



1 Decay Scheme

Am-244m decays predominantly by beta minus emission to a number of excited levels and the ground state of Cm-244. A small electron capture branch also occurs directly to the ground state of Pu-244.

L'américium 244 métastable se désintègre principalement vers des niveaux excités et le niveau fondamental du curium 244. Un faible branchement par capture électronique vers le plutonium 244 a été observé.

2 Nuclear Data

$T_{1/2}({}^{244}\text{Am}^m)$:	26	(3)	min
$T_{1/2}({}^{244}\text{Pu})$:	80,0	(9)	10^6 a
$T_{1/2}({}^{244}\text{Cm})$:	18,11	(3)	a
$Q^-({}^{244}\text{Am}^m)$:	1516	(3)	keV
$Q^+({}^{244}\text{Am}^m)$:	164	(9)	keV

2.1 Electron Capture Transitions

	Energy keV	Probability $\times 100$	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,0}$	164 (9)	0,036 (1)	allowed	6,37	0,24 (5)	0,53 (4)	0,168 (12)

2.2 β^- Transitions

	Energy keV	Probability $\times 100$	Nature	lg ft
$\beta_{0,11}^-$	410 (3)	0,35 (9)	(1st forbidden non-unique)	6,8
$\beta_{0,10}^-$	432 (3)	0,56 (13)	(allowed)	6,67
$\beta_{0,7}^-$	496 (3)	0,08 (2)	(allowed)	7,7

	Energy keV	Probability $\times 100$	Nature	$\lg ft$
$\beta_{0,6}^-$	531,1 (30)	1,36 (16)	allowed	6,58
$\beta_{0,1}^-$	1473 (3)	31 (9)	allowed	6,74
$\beta_{0,0}^-$	1516 (3)	67 (9)	allowed	6,45

2.3 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(\text{Cm})$	42,965 (10)	32 (9)	E2		760 (11)	214 (3)	1050 (15)
$\gamma_{6,1}(\text{Cm})$	941,95 (3)	0,36 (12)	E2	0,01120 (16)	0,00318 (5)	0,000807 (12)	0,01547 (22)
$\gamma_{7,1}(\text{Cm})$	977,80 (4)	0,08 (2)	E0 (+ M1+E2)				
$\gamma_{6,0}(\text{Cm})$	984,91 (2)	1,0 (1)	E0				
$\gamma_{10,1}(\text{Cm})$	1041,22 (3)	0,19 (6)	(M1+E2)				
$\gamma_{11,1}(\text{Cm})$	1062,95 (3)	0,30 (9)	anomalous E1	0,09 (3)	0,015 (4)	0,0032 (1)	0,11 (3)
$\gamma_{10,0}(\text{Cm})$	1084,181 (14)	0,37 (12)	anomalous (E2)	0,030 (8)	0,008 (2)	0,0020 (1)	0,041 (11)
$\gamma_{11,0}(\text{Cm})$	1105,91 (2)	0,05 (2)	anomalous (E1)	0,14 (3)	0,024 (6)	0,0058 (1)	0,17 (4)

3 Atomic Data

3.1 Cm

ω_K	:	0,972	(4)
$\bar{\omega}_L$:	0,538	(23)
n_{KL}	:	0,785	(5)

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	}
			38
	$K\beta_2$	126,889	}
	$K\beta_4$	127,352	}
	$KO_{2,3}$	127,97	}
			13,5

		Energy keV	Relative probability
X_L	L ℓ	12,633	
	L α	14,746 – 14,961	
	L η	17,314	
	L β	17,286 – 19,688	
	L γ	22,735 – 23,527	

3.1.2 Auger Electrons

		Energy keV	Relative probability
Auger K			
	KLL	78,858 – 89,973	100
	KLX	97,226 – 109,267	61,6
	KXY	115,57 – 128,23	9,5
Auger L			
		6,19 – 14,46	1450000

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
eAL	(Pu)	6,09 - 13,83	0,0124 (11)
eAK	(Pu)		0,000253 (45)
	KLL	75,263 - 85,357	}
	KLX	92,607 - 103,729	}
	KXY	109,93 - 121,78	}
eAL	(Cm)	6,19 - 14,46	10,6 (23)
eAK	(Cm)		0,00125 (27)
	KLL	78,858 - 89,973	}
	KLX	97,226 - 109,267	}
	KXY	115,57 - 128,23	}
ec _{1,0} L	(Cm)	18,439 - 23,995	23 (7)
ec _{1,0} M ₊	(Cm)	36,628 - 42,948	9 (3)
$\beta_{0,11}^-$	max:	410 (3)	0,35 (9)
$\beta_{0,11}^-$	avg:	116,9 (7)	

		Energy keV		Electrons per 100 disint.
$\beta_{0,10}^-$	max:	432	(3)	0,56 (13)
$\beta_{0,10}^-$	avg:	123,7	(7)	
$\beta_{0,7}^-$	max:	496	(3)	0,08 (2)
$\beta_{0,7}^-$	avg:	144,0	(7)	
$\beta_{0,6}^-$	max:	531,1	(30)	1,36 (16)
$\beta_{0,6}^-$	avg:	155,7	(7)	
$\beta_{0,1}^-$	max:	1473	(3)	31 (9)
$\beta_{0,1}^-$	avg:	495,8	(9)	
$\beta_{0,0}^-$	max:	1516	(3)	67 (9)
$\beta_{0,0}^-$	avg:	512,3	(9)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Cm)	12,633 — 23,527		12,3 (27)	
XK α_2	(Cm)	104,59		0,013 (4)	} K α
XK α_1	(Cm)	109,271		0,020 (6)	
XK β_3	(Cm)	122,304	}	0,0076 (21)	K' β_1
XK β_1	(Cm)	123,403	}		
XK β_5''	(Cm)	124,124	}		
XK β_2	(Cm)	126,889	}	0,0027 (8)	K' β_2
XK β_4	(Cm)	127,352	}		
XKO $_{2,3}$	(Cm)	127,97	}		

5.2 Gamma Emissions

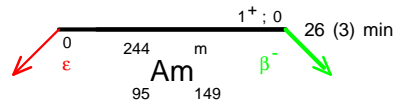
	Energy keV	Photons per 100 disint.
$\gamma_{1,0}(\text{Cm})$	42,965 (10)	0,030 (9)
$\gamma_{6,1}(\text{Cm})$	941,95 (3)	0,35 (12)
$\gamma_{10,1}(\text{Cm})$	1041,22 (3)	0,19 (6)
$\gamma_{11,1}(\text{Cm})$	1062,95 (3)	0,27 (8)
$\gamma_{10,0}(\text{Cm})$	1084,181 (14)	0,36 (12)
$\gamma_{11,0}(\text{Cm})$	1105,91 (2)	0,04 (2)

6 Main Production Modes

$\text{Am} - 243(n,\gamma)\text{Am} - 244m$

7 References

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γ Emission intensities per 100 disintegrations

