



## 1 Decay Scheme

Xe-133m decays by a single highly converted gamma transition to the ground state of Xe-133.  
*Le xénon 133 métastable se désexcite selon une transition gamma fortement convertie.*

## 2 Nuclear Data

$T_{1/2}(^{133\text{m}}\text{Xe})$	:	2,198	(13)	d
$T_{1/2}(^{133}\text{Xe})$	:	5,2441	(37)	d
$Q^{IT}(^{133\text{m}}\text{Xe})$	:	233,219	(15)	keV

### 2.1 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	$P_{\gamma+\text{ce}}$ (%)	Multipolarity	$\alpha_K$	$\alpha_L$	$\alpha_M$	$\alpha_T$
$\gamma_{1,0}(\text{Xe})$	233,219 (15)	100	M4+0.99%E5	6,22 (10)	2,08 (7)	0,464 (16)	8,88 (14)

## 3 Atomic Data

### 3.1 Xe

$\omega_K$	:	0,888	(5)
$\bar{\omega}_L$	:	0,097	(5)
$n_{KL}$	:	0,902	(4)

#### 3.1.1 X Radiations

	Energy (keV)	Relative probability
$X_K$		
$K\alpha_2$	29,459	53,98
$K\alpha_1$	29,779	100

	Energy (keV)	Relative probability
K $\beta_3$	33,562	} 28,99
K $\beta_1$	33,625	
K $\beta_5''$	33,881	
K $\beta_2$	34,415	} 6,84
K $\beta_4$	34,496	
KO <sub>2,3</sub>	34,552	
X <sub>L</sub>		
L $\ell$	3,6378	
L $\alpha$	4,0977 - 4,1103	
L $\eta$	3,9576	
L $\beta$	4,4176 - 4,7758	
L $\gamma$	4,895 - 5,296	

### 3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	23,512 - 24,842	100
KLX	27,897 - 29,770	46,5
KXY	32,27 - 34,54	5,41
Auger L	2,4 - 5,2	

## 4 Electron Emissions

	Energy (keV)	Electrons (per 100 disint.)
e <sub>AL</sub> (Xe)	2,4 - 5,2	70,3 (60)
e <sub>AK</sub> (Xe)		
KLL	23,512 - 24,842	} 7,0 (4)
KLX	27,897 - 29,770	
KXY	32,27 - 34,54	
ec <sub>1,0</sub> T (Xe)	198,655 - 233,207	89,88 (14)
ec <sub>1,0</sub> K (Xe)	198,655 (15)	62,9 (14)
ec <sub>1,0</sub> L (Xe)	227,766 - 228,437	21,0 (8)
ec <sub>1,0</sub> M (Xe)	232,070 - 232,542	4,70 (17)
ec <sub>1,0</sub> N (Xe)	233,006 - 233,152	0,961 (33)

## 5 Photon Emissions

### 5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)		
XL	(Xe)	3,6378 - 5,296	7,55 (16)		
XK $\alpha_2$	(Xe)	29,459	15,9 (4)	}	K $\alpha$
XK $\alpha_1$	(Xe)	29,779	29,4 (7)		
XK $\beta_3$	(Xe)	33,562	}	8,54 (21)	K' $\beta_1$
XK $\beta_1$	(Xe)	33,625			
XK $\beta_5''$	(Xe)	33,881			
XK $\beta_2$	(Xe)	34,415	}	2,01 (7)	K' $\beta_2$
XK $\beta_4$	(Xe)	34,496			
XKO <sub>2,3</sub>	(Xe)	34,552			

### 5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{1,0}(\text{Xe})$	233,219 (15)	10,12 (14)

## 6 Main Production Modes

- { Fissionproduct
- { Possible impurities: Xe – 127, Xe – 131m, Xe – 131, Xe – 133, Xe – 135
- { Xe – 132(n, $\gamma$ )Xe – 133m  $\sigma$  : 0,05 (1) barns
- { Possible impurities: Xe – 125, Xe – 129m, Xe – 133, Xe – 135, Xe – 135m, Xe – 137

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(Calculated X-ray, EC and Auger-electron intensities)

γ Emission intensities  
per 100 disintegrations

