

1 Decay Scheme

At-215 decays 100% to levels of Bi-211 by emission of alpha-particles.

L'astate 215 se désintègre par émissions alpha essentiellement vers le niveau fondamental du bismuth 211.

2 Nuclear Data

$$\begin{aligned}
 T_{1/2}({}^{215}\text{At}) &: 0,10 \quad (2) \quad 10^{-3} \text{ s} \\
 T_{1/2}({}^{211}\text{Bi}) &: 2,15 \quad (2) \quad \text{min} \\
 Q^\alpha({}^{215}\text{At}) &: 8178 \quad (4) \quad \text{keV}
 \end{aligned}$$

2.1 α Transitions

	Energy keV	Probability $\times 100$	F
$\alpha_{0,1}$	7773 (4)	0,05 (2)	390
$\alpha_{0,0}$	8178 (4)	99,95 (2)	2,8

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(\text{Bi})$	404,854 (9)	0,05 (2)	M1+E2	0,095 (7)	0,0206 (8)	0,00498 (17)	0,122 (8)

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 α_2	74,8157	59,77
K α_1	77,1088	100
K β_3	86,835	}
K β_1	87,344	}
K β_5''	87,862	}
		34,25
K β_2	89,732	}
K β_4	90,074	}
K $O_{2,3}$	90,421	}
		10,49
X _L		
L ℓ	9,4207	
L α	10,7308 – 10,8387	
L η	11,7127	
L β	12,4814 – 13,8066	
L γ	14,7735 – 15,7084	

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	5,42 – 16,34	

4 α Emissions

	Energy keV	alpha per 100 disint.
$\alpha_{0,1}$	7628 (4)	0,05 (2)
$\alpha_{0,0}$	8026 (4)	99,95 (2)

5 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AL}	(Bi)	5,42 - 16,34	0,0027 (5)
e _{AK}	(Bi)		0,00015 (7)
	KLL	57,491 - 63,419	}
	KLX	70,025 - 77,105	}
	KXY	82,53 - 90,52	}
ec _{1,0 T}	(Bi)	314,328 - 404,830	0,0055 (22)
ec _{1,0 K}	(Bi)	314,328 (9)	0,0043 (17)
ec _{1,0 L}	(Bi)	388,466 - 391,435	0,00093 (37)
ec _{1,0 M}	(Bi)	400,855 - 402,274	0,00022 (9)
ec _{1,0 N}	(Bi)	403,916 - 404,697	0,000057 (23)

6 Photon Emissions**6.1 X-Ray Emissions**

		Energy keV	Photons per 100 disint.	
XL	(Bi)	9,4207 — 15,7084	0,0017 (4)	
XK α_2	(Bi)	74,8157	0,0012 (5)	} K α
XK α_1	(Bi)	77,1088	0,0020 (9)	}
XK β_3	(Bi)	86,835	}	
XK β_1	(Bi)	87,344	}	} K' β_1
XK β_5''	(Bi)	87,862	}	

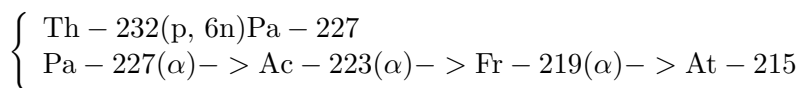
		Energy keV	Photons per 100 disint.		
XK β_2	(Bi)	89,732	}	0,00021 (9)	K' β_2
XK β_4	(Bi)	90,074	}		
XKO $_{2,3}$	(Bi)	90,421	}		

6.2 Gamma Emissions

		Energy keV	Photons per 100 disint.
$\gamma_{1,0}$ (Bi)		404,853 (9)	0,045 (18)

7 Main Production Modes

U – 235 decay chain



8 References

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