

1 Decay Scheme

Cf-252 disintegrates by alpha emissions mainly to the Cm-248 ground state level, and by spontaneous fission for 3,086(8) % .

The average number of neutrons emitted by spontaneous fission is: 3,7675 (40).

The average number of neutrons emitted per 100 disintegrations is:

$$n = 3,086 \times 3,7675 = 11,627 \text{ (33) \%}$$

Le californium 252 se désintègre par émissions alpha principalement vers le niveau fondamental de Cm-248 et pour 3,086 % par fission spontanée.

2 Nuclear Data

$T_{1/2}(^{252}\text{Cf})$:	2,6470	(26)	a
$T_{1/2}(^{248}\text{Cm})$:	348	(6)	10^3 a
$Q^\alpha(^{252}\text{Cf})$:	6216,87	(4)	keV

2.1 α Transitions

	Energy keV	Probability $\times 100$	F
$\alpha_{0,3}$	$\sim 5920,3$	$\sim 0,0019$	1200
$\alpha_{0,2}$	~ 6073	0,23 (4)	65
$\alpha_{0,1}$	6173,63 (11)	15,1 (3)	3,2
$\alpha_{0,0}$	6216,8 (1)	81,7 (3)	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
$\gamma_{1,0}(\text{Cm})$	43,40 (3)	15,2 (3)	E2		724 (11)	204 (3)	1000 (15)
$\gamma_{2,1}(\text{Cm})$	100,2 (4)	0,232 (39)	E2		13,4 (4)	3,79 (9)	18,5 (5)
$\gamma_{3,2}(\text{Cm})$	154,5 (6)	0,00192	E2	0,1741 (25)	1,87 (5)	0,526 (12)	2,76 (6)

3 Atomic Data

3.1 Cm

ω_K	:	0,972	(4)
$\bar{\omega}_L$:	0,538	(23)
$\bar{\omega}_M$:	0,061	(6)
n_{KL}	:	0,785	(5)
\bar{n}_{LM}	:	1,12	(4)

3.1.1 X Radiations

	Energy keV	Relative probability	
X_K	$K\alpha_2$	104,59	
	$K\alpha_1$	109,271	
	$K\beta_3$	122,304	}
	$K\beta_1$	123,403	}
	$K\beta_5''$	124,124	}
			37,45
	$K\beta_2$	126,889	}
	$K\beta_4$	127,352	}
	$KO_{2,3}$	127,97	}
			13,18
X_L	$L\ell$	12,639	
	$L\alpha$	14,744 – 14,9560	
	$L\eta$	17,315	
	$L\beta$	17,288 – 20,515	
	$L\gamma$	21,969 – 23,319	

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	78,858 – 89,973	100
KLX	97,226 – 109,267	61,8
KXY	115,57 – 128,23	9,5
Auger L	6,3 – 24,5	

4 α Emissions

	Energy keV	Probability $\times 100$
$\alpha_{0,3}$	$\sim 5826,3$	$\sim 0,0019$
$\alpha_{0,2}$	$\sim 5976,6$	0,23 (4)
$\alpha_{0,1}$	6075,64 (11)	15,1 (3)
$\alpha_{0,0}$	6118,1 (1)	81,7 (3)

5 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Cm)	6,3 - 24,5	5,02 (13)
e_{AK}	(Cm)		0,0000025 (4)
	KLL	78,858 - 89,973	}
	KLX	97,226 - 109,267	}
	KXY	115,57 - 128,23	}
$ec_{1,0 L}$	(Cm)	18,9 - 24,4	10,93 (33)
$ec_{1,0 M}$	(Cm)	37,1 - 39,4	3,08 (9)
$ec_{1,0 N}$	(Cm)	41,7 - 42,9	0,856 (26)
$ec_{2,1 L}$	(Cm)	75,7 - 81,2	0,159 (27)

6 Photon Emissions

6.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Cm)	12,634 — 23,319	6,07 (14)	
XK α_2	(Cm)	104,59	0,0000257 (7)	} K α
XK α_1	(Cm)	109,271	0,0000402 (11)	}
XK β_3	(Cm)	122,304	}	
XK β_1	(Cm)	123,403	}	0,0000151 (5) K' β_1
XK β_5''	(Cm)	124,124	}	
XK β_2	(Cm)	126,889	}	
XK β_4	(Cm)	127,352	}	0,00000530 (19) K' β_2
XKO _{2,3}	(Cm)	127,97	}	

6.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$ (Cm)	43,399 (25)	0,0152 (4)
$\gamma_{2,1}$ (Cm)	100,2 (4)	0,0119 (20)
$\gamma_{3,2}$ (Cm)	154,5 (6)	0,00051

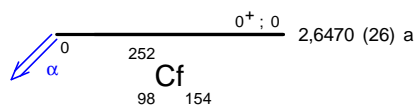
7 Main Production Modes

Pu – 239(multiple,n – captures)

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γ Emission intensities
per 100 disintegrations

