



1 Decay Scheme

U-236 disintegrates by alpha emission mainly to the ground and 49-keV states in Th-232, and by $9,3 \times 10^{-8}$ % spontaneous fission.

L’uranium 236 se désintègre par émission alpha et par fission spontanée dans une proportion p (FS) = $9,3 \times 10^{-8}$ %. L’émission alpha a lieu principalement vers le niveau excité de 49 keV et le niveau fondamental de thorium 232. Le nombre moyen n (FS) de neutrons émis par transformation nucléaire de U-236 est : n (FS) = p (FS) $\times \nu = 1,76 \cdot 10^{-9}$ avec p (FS) = $9,3 \cdot 10^{-10}$ ν égal à $1,89 \pm 0,05$ est le nombre moyen de neutrons émis par fission spontanée.

2 Nuclear Data

$T_{1/2}({}^{236}\text{U})$: 23,43 (6) 10^6 a
 $T_{1/2}({}^{232}\text{Th})$: 14,02 (6) 10^9 a
 $Q^\alpha({}^{236}\text{U})$: 4573,1 (9) keV

2.1 α Transitions

	Energy keV	Probability $\times 100$	F
$\alpha_{0,3}$	4240	0,00014 (5)	1160
$\alpha_{0,2}$	4407 (8)	0,149 (22)	27,3
$\alpha_{0,1}$	4522 (5)	26,1 (40)	1,2
$\alpha_{0,0}$	4571 (3)	73,8 (40)	1

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(\text{Th})$	49,46 (10)	26,3 (40)	E2		237 (7)	65,0 (19)	324 (10)
$\gamma_{2,1}(\text{Th})$	112,79 (10)	0,150 (24)	E2	0,229 (7)	4,71 (14)	1,295 (39)	6,67 (20)
$\gamma_{3,2}(\text{Th})$	171,15 (20)	0,000142 (48)	E2	0,204 (6)	0,719 (22)	0,197 (6)	1,186 (36)

3 Atomic Data

3.1 Th

ω_K	:	0,969	(4)
$\bar{\omega}_L$:	0,476	(18)
n_{KL}	:	0,797	(5)

3.1.1 X Radiations

	Energy keV	Relative probability
X _K		
	K α_2	89,954
	K α_1	93,351
	K β_3	104,819
	K β_1	105,604
	K β_5''	106,239
	K β_2	108,509
	K β_4	108,955
X _L	KO _{2,3}	109,442
	L ℓ	11,118
	L α	12,809 – 12,968
	L η	14,511
	L β	14,97 – 16,426
	L γ	18,98 – 19,599

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	68,406 – 76,745	100
KLX	83,857 – 93,345	59,7
KXY	99,29 – 109,64	8,67
Auger L	5,8 – 20,3	

4 α Emissions

	Energy keV	Probability $\times 100$
$\alpha_{0,3}$	4168	0,00014 (5)
$\alpha_{0,2}$	4332 (8)	0,149 (22)
$\alpha_{0,1}$	4445 (5)	26,1 (40)
$\alpha_{0,0}$	4494 (3)	73,8 (40)

5 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AL}	(Th)	5,8 - 20,3	10,1 (12)
e _{AK}	(Th)		0,000139 (30)
	KLL	68,406 - 76,745	}
	KLX	83,857 - 93,345	}
	KXY	99,29 - 109,64	}
ec _{1,0} L	(Th)	28,99 - 33,20	19,2 (29)
ec _{1,0} M	(Th)	44,28 - 46,13	5,3 (8)
ec _{1,0} N	(Th)	48,13 - 49,12	1,41 (21)
ec _{2,1} L	(Th)	92,32 - 96,50	0,092 (15)
ec _{2,1} M	(Th)	107,61 - 109,46	0,0253 (41)

6 Photon Emissions

6.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Th)	11,118 — 19,599	9,4 (10)	
XK α_2	(Th)	89,954	0,00128 (22)	} K α
XK α_1	(Th)	93,351	0,0021 (4)	
XK β_3	(Th)	104,819	}	K' β_1
XK β_1	(Th)	105,604	}	
XK β_5''	(Th)	106,239	}	
XK β_2	(Th)	108,509	}	K' β_2
XK β_4	(Th)	108,955	}	
XK $O_{2,3}$	(Th)	109,442	}	

6.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}(\text{Th})$	49,46 (10)	0,081 (12)
$\gamma_{2,1}(\text{Th})$	112,79 (10)	0,0195 (31)
$\gamma_{3,2}(\text{Th})$	171,15 (20)	0,000065 (22)

7 Main Production Modes

$$\text{U} - 235(n,\gamma)\text{U} - 236 \qquad \sigma : 98,3 \text{ (8) barns}$$

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