



1 Decay Scheme

Xe-127 decays by electron capture to excited levels in I-127.

Le Xe-127 se désintègre par capture électronique vers des niveaux excités de I-127.

2 Nuclear Data

$$T_{1/2}(^{127}\text{Xe}) : 36,358 \quad (31) \quad \text{d}$$

$$Q^+(^{127}\text{Xe}) : 662,3 \quad (20) \quad \text{keV}$$

2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	lg <i>ft</i>	<i>P_K</i>	<i>P_L</i>	<i>P_M</i>
ε _{0,4}	43,9 (21)	0,0142 (9)	Allowed	7,42	0,31 (6)	0,523 (44)	0,137 (12)
ε _{0,3}	287,3 (20)	47,3 (7)	Allowed	6,21	0,830 (8)	0,134 (1)	0,0294 (6)
ε _{0,2}	459,4 (20)	52,7 (14)	Allowed	6,61	0,842 (8)	0,125 (1)	0,0272 (5)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	P _{γ+ce} (%)	Multipolarity	α _K	α _L	α _M	α _T
γ _{1,0} (I)	57,609 (11)	6,00 (18)	M1 + 0,68 (8) % E2	3,16 (5)	0,449 (8)	0,0910 (16)	3,72 (6)
γ _{2,1} (I)	145,251 (14)	6,22 (11)	E2	0,357 (5)	0,0906 (13)	0,0189 (3)	0,471 (7)
γ _{3,2} (I)	172,132 (12)	29,74 (45)	M1 + 0,72 (10) % E2	0,1419 (20)	0,0185 (3)	0,00373 (6)	0,1649 (24)
γ _{2,0} (I)	202,860 (8)	76,3 (5)	M1 + 21,1 (17) % E2	0,0964 (15)	0,0142 (3)	0,00289 (6)	0,1142 (18)
γ _{3,0} (I)	374,992 (9)	17,60 (28)	E2	0,01671 (24)	0,00257 (4)	0,000524 (8)	0,0199 (3)
γ _{4,0} (I)	618,4 (3)	0,0142 (9)	M1 + 0,65 (29) % E2	0,00528 (8)	0,000656 (10)	0,0001316 (19)	0,00609 (9)

3 Atomic Data

3.1 I

ω_K	:	0,8842	(40)
$\bar{\omega}_L$:	0,092	(4)
n_{KL}	:	0,909	(4)

3.1.1 X Radiations

	Energy (keV)		Relative probability
X _K			
Kα ₂	28,3175		53,84
Kα ₁	28,6123		100
Kβ ₃	32,2397	}	28,81
Kβ ₁	32,2951		
Kβ' ₅	32,544		
Kβ ₂	33,042	}	6,51
Kβ ₄	33,12		
KO _{2,3}	33,166		
X _L			
Lℓ	3,4848		
Lα	3,9269 - 3,9382		
Lη	3,7791		
Lβ	4,2212 - 4,5678		
Lγ	4,6668 - 5,0595		

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	22,66 - 23,91	100
KLX	26,85 - 28,56	45,8
KXY	30,99 - 33,07	6,2
Auger L		
	2,4 - 5,1	

4 Electron Emissions

		Energy (keV)	Electrons (per 100 disint.)
eAL	(I)	2,4 - 5,1	96,4 (6)
eAK	(I)	}	11,8 (5)
	KLL	22,66 - 23,91	
	KLX	26,85 - 28,56	
	KXY	30,99 - 33,07	
ec _{1,0} T	(I)	24,440 - 57,606	4,73 (15)
ec _{1,0} K	(I)	24,440 (11)	4,02 (13)
ec _{1,0} L	(I)	52,421 - 53,052	0,571 (19)
ec _{1,0} M	(I)	56,537 - 56,990	0,1158 (38)
ec _{1,0} N	(I)	57,423 - 57,559	0,0233 (8)
ec _{2,1} T	(I)	112,082 - 145,248	1,992 (44)
ec _{2,1} K	(I)	112,082 (14)	1,510 (33)
ec _{3,2} K	(I)	138,963 (12)	3,62 (7)
ec _{3,2} T	(I)	138,963 - 172,129	4,21 (9)
ec _{2,1} L	(I)	140,063 - 140,694	0,383 (8)
ec _{2,1} M	(I)	144,179 - 144,632	0,0799 (18)
ec _{2,1} N	(I)	145,065 - 145,201	0,01561 (36)
ec _{3,2} L	(I)	166,944 - 167,575	0,472 (10)
ec _{2,0} T	(I)	169,69 - 202,86	7,82 (13)
ec _{2,0} K	(I)	169,691 (8)	6,60 (11)
ec _{3,2} M	(I)	171,060 - 171,513	0,0952 (21)
ec _{3,2} N	(I)	171,946 - 172,082	0,01925 (40)
ec _{2,0} L	(I)	197,67 - 198,30	0,972 (22)
ec _{2,0} M	(I)	201,79 - 202,24	0,1978 (43)
ec _{2,0} N	(I)	202,67 - 202,81	0,0396 (9)
ec _{3,0} K	(I)	341,823 (9)	0,288 (6)
ec _{3,0} L	(I)	369,804 - 370,435	0,0444 (10)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)		
XL	(I)	3,4848 - 5,0595	9,60 (19)		
XK α_2	(I)	28,3175	25,0 (4)	}	K α
XK α_1	(I)	28,6123	46,5 (8)		
XK β_3	(I)	32,2397	13,39 (25)	}	K' β_1
XK β_1	(I)	32,2951			
XK β_5''	(I)	32,544			
XK β_2	(I)	33,042	3,03 (9)	}	K' β_2
XK β_4	(I)	33,12			
XKO _{2,3}	(I)	33,166			

5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{1,0}(I)$	57,61 (2)	1,272 (35)
$\gamma_{2,1}(I)$	145,252 (10)	4,23 (7)
$\gamma_{3,2}(I)$	172,132 (10)	25,53 (38)
$\gamma_{2,0}(I)$	202,86 (1)	68,45 (45)
$\gamma_{3,0}(I)$	374,991 (12)	17,26 (27)
$\gamma_{4,0}(I)$	618,41 (14)	0,0141 (9)

6 Main Production Modes

$$\begin{aligned}
 & \left\{ \begin{array}{l} \text{Xe} - 126(n,\gamma)\text{Xe} - 127 \quad \sigma : 3,5 (8) \text{ barns} \\ \text{Possible impurities : } \text{Xe} - 129\text{m}, \text{Xe} - 131\text{m} \end{array} \right. \\
 & \left\{ \begin{array}{l} \text{I} - 127(p,n)\text{Xe} - 127\text{m} \\ \text{Possible impurities : } \text{Xe} - 122, \text{Xe} - 125 \end{array} \right. \\
 & \left\{ \begin{array}{l} \text{I} - 127(d,2n)\text{Xe} - 127\text{m} \\ \text{Possible impurities : } \text{I} - 126 \end{array} \right. \\
 & \text{Xe} - 126(n,\gamma)\text{Xe} - 127\text{m} \\
 & \text{Xe} - 127\text{m(I.T.)Xe} - 127 \quad T_{1/2} : 69 \text{ s}
 \end{aligned}$$

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