



## 1 Decay Scheme

Rn-222 disintegrates mainly to the ground state level in Po-218.

*Le radon 222 se désintègre par émission alpha principalement vers le niveau fondamental du polonium 218.*

## 2 Nuclear Data

$T_{1/2}(^{222}\text{Rn})$	:	3,8232	(8)	d
$T_{1/2}(^{218}\text{Po})$	:	3,071	(22)	min
$Q^\alpha(^{222}\text{Rn})$	:	5590,3	(3)	keV

### 2.1 $\alpha$ Transitions

	Energy keV	Probability $\times 100$	F
$\alpha_{0,2}$	4915 (5)	$\approx 0,0005$	$\approx 30$
$\alpha_{0,1}$	5080 (2)	0,078	1,9
$\alpha_{0,0}$	5590,3 (3)	99,92 (1)	1

### 2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	P $_{\gamma+ce}$ $\times 100$	Multipolarity	$\alpha_K$	$\alpha_L$	$\alpha_M$	$\alpha_T$
$\gamma_{1,0}(\text{Po})$	511 (2)	0,078	[E2]	0,0213 (4)	0,00704 (13)	0,00177 (4)	0,0306 (6)

### 3 Atomic Data

#### 3.1 Po

$\omega_K$	:	0,965	(4)
$\bar{\omega}_L$	:	0,403	(16)
$n_{KL}$	:	0,807	(5)

##### 3.1.1 X Radiations

	Energy keV	Relative probability		
X <sub>K</sub>	K $\alpha_2$	76,864	60,05	
	K $\alpha_1$	79,293	100	
	K $\beta_3$	89,256	}	
	K $\beta_1$	89,807	}	
	K $\beta_5''$	90,363	}	34,43
	K $\beta_2$	92,263	}	
	K $\beta_4$	92,618	}	10,71
	KO <sub>2,3</sub>	92,983	}	
	X <sub>L</sub>	L $\ell$	9,66	
		L $\alpha$	11,0161 – 11,1303	
L $\eta$		12,0847		
L $\beta$		12,8239 – 14,2476		
L $\gamma$		15,251 – 16,21		

### 4 $\alpha$ Emissions

	Energy keV	Probability $\times 100$
$\alpha_{0,2}$	4827 (4)	$\approx 0,0005$
$\alpha_{0,1}$	4987 (1)	0,078
$\alpha_{0,0}$	5489,48 (30)	99,92 (1)

## 5 Photon Emissions

### 5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Po)	9,66 — 16,21	0,000766 (15)	
XK $\alpha_2$	(Po)	76,864	0,000469 (10)	} K $\alpha$
XK $\alpha_1$	(Po)	79,293	0,000781 (16)	
XK $\beta_3$	(Po)	89,256	}	} K' $\beta_1$
XK $\beta_1$	(Po)	89,807		
XK $\beta_5''$	(Po)	90,363		
XK $\beta_2$	(Po)	92,263	}	} K' $\beta_2$
XK $\beta_4$	(Po)	92,618		
XKO <sub>2,3</sub>	(Po)	92,983		

### 5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}(\text{Po})$	510 (2)	0,076

## 6 Main Production Modes

Ra – 226 decay chain

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