1 Half-life, Q-value and Decay mode

$T_{1/2}$	:	2.144	(7)	$\times 10^6$ y
Q_α	:	4958.3	(12)	keV
α	:	100		%

2 α Emissions

	Energy keV	Probability × 100
$\alpha_{0,20}$	4515.1 (19)	0.038 (4)
$\alpha_{-1,1}$	4550.5 (22)	0.011 (3)
$\alpha_{0,18}$	4573 (3)	0.048 (23)
$\alpha_{0,17}$	4578.6 (14)	0.393 (23)
$\alpha_{0,16}$	4599.1 (18)	0.373 (9)
$\alpha_{0,15}$	4619.7 (21)	0.032 (8)
$\alpha_{0,14}$	4640 (1)	6.43 (3)
$\alpha_{0,13}$	4665.0 (9)	3.46 (3)
$\alpha_{0,12}$	4676.4	0.38 (2)
$\alpha_{0,11}$	4698.2 (8)	0.535 (10)
$\alpha_{0,10}$	4708.3 (20)}	
$\alpha_{0,9}$	4712.3 (20)}	1.174 (13)
$\alpha_{0,8}$	4741.3 (20)	0.019
$\alpha_{0,7}$	4766.5 (8)	9.5 (3)
$\alpha_{0,6}$	4771.4 (8)	23.0 (3)
$\alpha_{0,4}$	4788.0 (9)	47.64 (6)
$\alpha_{0,3}$	4803.5 (10)	2.02 (2)
$\alpha_{0,2}$	4816.8 (10)	2.430 (17)
$\alpha_{0,1}$	4866.4 (14)	0.51 (3)
$\alpha_{0,0}$	4872.7 (14)	2.41 (3)

3 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Pa)	5.90 - 21.01	47.1 (20)
e_{AK}	(Pa)		0.167 (24)
	KLL	70.08 - 78.82 }	
	KLX	85.99 - 95.86 }	
	KXY	101.87 - 112.59 }	
$ec_{13,5\ K}$	(Pa)	5.11 (2)	1.59 (9)
$ec_{4,2\ L}$	(Pa)	8.269 - 12.641	32.7 (15)
$ec_{14,12\ L}$	(Pa)	15.22 - 19.59	0.37 (11)
$ec_{4,2\ M}$	(Pa)	24.013 - 25.932	8.4 (4)
$ec_{6,2\ L}$	(Pa)	25.42 - 29.80	0.075 (3)
$ec_{14,5\ K}$	(Pa)	30.65 (2)	2.26 (22)
$ec_{14,12\ M}$	(Pa)	30.96 - 32.88	0.090 (27)

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		Energy keV	Electrons per 100 disint.
$ec_{2,0}$ L	(Pa)	35.999 - 40.371	48.9 (29)
$ec_{14,4}$ K	(Pa)	38.82 (2)	0.80 (12)
$ec_{6,2}$ M	(Pa)	41.17 - 43.09	0.0186 (11)
$ec_{17,14}$ L	(Pa)	41.48 - 45.86	0.3 (2)
$ec_{3,1}$ L	(Pa)	42.8 - 47.2	0.80 (4)
$ec_{3,0}$ L	(Pa)	49.38 - 53.76	0.3 (2)
$ec_{2,0}$ M	(Pa)	51.743 - 53.662	13.4 (8)
$ec_{17,14}$ M	(Pa)	57.23 - 59.15	0.08 (6)
$ec_{3,1}$ M	(Pa)	58.5 - 60.5	0.220 (9)
$ec_{3,0}$ M	(Pa)	65.13 - 67.05	0.08 (6)
$ec_{4,0}$ L	(Pa)	65.372 - 69.744	13.9 (6)
$ec_{5,1}$ L	(Pa)	66.88 - 71.26	0.0183 (6)
$ec_{5,0}$ L	(Pa)	73.54 - 77.91	0.070 (7)
$ec_{4,0}$ M	(Pa)	81.116 - 83.035	2.7 (7)
$ec_{5,0}$ M	(Pa)	89.28 - 91.20	0.0170 (18)
$ec_{13,5}$ L	(Pa)	96.597 - 100.969	0.369 (22)
$ec_{13,5}$ M	(Pa)	112.341 - 114.260	0.091 (7)
$ec_{14,5}$ L	(Pa)	122.144 - 126.516	0.49 (5)
$ec_{14,4}$ L	(Pa)	130.309 - 134.681	0.257 (10)
$ec_{14,5}$ M	(Pa)	137.888 - 139.807	0.121 (12)
$ec_{14,4}$ M	(Pa)	146.053 - 147.972	0.0654 (34)

4 Photon Emissions

4.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Pa)	11.368 — 20.113		59.7 (32)	
$XK\alpha_2$	(Pa)	92.288		1.813 (20)	} $K\alpha$
$XK\alpha_1$	(Pa)	95.869		2.906 (20)	}
$XK\beta_3$	(Pa)	107.595	}		
$XK\beta_1$	(Pa)	108.422	}	1.06 (10)	$K\beta_1'$
$XK\beta_5''$	(Pa)	109.072	}		
$XK\beta_2$	(Pa)	111.405	}		
$XK\beta_4$	(Pa)	111.87	}	0.380 (9)	$K\beta_2'$
$XKO_{2,3}$	(Pa)	112.38	}		

4.2 Gamma Transitions and Emissions

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_T	P_γ × 100
$\gamma_{7,6}$(Pa)	5.18				0.220 (5)
$\gamma_{5,4}$(Pa)	8.22 (5)	≈9			≈0.12 (5)
$\gamma_{-1,1}$(Pa)	21.5				0.352 (13)
$\gamma_{-1,2}$(Pa)	27.7				0.84 (7)
$\gamma_{4,2}$(Pa)	29.374 (20)	58.2 (26)	E1	3.07 (6)	14.3 (6)
$\gamma_{14,12}$(Pa)	36.32 (2)	0.50 (14)	M1+1.20%E2	99 (20)	0.005 (1)
$\gamma_{6,2}$(Pa)	46.53 (6)	0.209 (8)	[E1]	0.914 (18)	0.109 (4)
$\gamma_{2,0}$(Pa)	57.104 (20)	67.4 (40)	E2	176 (4)	0.381 (21)
$\gamma_{17,14}$(Pa)	62.59 (10)	0.4 (3)	[M1+50%E2]	60 (50)	0.006 (2)
$\gamma_{3,1}$(Pa)	63.9 (1)	1.10 (5)	(E2)	102.3 (20)	0.0107 (4)
$\gamma_{3,0}$(Pa)	70.49 (10)	0.42 (28)	[M1+50%E2]	38 (26)	0.0107 (4)
$\gamma_{10,5}$(Pa)	74.54 (10)	0.13 (3)	[M1]	9.84 (20)	0.012 (3)
$\gamma_{4,0}$(Pa)	86.477 (10)	29.8 (10)	E1	1.43 (8)	12.26 (12)
$\gamma_{5,1}$(Pa)	87.99 (3)	0.167 (4)	[E1]	0.169 (4)	0.143 (3)
$\gamma_{5,0}$(Pa)	94.64 (5)	0.75 (8)	E1	0.140 (3)	0.66 (7)
$\gamma_{9,2}$(Pa)	106.15 (25)	0.523 (31)	[E2]	9.28 (19)	0.0509 (29)
$\gamma_{13,6}$(Pa)	108.7	0.32 (4)	M1+4.62%E2	3.5 (6)	0.071 (3)
$\gamma_{12,4}$(Pa)	115.40 (35)	0.0029 (14)	[M1+E2]	10 (4)	0.0026 (8)
$\gamma_{13,5}$(Pa)	117.702 (20)	2.26 (12)	M1+8.26%E2	12.2 (6)	0.171 (4)
$\gamma_{12,3}$(Pa)	131.101 (25)	0.106 (6)	E1	0.262 (5)	0.084 (5)
$\gamma_{14,6}$(Pa)	134.285 (20)	0.62 (9)	[M1+E2]	8.0 (11)	0.069 (5)
$\gamma_{18,9}$(Pa)	139.9 (1)	0.00560 (49)	[E1]	0.225 (5)	0.0046 (4)
$\gamma_{14,5}$(Pa)	143.249 (20)	3.3 (3)	M1+7.76%E2	6.94 (14)	0.42 (4)
$\gamma_{14,4}$(Pa)	151.414 (20)	1.38 (14)	M1+32.89%E2	4.9 (6)	0.234 (2)
$\gamma_{20,13}$(Pa)	153.37 (10)	0.021 (6)	[E2]	1.96 (4)	0.007 (2)
$\gamma_{13,2}$(Pa)	155.239 (20)	0.103 (9)	E1	0.176 (4)	0.088 (8)
$\gamma_{10,1}$(Pa)	162.41 (8)	0.0382 (12)	[E1]	0.158 (3)	0.033 (1)
$\gamma_{10,0}$(Pa)	169.156 (20)	0.0768 (4)	[E1]	0.143 (3)	0.0672 (3)
$\gamma_{16,7}$(Pa)	170.59 (6)	0.100 (22)	[M1+13.79%E2]	4.0 (5)	0.020 (4)
$\gamma_{16,6}$(Pa)	176.12 (6)	0.070 (16)	[M1+13.79%E2]	3.7 (5)	0.015 (3)
$\gamma_{14,2}$(Pa)	180.81 (10)	0.0180 (11)	[E1]	0.1223 (25)	0.016 (1)
$\gamma_{20,11}$(Pa)	186.86 (35)	0.003 (3)	[E1]	0.1131 (23)	0.003 (3)
$\gamma_{17,7}$(Pa)	191.46 (5)	0.074 (9)	[M1+13.79%E2]	2.9 (4)	0.019 (1)
$\gamma_{16,4}$(Pa)	193.26 (5)	0.167 (18)	[M1+13.79%E2]	2.8 (4)	0.044 (1)
$\gamma_{18,7}$(Pa)	194.67 (20)				0.033 (1)
$\gamma_{12,1}$(Pa)	194.95 (3)	0.192 (22)	E1	0.1024 (21)	0.174 (20)
$\gamma_{17,6}$(Pa)	196.86 (5)	0.078 (6)	[M1+13.79%E2]	2.7 (3)	0.0210 (1)
$\gamma_{18,6}$(Pa)	199.95 (6)	0.020 (3)	[M1]	2.85 (6)	0.0053 (8)
$\gamma_{12,0}$(Pa)	201.62 (5)	0.0429 (10)	E1	0.0946 (19)	0.0392 (9)
$\gamma_{20,9}$(Pa)	202.9 (2)	0.0052 (21)	[E1]	0.0932 (19)	0.0048 (19)
$\gamma_{16,3}$(Pa)	209.19 (5)	0.0163 (16)	[E1]	0.0868 (17)	0.0150 (15)
$\gamma_{13,0}$(Pa)	212.29 (5)	0.184 (11)	E1	0.0839 (17)	0.17 (1)
$\gamma_{17,4}$(Pa)	214.01 (5)	0.115 (13)	[M1+13.79%E2]	2.1 (3)	0.037 (2)
$\gamma_{16,2}$(Pa)	222.6 (2)				0.002 (2)
$\gamma_{17,3}$(Pa)	229.94 (5)	0.015 (3)	[E1]	0.0697 (14)	0.014 (3)
$\gamma_{14,0}$(Pa)	237.86 (2)	0.0610 (6)	[E1]	0.0645 (13)	0.0573 (6)
$\gamma_{19,2}$(Pa)	248.95 (10)	0.012 (3)	[M1+13.79%E2]	1.37 (16)	0.005 (1)

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_T	P_γ × 100
$\gamma_{20,7}$(Pa)	257.09 (20)	0.048 (24)	[M1]	1.41 (3)	0.02 (1)
$\gamma_{20,6}$(Pa)	262.44 (20)	0.01120 (49)	[M1]	1.33 (3)	0.0048 (2)
$\gamma_{20,4}$(Pa)	279.65 (20)	0.01320 (49)	[E2]	0.222 (5)	0.0108 (4)
$\gamma_{-1,4}$(Pa)	288.3				0.0162 (5)

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