25], adjusted by +1.0 keV as recommended by [1991Ry01].

@@ [1966Ah02].

@@@ [2014Br18].

^a R_0 (fm) = 1.51188(12).^b Deduced from γ energies [1976GuZN] and $Q_\alpha = 5244.43(14)$ keV, using the levels and transitions from [2014Br18]. Conversion electron strength and strength from unobserved γ 's (in [1976GuZN]) decaying from a given level are taken into account.

Table 7
direct α emission from ^{239}Pu , $J^\pi = 1/2^+$, $T_{1/2} = 24085(13)$ y*, $BR_\alpha = 100\%$. (3 of 3)

E_α (c.m.)	E_α (lab)**	I_α (rel)	I_α (abs)**	$J_f^{\pi@@@}$	$E_{daughter}(^{235}\text{U})^{@@@}$	coincident γ -rays (keV) $^{@@@}$	HF
4.950(9)	4.867(9)	$2.7(10)\times 10^{-3}\%$	$1.9(7)\times 10^{-3}\%$	$13/2^+$	0.2946	13.0, 30.0, 38.7, 51.6, 68.7, 69.0, 97.6, 98.8, 115.3, 144.2	$1.2^{+0.7}_{-0.3}\times 10^3$
4.995(9)	4.911(9)	$3.4(13)\times 10^{-3}\%$	$2.4(9)\times 10^{-3}\%$	$15/2^-$	0.2500	3.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 57.8, 69.0, 77.6, 78.8, 89.6, 103.1, 116.3, 116.3, 119.7, 129.3, 123.2, 146.3, 158.1, 171.4	$1.9^{+1.2}_{-0.5}\times 10^3$
5.018(9)	4.934(9)	$8.5(14)\times 10^{-3}\%$	$6(1)\times 10^{-3}\%$	$9/2^+$	0.2254	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 54.0, 69.0, 77.6, 89.6, 96.1, 116.3, 119.7, 129.3, 123.2, 143.4, 158.1, 171.4, 173.7, 179.2, 225.4	$1.14^{+0.23}_{-0.16}\times 10^3$
5.046(9)	4.962(9)	0.010(1)%	$7(1)\times 10^{-3}\%$	$11/2^+$	0.1971	13.0, 30.0, 38.7, 51.6, 69.0, 115.3	$1.5^{+3}_{-2}\times 10^3$
5.074(9)	4.989(9)	0.018(3)%	0.013(2)%	$7/2^+$	0.1714	13.0, 30.0, 38.7, 41.9, 46.2, 47.6, 51.6, 69.0, 77.6, 89.6, 116.3, 119.7, 123.2, 129.3, 158.1, 171.4	$1.2(2)\times 10^3$
5.094(9)	5.009(9)	0.024(3)%	0.017(2)%	$9/2^+$	0.1504	13.0, 30.0, 38.7, 51.6, 68.7, 69.0, 98.8	$1.25^{+0.17}_{-0.133}\times 10^3$
5.117(9)	5.031(9)	0.013(42)%	$9.4(3)\times 10^{-3}\%$	$5/2^+$	0.1293	13.0, 30.0, 38.7, 47.6, 51.6, 69.0, 77.6, 116.3, 129.3	$3.1(1)\times 10^3$
5.141(9)	5.055(9)	0.066(18)%	0.047(13)%	$11/2^-$	0.1039	46.2, 57.8, 103.1	910^{+350}_{-200}
5.162(9)	5.076(9)	0.11(1)%	0.078(8)%	$7/2^+$	0.0817	13.0, 30.0, 38.7, 51.6, 69.0	760^{+90}_{-70}
5.1927(8)	5.1058(8) [@]	16.87(10)%	11.94(7)%	$5/2^+$	0.0517	13.0, 38.7, 51.6	7.68(5)
5.2319(8)	5.1443(8) [@]	24.18(20)%	17.11(14)%	$3/2^+$	0.0130	13.0	9.40(8)
5.24436(14)	5.15659(14) ^{***}	100.0(2)%	70.77(14)%	$1/2^+$	0.000076		2.74(1)

* Weighted average of 24060(16) y [1975Al15], 24131(16) y [1978Ja20], 24101(20) y [1978Se12], 24089(13) y and 24019(21) [1978Pr07].

** Values from [1993Ga28], except where noted.

*** Value from [1980RyZX], adjusted by -0.11 keV as recommended by [1991Ry01].

@ Value from [1968Ba25], adjusted by +1.0 keV as recommended by [1991Ry01].

@@ [1966Ah02].

@@@ [2014Br18].

^a R_0 (fm) = 1.51188(12).

^b Deduced from γ energies [1976GuZN] and $Q_\alpha = 5244.43(14)$ keV, using the levels and transitions from [2014Br18]. Conversion electron strength and strength from unobserved γ 's (in [1976GuZN]) decaying from a given level are taken into account.

Table 8
direct α emission from ^{243}Cm , $J^\pi = 5/2^+$, $T_{1/2} = 29.20(14)$ y*, $BR_\alpha = 99.97(3)\%$.

E_α (c.m.)	E_α (lab)	I_α (rel)	I_α (abs)	J_f^π	$E_{daughter} (^{239}\text{Pu})$	coincident γ -rays (keV) ^{@@}	HF ^a
5.355(3)	5.267(3)***	0.002%	0.0015%***		0.813(3)		60
5.405(3)	5.316(3)***	0.001%	0.001%***		0.763(3)		180
5.412(3)	5.323(3)***	0.004%	0.003%***		0.756(3)		67
5.421(3)	5.332(3)***	0.004%	0.003%***		0.747(3)		76
5.615(3)	5.523(3)***	0.003%	0.002%***		0.552(3)		1.6×10^3
5.625(3)	5.532(3)***	0.008%	0.006%***		0.543(3)		610
5.630(3)	5.537(3)***	0.003%	0.002%***		0.538(3)		2.0×10^3
5.661(3)	5.568(3)***	0.010%	0.007%***	(5/2 ⁻)	0.5056(2) ^{@@}	49.4, 57.3, 67.8, 430.0, 448.3, 505.6	850
5.668(3)	5.575(3)***	0.010%	0.007%***		0.499(3)		930
5.675(3)	5.582(3)***	$\approx 0.012\%$	$\approx 0.009\%***$	3/2 ⁻	0.4921(3) ^{@@}	49.4, 57.3, 434.7, 484.3, 492.3	≈ 790
5.681(3)	5.587(3)***	$\approx 0.027\%$	$\approx 0.02\%$	(11/2 ⁻)	0.487(3)		≈ 380
5.687(2)	5.593(2) [@]	0.041(10)%	0.03(1)% [@]		0.481(3)		270^{+140}_{-70}
5.703(3)	5.609(3)***	0.014%	0.01%***		0.465(3)		1.0×10^3
5.706(3)	5.612(3)***	$\approx 0.055\%$	$\approx 0.04\%***$	(11/2 ⁺)	0.462(3)		≈ 260
5.716(3)	5.622(3)***	0.082%	0.06%***		0.452(3)		200
5.780(2)	5.685(2) ^{@@}	2.25(28)%	1.65(20)% [@]	9/2 ⁺	0.3874 ^{@@}	44.7, 49.4, 57.3, 67.8, 88.1, 102.0, 106.5, 166.3, 209.8, 228.1, 254.4, 272.9, 277.6, 322.3, 285.5, 311.7	$16.5^{+2.4}_{-1.9}$
5.8382(9)	5.7421(9)	16.80(97)%	12.3(6)%	7/2 ⁺	0.3301 ^{@@}	44.7, 49.4, 57.3, 67.8, 88.1, 106.5, 166.3, 209.8, 228.1, 254.4, 272.9, 277.6, 322.3, 285.5	4.53(24)
5.8820(9)	5.7852(9)	100.0(44)%	73.2(23)%	5/2 ⁺	0.2855 ^{@@}	49.4, 57.3, 67.8, 209.8, 228.1, 277.6, 285.5	1.32(4)
6.0921(15)	5.9918(15)	7.79(37)%	5.7(2)%	7/2 ⁺	0.0757 ^{@@}	67.8	209(8)
6.158	6.057	6.83%	5%	3/2 ⁺	0.0078 ^{@@}		570
6.1677(17)	6.0662(17)	2.05(28)%	1.5(2)%	1/2 ⁺	0.00	—	$1.9^{+3.1}_{-2.4} \times 10^3$

* [1986Ti03].

** [1958Ch38].

*** From [1966Ba07], E_α (lab) is adjusted by +0.4 keV as recommended by [1991Ry01].

@ Weighted average of values from [1963Dz07] (adjusted by -1.5 keV [1991Ry01]) and [1966Ba07] (adjusted by +0.4 keV [1991Ry01]). I_α (abs) taken from [1963Dz07].

@@ [2014Br13].

@@@ Recommended by [1991Ry01] based on the adjusted values of [1957As70], [1963Dz07] and [19Ba07].

^a R_0 (fm) = 1.499719(73).

Table 9
direct α emission from ^{247}Cf *, $J^\pi = (7/2^+)$, $T_{1/2} = 3.11(3)$ h, $BR_\alpha = 0.035(5)\%$.

E_α (c.m.)	E_α (lab)	I_α (rel)	I_α (abs)	J_f^π	$E_{daughter} (^{243}\text{Cm})$	coincident γ -rays (keV)	R_0 (fm)	HF
6.341(6)	6.238(6)	5(1)%	5(1)%				1.4903(17)	16^{+5}_{-3}
6.400(5)	6.296(5)	100%	95(3)%				1.4903(17)	$1.56^{+0.31}_{-0.24}$

* All values from [1984Ah02].

Table 10direct α emission from $^{251}\text{Fm}^*$, $J^\pi = (7/2^+)$, $T_{1/2} = 5.30(8)$ h, $BR_\alpha = 1.80(13)\%^{**}$.

E_α (c.m.)	E_α (lab)	I_α (rel)	I_α (abs)	J_f^π	$E_{daughter}(^{247}\text{Cf})$	coincident γ -rays (keV)	R_0 (fm)	HF
6.687(3)	6.58(3)	0.30(5)%	$4.7(8)\times 10^{-3}\%$	(9/2 ⁻)	0.738	55.0, 683	1.4730(28)	39_{-7}^{+9}
6.747(3)	6.639(3)	0.64(7)%	0.010(1)%	(7/2 ⁻ +)	0.678	55.0, 623.0, 678.0	1.4730(28)	34_{-5}^{+6}
6.790(4)	6.682(4)	0.08(3)%	$1.3(5)\times 10^{-3}\%$	(13/2 ⁺)	0.634		1.4730(28)	430_{-140}^{+340}
6.830(3)	6.721(3)	0.51(5)%	$7.9(9)\times 10^{-3}\%$	(13/2 ⁻)	0.594		1.4730(28)	103_{-15}^{+18}
6.873(3)	6.763(3)	0.44(7)%	$6.68(12)\times 10^{-3}\%$	(11/2 ⁺)	0.552	55.0, 496	1.4730(28)	180_{-30}^{+50}
6.893(2)	6.783(2)	5.52(24)%	0.086(7)%	(11/2 ⁻)	0.5320	55.0, 67.1, 122.1, 331.0, 410.0, 477.0	1.4730(28)	17.7(21)
6.945(2)	6.834(2)	100%	1.6(1)%	(9/2 ⁻)	0.4804	55.0, 67.1, 122.1, 358.3, 425.4, 480.4	1.4730(28)	1.63(18)
6.998(2)	6.886(2)	1.95(12)%	0.031(3)%	(7/2 ⁺)	0.4272	55.0, 372.2	1.4730(28)	141(17)
7.041(2)	6.929(2)	2.07(12)%	0.0320(3)%	(5/2 ⁺)	0.383	383.2	1.4730(28)	205(24)
7.222(5)	7.107(5)	≈ 0.06	$\approx 9\times 10^{-4}\%$	(13/2 ⁺)	0.202		1.4730(28)	$\approx 4.2\times 10^4$
7.301(3)	7.185(3)	0.33(3)%	$5.2(7)\times 10^{-3}\%$	(11/2 ⁺)	0.1221	55.0, 67.1, 122.1	1.4730(28)	$1.5_{-0.2}^{+0.3}\times 10^4$
7.369(3)	7.252(3)	1.07(9)%	0.017(2)%	(9/2 ⁺)	0.0550	55.0	1.4730(28)	$8.6_{-1.1}^{+1.4}\times 10^3$
7.424(3)	7.306(3)	1.7(2)%	0.027(3)%	(7/2 ⁺)	0.0	—	1.4730(28)	$8.7(11)\times 10^3$

* All values from [1973Ah02], except where noted.

** [1978Ah02].

Table 11direct α emission from $^{255}\text{No}^*$, $J^\pi = (1/2^+)$, $T_{1/2} = 3.52(18)$ m, $BR_\alpha = 30(5)\%$.

E_α (c.m.)	E_α (lab)	I_α (rel)	I_α (abs)	J_f^π	$E_{daughter}(^{251}\text{Fm})$	coincident γ -rays (keV)	R_0 (fm)	HF
7.825(5)	7.702(5)	9(2)%	0.81(22)%	(5/2 ⁺)	0.604(4)		1.4717(26)	18_{-5}^{+9}
7.849(6)	7.726(6)	9.1(29)%	0.81(29)%	(3/2 ⁺)	0.579(5)		1.4717(26)	22_{-7}^{+14}
7.871(3)	7.748(3)	62(5)%	5.5(10)%	(1/2 ⁺)	0.5887	163.3, 166.7, 191.9, 195.3, 200.1, 358.5	1.4717(26)	$3.0_{-0.6}^{+0.9}$
7.967(4)	7.842(4)	14.4(22)%	1.29(29)%	(5/2 ⁺)	0.461(3)		1.4717(26)	37_{-8}^{+10}
8.035(3)	7.909(3)	56(4)%	5.1(9)%	(3/2 ⁺)	0.3954	191.9, 195.3, 200.1	1.4717(26)	16_{-3}^{+5}
8.129(4)	8.001(4)	22.8(26)%	2.04(41)%	(9/2 ⁺)	0.301(3)		1.4717(26)	84_{-19}^{+28}
8.185(4)	8.057(4)	34.7(31)%	3.11(59)%	(7/2 ⁺)	0.243(3)		1.4717(26)	87_{-19}^{+27}
8.229(3)	8.100(3)	100(5)%	9.0(16)%	(5/2 ⁺)	0.2001	200.1	1.4717(26)	42_{-9}^{+12}
8.364(4)	8.233(4)	23.1(26)%	2.07(42)%	(11/2 ⁻)	0.0639	63.9	1.4717(26)	520_{-110}^{+170}
8.428(6)	8.296(6)	4.0(12)%	0.36(12)%	(9/2 ⁻)	0.0	—	1.4717(26)	$4.9_{-1.5}^{+3.0}\times 10^3$

* All values from [2011As02].

Table 12direct α emission from $^{259}\text{Rf}^*$, $J^\pi = (1/2^+)$, $T_{1/2} = 2.4(4)$ s^{**}, $BR_\alpha = 92.1(23)\%^{***}$.

E_α (c.m.)	E_α (lab)	I_α (rel)	I_α (abs)	J_f^π	$E_{daughter}(^{255}\text{No})$	coincident γ -rays (keV)	R_0 (fm)	HF
8.908(10)	8.770(10)	100%	55%		x + 101 keV		1.481(16)	3.1
9.009(10)	8.870(10)	67%	37%		x		1.481(16)	9

* All values from [1981Be03], except where noted.

** Weighted average of 3.2(8) s [1973Dr10], 3.0(1.3) s [1981Be03], 3.4(17) s [1985So03], $1.7_{-0.5}^{+0.8}$ s [1994Gr08], $2.2_{-0.8}^{+17}$ s [2004Fo08] and $1.9_{-0.5}^{+1.3}$ s [2006Gr24].*** Weighted average of 6.3(37)% [1981Be03] and 9(3)% [1985So03] for BR_{SF} . α -decay is expected to be the rest of the decay strength.**Table 13**direct α emission from $^{263}\text{Sg}^*$, $T_{1/2} = 0.9(2)$ s, $BR_\alpha = 87(8)\%^{**}$.

E_α (c.m.)	E_α (lab)	I_α (abs)	J_f^π	$E_{daughter}(^{259}\text{Rf})$	coincident γ -rays (keV)	R_0 (fm)	HF
9.200(40)	9.060(40)					1.466(30)	$0.9_{-0.5}^{+1.0}$

* All values from [1974Gh04], except where noted.

** [2006Gr24].

Table 14direct α emission from $^{263m}\text{Sg}^*$, Ex. = unk., $T_{1/2} = 560_{-100}^{+160}$ ms, $BR_\alpha = \approx 100\%$.

E_α (c.m.)	E_α (lab)	I_α (abs)	J_f^π	$E_{daughter}(^{259}\text{Rf})$	coincident γ -rays (keV)	R_0 (fm)	HF
9.393	9.250					1.466(30)	1.7

* All values from [2006Ni10].

Table 15direct α emission from $^{267}\text{Hs}^*$, $T_{1/2} = 0.80_{-0.37}^{+3.80}$ s, $BR_\alpha = 100\%$.

E_α (c.m.)	E_α (lab)	I_α (abs)	J_f^π	$E_{daughter}(^{263}\text{Sg})$	coincident γ -rays (keV)	R_0 (fm)	HF
10.00	9.85					1.470(30)	28

* All values from [2004Mo40].

Table 16direct α emission from $^{267m}\text{Hs}^*$, Ex. = unk., $T_{1/2} = 52_{-8}^{+13}$ ms, $BR_\alpha = 100\%$.

E_α (c.m.)	E_α (lab)	I_α (abs)	J_f^π	$E_{daughter}(^{263}\text{Sg})$	coincident γ -rays (keV)	R_0 (fm)	HF
9.88	9.73					1.470(30)	0.9

* All values from [2004Mo40].

Table 17direct α emission from $^{271}\text{Ds}^*$, $T_{1/2} = 1.63_{-0.29}^{+0.44}$ ms, $BR_\alpha = 100\%$.

E_α (c.m.)	E_α (lab)	I_α (abs)	J_f^π	$E_{daughter}(^{267}\text{Hs})$	coincident γ -rays (keV)	R_0 (fm)	HF
10.87	10.71						

* All values from [2015Mo25].

Table 18direct α emission from $^{271m}\text{Ds}^*$, Ex. = unk., $T_{1/2} = 69_{-21}^{+56}$ ms, $BR_\alpha = 100\%$.

E_α (c.m.)	E_α (lab)	I_α (rel)	I_α (abs)	J_f^π	$E_{daughter}(^{267}\text{Hs})$	coincident γ -rays (keV)	R_0 (fm)	HF
10.06	9.91	13%	7%					
10.61	10.45	63%	36%					
10.89	10.73	100%	57%					

* All values from [2015Mo25]. I_α is based on the 14 events reported therein.**References used in the Tables**

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