



1 Decay Scheme

Le xénon ^{131m}Xe se désexcite par une transition gamma (163,930 keV) fortement convertie.
Xe-131m decays by a strongly converted gamma transition.

2 Nuclear Data

$T_{1/2}(^{131}\text{Xe}^m)$: 11,930 (16) d

2.1 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(\text{Xe})$	163,930 (8)	100	M4	30,8 (9)	14,66 (44)	3,38 (10)	49,6 (15)

3 Atomic Data

3.1 Xe

ω_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	
	$K\beta_3$	33,562	}	
	$K\beta_1$	33,625	}	
	$K\beta_5''$	33,881	}	28,99
	$K\beta_2$	34,415	}	
	$K\beta_4$	34,496	}	6,84
	$KO_{2,3}$	34,552	}	
	X_L	$L\ell$	3,64	
		$L\alpha$	4,1 – 4,11	
$L\eta$		3,96		
$L\beta$		4,42 – 4,78		
$L\gamma$		4,89 – 5,30		

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	0,14 – 5,30	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AL}	(Xe)	0,14 - 5,30	75,9 (8)
e _{AK}	(Xe)		6,8 (5)
	KLL	23,512 - 24,842	}
	KLX	27,897 - 29,770	}
	KXY	32,27 - 34,54	}
ec _{1,0 T}	(Xe)	129,3656 - 163,9179	98,02 (6)
ec _{1,0 K}	(Xe)	129,366 (8)	61,0 (26)
ec _{1,0 L}	(Xe)	158,477 - 159,148	29,0 (12)
ec _{1,0 M}	(Xe)	162,781 - 163,253	6,69 (28)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.
XL	(Xe)	3,64 — 5,30	8,13 (21)
XK α_2	(Xe)	29,459	15,4 (7) } K α
XK α_1	(Xe)	29,779	28,5 (13) }
XK β_3	(Xe)	33,562	}
XK β_1	(Xe)	33,625	}
XK β_5''	(Xe)	33,881	}
XK β_2	(Xe)	34,415	}
XK β_4	(Xe)	34,496	}
XK $O_{2,3}$	(Xe)	34,552	}
			8,3 (4) K' β_1
			1,95 (10) K' β_2

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}(\text{Xe})$	163,930 (8)	1,98 (6)

6 Main Production Modes

{ Fission products
Possible impurities : Xe – 127, Xe – 129m, Xe – 133, Xe – 133m, Xe – 135

I – 129(n,γ)I – 130 σ : 9 (1) barns
{ I – 130(β⁻)Xe – 130
Possible impurities : T_{1/2} = 12,3 h

I – 129(n,γ)I – 130m
{ I – 130m(β⁻)Xe – 130 σ : 18 (2) barns
Possible impurities : T_{1/2} = 9,2 min

{ I – 130m(I.T.)I – 130
Possible impurities : T_{1/2} = 9,2 min

{ Xe – 130(n,γ)Xe – 131m σ : 0,45 (10) barns
Possible impurities : Xe – 129m

7 References

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γ Emission probabilities
per 100 disintegrations

