$^{135}_{54}\mathrm{Xe}^{\,m}_{81}$

1 Decay Scheme

Xe-135 metastable mainly disintegrates by isomeric transition to Xe-135. A weak beta minus transition to Cs-135 has been observed.
Le xénon 135 metastable se déexcite vers le niveau fondamental de xénon 135 principalement. Une faible transition bêta moins vers le césium 135 a été observée.

2 Nuclear Data

$T_{1/2}(^{135}\mathrm{Xe^m})$	:	15,30	(3)	min
$T_{1/2}(^{135}\mathrm{Cs})$	:	2300000	(300000)	a
$T_{1/2}(^{135}\mathrm{Xe})$	:	9,14	(2)	h
$Q^-(^{135}\mathrm{Xe^m})$	:	1692	(4)	keV

2.1 β^- Transitions

	Energy keV	Probability × 100	Nature	lg ft
$\beta^-_{0,4}$	334 (4)	0,00016		8,7
$\beta^-_{0,3}$	500 (4)	0,000032		9,9
$\beta^-_{0,2}$	559 (4)	0,00024		9,2
$\beta^-_{0,1}$	905,1 (40)	0,0036 (18)	1st Forbidden	8,7

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}$(Xe)	526,570 (5)	96,996 (2)	M4	0,1908 (27)	0,0364 (5)	0,0077 (1)	0,237 (3)
$\gamma_{1,0}$(Cs)	786,91	0,0036 (18)	E2				
$\gamma_{2,0}$(Cs)	1133	0,00024					

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{3,0}$(Cs)	1192	0,000032					
$\gamma_{4,0}$(Cs)	1358	0,00016	E1				

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				
	$L\ell$	3,6378		
	$L\alpha$	4,0977 – 4,1103		
	$L\eta$	3,9576		
	$L\beta$	4,4176 – 4,7758		
	$L\gamma$	4,895 – 5,2960		

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	2,5 – 5,3	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Xe)	2,5 - 5,3	15,21 (9)
e_{AK}	(Xe)		1,73 (8)
	KLL	23,512 - 24,842	
	KLX	27,897 - 29,770	
	KXY	32,27 - 34,54	
$ec_{1,0\ T}$	(Xe)	492,006 - 526,560	19,16 (25)
$ec_{1,0\ K}$	(Xe)	492,006 (5)	15,42 (22)
$ec_{1,0\ L}$	(Xe)	521,12 - 521,79	2,943 (41)
$ec_{1,0\ M}$	(Xe)	525,42 - 525,89	0,622 (8)
$ec_{1,0\ N}$	(Xe)	526,36 - 526,50	0,1283 (18)
$\beta^-_{0,4}$	max:	334 (4)	0,00016
$\beta^-_{0,4}$	avg:	96,4 (13)	
$\beta^-_{0,3}$	max:	500 (4)	0,000032
$\beta^-_{0,3}$	avg:	152,8 (15)	
$\beta^-_{0,2}$	max:	559 (4)	0,00024
$\beta^-_{0,2}$	avg:	173,9 (15)	
$\beta^-_{0,1}$	max:	905,1 (40)	0,0036 (18)
$\beta^-_{0,1}$	avg:	306 (17)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Xe)	3,6378 — 5,2960	1,637 (30)	
$XK\alpha_2$	(Xe)	29,459	3,90 (7)	} Kα
$XK\alpha_1$	(Xe)	29,779	7,22 (12)	}
$XK\beta_3$	(Xe)	33,562	}	
$XK\beta_1$	(Xe)	33,625	} 2,09 (4)	$K'\beta_1$
$XK\beta''_5$	(Xe)	33,881	}	
$XK\beta_2$	(Xe)	34,415	}	
$XK\beta_4$	(Xe)	34,496	} 0,494 (14)	$K'\beta_2$
$XKO_{2,3}$	(Xe)	34,552	}	

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$(Xe)	526,570 (5)	80,84 (20)
$\gamma_{1,0}$(Cs)	786,89	0,0036 (18)
$\gamma_{2,0}$(Cs)	1133	0,00024
$\gamma_{3,0}$(Cs)	1192	0,000032
$\gamma_{4,0}$(Cs)	1358	0,00016

6 Main Production Modes

- Xe − 136(n,2n)Xe − 135m
  Possible impurities : Xe − 135, Xe − 134, Xe − 133, Xe − 133m, Xe − 131
- Xe − 134(n,γ)Xe − 135m
  Possible impurities : Xe − 135, Xe − 134, Xe − 133, Xe − 133m, Xe − 131
- Ba − 138(n,α)Xe − 135m
  Possible impurities : Xe − 135, Xe − 134, Xe − 133, Xe − 133m, Xe − 131
- Xe − 136(d,t)Xe − 135m
  Possible impurities : Xe − 135, Xe − 134, Xe − 133, Xe − 133m, Xe − 131
- Fission product ()
  Possible impurities : Xe − 135, Xe − 134, Xe − 133, Xe − 133m, Xe − 131

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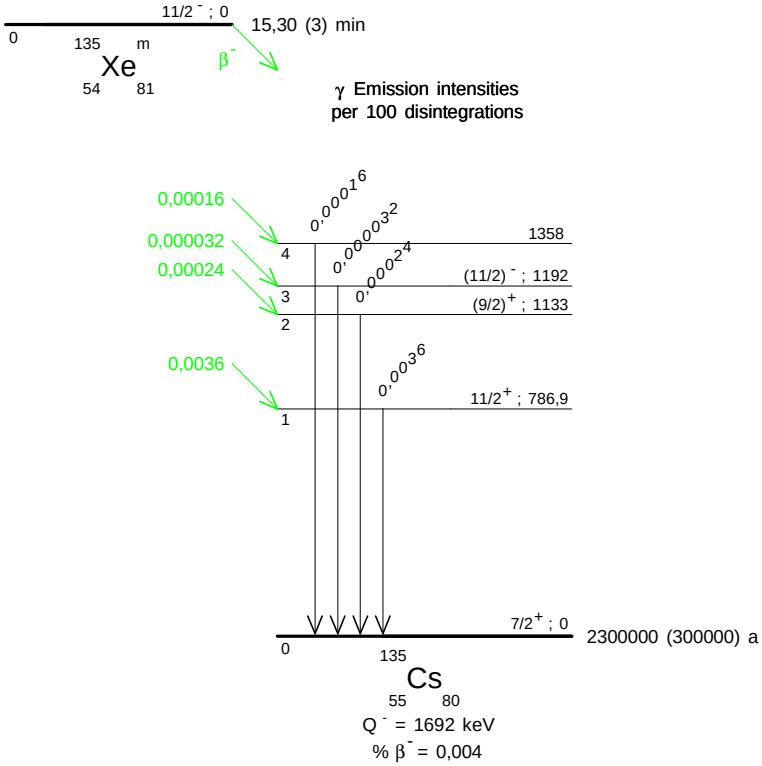
(Level scheme, Beta minus emission probability)

γ Emission intensities
per 100 disintegrations

Q^{IT} = 526,57 keV

% IT = 99,996


11/2 - ; 0
15,30 (3) min
0
135 m
Xe
54 81
β-
γ Emission intensities
per 100 disintegrations
0,00016
0,000032
0,00024
0,0036
0+,0+,0+,0+
1358
4
0+,0+,0+,0+
(11/2) - ; 1192
3
0+
(9/2)+ ; 1133
2
0+,0+,0+,0+
11/2+ ; 786,9
1
7/2+ ; 0
2300000 (300000) a
0
135
Cs
55 80
Q - = 1692 keV
% β- = 0,004