



1 Decay Scheme

At-217 disintegrates 99,9933(24)% by alpha emission to levels in Bi-213 and 0,0067(24)% by beta minus emission to levels in Rn-217. The beta minus decay scheme of At-217 has not been studied.

L'astate 217 se désintègre à 99,9933 % par émission alpha vers des niveaux excités de bismuth 213 et par transitions bêta moins (0,0067 %) vers le radon 217, cette partie n'a pas été étudiée.

2 Nuclear Data

$T_{1/2}({}^{217}\text{At})$:	32,3	(4)	10^{-3} s
$T_{1/2}({}^{217}\text{Rn})$:	0,54	(5)	10^{-3} s
$T_{1/2}({}^{213}\text{Bi})$:	45,59	(6)	min
$Q^{-}({}^{217}\text{At})$:	737	(6)	keV
$Q^{\alpha}({}^{217}\text{At})$:	7201,3	(12)	keV

2.1 α Transitions

	Energy keV	Probability $\times 100$	F
$\alpha_{0,4}$	6150 (3)	0,002	5,2
$\alpha_{0,3}$	6441,0 (16)	0,0049 (4)	36
$\alpha_{0,2}$	6606,5 (16)	0,0167 (8)	49
$\alpha_{0,1}$	6941,8 (16)	0,0384 (15)	379
$\alpha_{0,0}$	7199,6 (16)	99,932 (3)	1,16

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(\text{Bi})$	257,88 (4)	0,0446 (13)	M1+29%E2	0,434 (17)	0,0918 (16)	0,02212 (37)	0,555 (26)
$\gamma_{2,1}(\text{Bi})$	335,33 (10)	0,0062 (3)					
$\gamma_{4,2}(\text{Bi})$	455	0,002					
$\gamma_{2,0}(\text{Bi})$	593,1 (1)	0,0115 (5)					
$\gamma_{3,0}(\text{Bi})$	758,9 (1)	0,0049 (4)					

3 Atomic Data

3.1 Bi

ω_K	:	0,964	(4)
$\bar{\omega}_L$:	0,391	(16)
n_{KL}	:	0,809	(5)

3.1.1 X Radiations

	Energy keV	Relative probability		
X_K	$K\alpha_2$	74,8157	59,77	
	$K\alpha_1$	77,1088	100	
	$K\beta_3$	86,835	}	
	$K\beta_1$	87,344		
	$K\beta_5''$	87,862		34,25
	$K\beta_2$	89,732	}	
	$K\beta_4$	90,074		10,48
	$KO_{2,3}$	90,421		
	X_L	$L\ell$	9,421	
$L\gamma$		- 15,708		

3.1.2 Auger Electrons

	Energy keV	Relative probability	
Auger K	KLL	57,491 – 63,419	100
	KLX	70,025 – 77,105	56
	KXY	82,53 – 90,52	7,84
Auger L	5,3 – 16,4		

4 α Emissions

	Energy keV	Probability × 100
$\alpha_{0,4}$	6037 (3)	0,002
$\alpha_{0,3}$	6322,0 (16)	0,0049 (4)
$\alpha_{0,2}$	6484,7 (16)	0,0167 (8)
$\alpha_{0,1}$	6813,8 (16)	0,0384 (15)
$\alpha_{0,0}$	7066,9 (16)	99,932 (3)

5 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AL}	(Bi)	5,3 - 16,4	0,0077 (4)
e _{AK}	(Bi)		0,00044 (3)
	KLL	57,491 - 63,419	}
	KLX	70,025 - 77,105	}
	KXY	82,53 - 90,52	}
ec _{1,0 K}	(Bi)	167,35 (4)	0,0125 (6)

6 Photon Emissions

6.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Bi)	9,421 — 15,708	0,00497 (23)	
XK α_2	(Bi)	74,8157	0,00351 (20)	} K α
XK α_1	(Bi)	77,1088	0,0059 (4)	}
XK β_3	(Bi)	86,835	}	
XK β_1	(Bi)	87,344	}	
XK β_5''	(Bi)	87,862	}	0,00201 (11) K' β_1
XK β_2	(Bi)	89,732	}	
XK β_4	(Bi)	90,074	}	0,00062 (4) K' β_2
XKO _{2,3}	(Bi)	90,421	}	

6.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$ (Bi)	257,88 (4)	0,0287 (7)
$\gamma_{2,1}$ (Bi)	335,33 (10)	0,0062 (3)
$\gamma_{4,2}$ (Bi)	455	0,002
$\gamma_{2,0}$ (Bi)	593,1 (1)	0,0115 (5)
$\gamma_{3,0}$ (Bi)	758,9 (1)	0,0049 (4)

7 Main Production Modes

Ac – 225 decay chain

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