$^{129}_{53}\mathrm{I}_{76}$

## 1 Decay Scheme

I-129 disintegrates by 100 % beta minus decay to the excited level of 39.58 keV in Xe-129. The transition to the Xe-129 ground state was not observed.
*L'iode 129 se désintègre par émission bêta moins vers le niveau excité de 39,58 keV du xenon 129. La transition vers le niveau fondamental du xenon 129 n'a pas été observée expérimentalement.*

## 2 Nuclear Data

$T_{1/2}(^{129}\mathrm{I}\ )$ : 16,1 (7) $10^6$ a
$Q^-(^{129}\mathrm{I}\ )$ : 190,8 (11) keV

### 2.1 $\beta^-$ Transitions

| | Energy keV | Probability × 100 | Nature | lg $ft$ |
|---|---|---|---|---|
| $\beta^-_{0,1}$ | 151,2 (11) | 99,5 (5) | 2nd Forbidden | 13,49 |
| $\beta^-_{0,0}$ | 190,8 (11) | 0,5 (5) | 2nd Unique Forbidden | >14,9 |

### 2.2 Gamma Transitions and Internal Conversion Coefficients

| | Energy keV | $P_{\gamma+ce}$ × 100 | Multipolarity | $\alpha_K$ | $\alpha_L$ | $\alpha_M$ | $\alpha_T$ |
|---|---|---|---|---|---|---|---|
| $\gamma_{1,0}$(Xe) | 39,578 (4) | 99,5 (5) | M1+0,07%E2 | 10,59 (11) | 1,45 (5) | 0,296 (10) | 12,41 (13) |

# 3 Atomic Data

## 3.1 Xe

$\omega_K$ : 0,888 (5)
$\bar{\omega}_L$ : 0,097 (5)
$n_{KL}$ : 0,905 (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 | } | 27,7 |
| | $K\beta_2$ | 34,415 | } | |
| | $K\beta_4$ | 34,496 | } | 6,2 |
| | $KO_{2,3}$ | 34,552 | } | |
| $X_L$ | | | | |
| | $L\ell$ | 3,6 | | |
| | $L\gamma$ | – 5,4 | | |

### 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 – 5,4 | |

## 4 Electron Emissions

| | | Energy keV | Electrons per 100 disint. |
|---|---|---|---|
| $e_{AL}$ | (Xe) | 2,4 - 5,4 | 73,9 (12) |
| $e_{AK}$ | (Xe) | | 8,8 (4) |
| | KLL | 23,512 - 24,842 | } |
| | KLX | 27,897 - 29,770 | } |
| | KXY | 32,27 - 34,54 | } |
| $ec_{1,0\ K}$ | (Xe) | 5,017 (4) | 78,6 (12) |
| $ec_{1,0\ L}$ | (Xe) | 34,126 - 34,796 | 10,8 (4) |
| $ec_{1,0\ M}$ | (Xe) | 38,43 - 38,90 | 2,20 (8) |
| $ec_{1,0\ N}$ | (Xe) | 39,37 - 39,56 | 0,55 (1) |
| $\beta^-_{0,1}$ | max: | 151,2 (11) | 99,5 (5) |
| $\beta^-_{0,1}$ | avg: | 37 (1) | |
| $\beta^-_{0,0}$ | max: | 190,8 (11) | 0,5 (5) |

## 5 Photon Emissions

### 5.1 X-Ray Emissions

| | | Energy keV | Photons per 100 disint. | |
|---|---|---|---|---|
| XL | (Xe) | 3,6 — 5,4 | 7,9 (4) | |
| $XK\alpha_2$ | (Xe) | 29,459 | 20,1 (3) | } Kα |
| $XK\alpha_1$ | (Xe) | 29,779 | 37,2 (6) | } |
| $XK\beta_3$ | (Xe) | 33,562 } | | |
| $XK\beta_1$ | (Xe) | 33,625 } | 10,3 (4) | $K'\beta_1$ |
| $XK\beta''_5$ | (Xe) | 33,881 } | | |
| $XK\beta_2$ | (Xe) | 34,415 } | | |
| $XK\beta_4$ | (Xe) | 34,496 } | 2,30 (13) | $K'\beta_2$ |
| $XKO_{2,3}$ | (Xe) | 34,552 } | | |

### 5.2 Gamma Emissions

| | Energy keV | Photons per 100 disint. |
|---|---|---|
| $\gamma_{1,0}$(Xe) | 39,578 (4) | 7,42 (8) |

## 6 Main Production Modes

Fission product
Possible impurities : I – 131, I – 132, I – 133, I – 135

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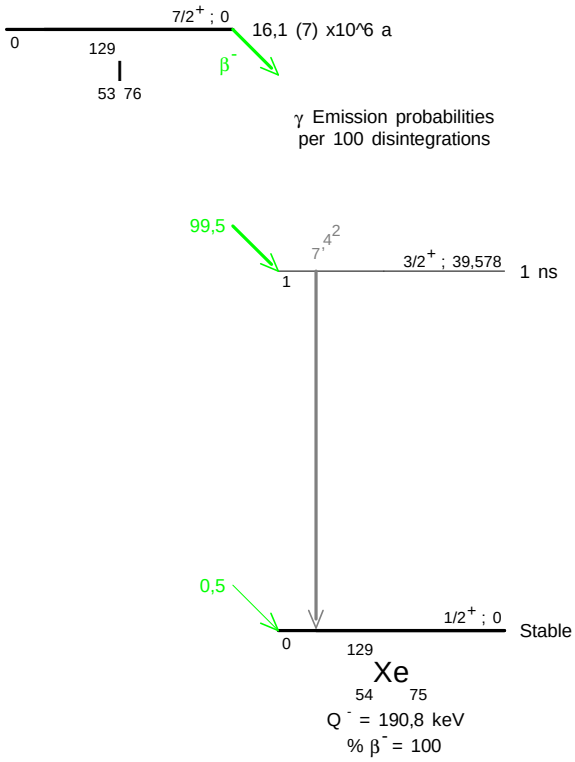
7/2+ ; 0
16,1 (7) x10^6 a
0
129
I
53 76
β-
γ Emission probabilities
per 100 disintegrations
99,5
7-
4 2
3/2+ ; 39,578
1 ns
1
0,5
1/2+ ; 0
Stable
0
129
Xe
54 75
Q- = 190,8 keV
% β- = 100