$^{244}_{96}\mathrm{Cm}_{148}$

1 Decay Scheme

Cm-244 decays 100% by alpha transitions to Pu-240 and by spontaneous fission with branching fraction of 1.36 (1) E-4 %.
Le curium 244 se désintègre par émission alpha et par fission spontanée dans une dans une proportion de 1,36 (1) E-4 %. Le nombre moyen de neutrons émis par fission spontanée est de 2,731 (20). Le nombre de neutrons émis pour 100 désintégrations de Cm-244 est : 3,71 (5) E-4%.

2 Nuclear Data

$T_{1/2}(^{244}\mathrm{Cm})$	:	18,11	(3)	a
$T_{1/2}(^{240}\mathrm{Pu})$	:	6561	(7)	a
$Q^{\alpha}(^{244}\mathrm{Cm})$	:	5901,74	(5)	keV

2.1 α Transitions

	Energy keV	Probability × 100	F
$\alpha_{0,9}$	4963,68 (8)	0,0000047 (11)	33
$\alpha_{0,8}$	5001,42 (7)	0,000050 (5)	5,6
$\alpha_{0,7}$	5041,03 (9)	0,000149 (16)	3,5
$\alpha_{0,6}$	5252,89 (7)	0,0000042 (30)	3100
$\alpha_{0,5}$	5304,40 (7)	0,000055 (9)	500
$\alpha_{0,4}$	5362,2	0,00004	
$\alpha_{0,3}$	5607,42 (6)	0,00352 (18)	512
$\alpha_{0,2}$	5760,05 (5)	0,0204 (15)	636
$\alpha_{0,1}$	5858,92 (5)	23,3 (4)	1,94
$\alpha_{0,0}$	5901,74 (5)	76,7 (4)	1

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}$(Pu)	42,824 (8)	23,4 (8)	E2		658 (13)	183 (4)	905 (18)
$\gamma_{2,1}$(Pu)	98,860 (13)	0,0239 (16)	E2		12,08 (24)	3,38 (7)	16,6 (3)
$\gamma_{3,2}$(Pu)	152,63 (2)	0,00355 (18)	(E2)	0,196 (4)	1,66 (3)	0,465 (9)	2,48 (5)
$\gamma_{4,3}$(Pu)	202,4	0,00004	(E2)	0,148 (3)	0,487 (10)	0,135 (3)	0,817 (16)
$\gamma_{8,6}$(Pu)	251,47 (6)	0,0000121 (24)	(E1)	0,048 (1)	0,00983 (20)	0,00239 (5)	0,0606 (12)
$\gamma_{7,5}$(Pu)	263,37 (8)	0,000065 (9)	(E1)	0,0433 (9)	0,00881 (18)	0,00214 (4)	0,0547 (11)
$\gamma_{9,6}$(Pu)	289,21 (7)	0,0000048 (48)	E2+M3	3 (4)	2,4 (23)	0,7 (7)	7 (7)
$\gamma_{8,5}$(Pu)	302,98 (6)	0,0000198 (31)	(E1)	0,0320 (7)	0,00637 (13)	0,00154 (3)	0,0405 (8)
$\gamma_{9,5}$(Pu)	340,72 (7)	0,0000018 (9)					
$\gamma_{6,2}$(Pu)	507,16 (5)	0,0000088 (28)	(E1)	0,01126 (23)	0,00208 (4)	0,00050 (1)	0,01401 (29)
$\gamma_{5,1}$(Pu)	554,52 (4)	0,000088 (11)	(E1)	0,00949 (19)	0,00174 (4)	0,000417 (9)	0,01179 (24)
$\gamma_{5,0}$(Pu)	597,34 (4)	0,000054 (7)	(E1)	0,00826 (17)	0,00150 (3)	0,000359 (7)	0,01024 (21)
$\gamma_{6,1}$(Pu)	606,03 (4)	0,0000081 (14)					
$\gamma_{8,2}$(Pu)	758,63 (5)	0,0000141 (19)	(E2)	0,0148 (3)	0,00473 (9)	0,001211 (24)	0,0212 (4)
$\gamma_{7,1}$(Pu)	817,89 (7)	0,000069 (9)	(E2)	0,0130 (3)	0,00389 (8)	0,000989 (20)	0,0182 (4)
$\gamma_{8,1}$(Pu)	857,50 (4)	0,0000057 (8)					
$\gamma_{7,0}$(Pu)	860,71 (7)	0,0000082 (20)	(E0)				
$\gamma_{9,1}$(Pu)	895,24 (6)	0,0000019 (7)	E1+M2	0,06 (6)	0,013 (13)	0,003 (3)	0,07 (7)
$\gamma_{8,0}$(Pu)	900,32 (4)	0,0000013 (6)					
$\gamma_{9,0}$(Pu)	938,06 (6)	0,0000004 (4)					

3 Atomic Data

3.1

ω_K : 0,971 (4)
$\bar{\omega}_L$: 0,521 (20)
$\bar{\omega}_M$: 0,0555 (5)
n_{KL} : 0,790 (5)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	$K\alpha_2$	99,525		63,17
	$K\alpha_1$	103,734		100
	$K\beta_3$	116,244	}	
	$K\beta_1$	117,228	}	
	$K\beta_5''$	117,918	}	36,36
	$K\beta_2$	120,54	}	
	$K\beta_4$	120,969	}	12,61
	$KO_{2,3}$	121,543	}	

		Energy keV	Relative probability
X_L			
	Lℓ	12,125	
	Lα	14,083 – 14,279	
	Lη	16,334	
	Lβ	16,499 – 19,331	
	Lγ	20,708 – 21,984	

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	75,263 – 85,357	100
KLX	92,607 – 103,729	60,6
KXY	109,93 – 121,78	9,18
Auger L	6,1 – 22,9	

4 α Emissions

	Energy keV	Probability × 100
$\alpha_{0,9}$	4882,12 (8)	0,0000047 (11)
$\alpha_{0,8}$	4919,24 (7)	0,000050 (5)
$\alpha_{0,7}$	4958,20 (9)	0,000149 (16)
$\alpha_{0,6}$	5166,58 (7)	0,0000042 (30)
$\alpha_{0,5}$	5217,24 (7)	0,000055 (9)
$\alpha_{0,4}$	5315,3	0,00004
$\alpha_{0,3}$	5515,29 (6)	0,00352 (18)
$\alpha_{0,2}$	5665,41 (5)	0,0204 (15)
$\alpha_{0,1}$	5762,65 (5)	23,3 (4)
$\alpha_{0,0}$	5804,77 (5)	76,7 (4)

5 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Pu)	6,1 - 22,9	8,09 (20)
e_{AK}	(Pu)		0,0000061 (9)
	KLL	75,263 - 85,357	
	KLX	92,607 - 103,729	
	KXY	109,93 - 121,78	
$ec_{1,0\ L}$	(Pu)	19,720 - 24,767	16,9 (6)
$ec_{1,0\ M}$	(Pu)	36,891 - 39,049	4,72 (16)
$ec_{2,1\ L}$	(Pu)	75,76 - 80,80	0,0164 (11)
$ec_{2,1\ M}$	(Pu)	92,92 - 95,05	0,00468 (32)
$ec_{3,2\ K}$	(Pu)	30,82 (2)	0,00019 (1)
$ec_{3,2\ L}$	(Pu)	129,52 - 134,57	0,00169 (9)
$ec_{3,2\ M}$	(Pu)	146,69 - 148,85	0,000470 (25)

6 Photon Emissions

6.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Pu)	12,125 — 21,984	8,92 (23)	
$XK\alpha_2$	(Pu)	99,525	0,000061 (4)	} $K\alpha$
$XK\alpha_1$	(Pu)	103,734	0,000097 (5)	}
$XK\beta_3$	(Pu)	116,244	}	
$XK\beta_1$	(Pu)	117,228	} 0,0000354 (20)	$K'\beta_1$
$XK\beta_5''$	(Pu)	117,918	}	
$XK\beta_2$	(Pu)	120,54	}	
$XK\beta_4$	(Pu)	120,969	} 0,0000123 (7)	$K'\beta_2$
$XKO_{2,3}$	(Pu)	121,543	}	

6.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$(Pu)	42,824 (8)	0,0258 (7)
$\gamma_{2,1}$(Pu)	98,860 (13)	0,00136 (9)
$\gamma_{3,2}$(Pu)	152,63 (2)	0,00102 (5)
$\gamma_{4,3}$(Pu)	202,4	0,000022
$\gamma_{8,6}$(Pu)	251,47 (6)	0,0000114 (23)
$\gamma_{7,5}$(Pu)	263,37 (8)	0,000062 (9)
$\gamma_{9,6}$(Pu)	289,21 (7)	0,0000006 (3)
$\gamma_{8,5}$(Pu)	302,98 (6)	0,000019 (3)
$\gamma_{9,5}$(Pu)	340,72 (7)	0,0000018 (9)
$\gamma_{6,2}$(Pu)	507,16 (5)	0,0000087 (28)
$\gamma_{5,1}$(Pu)	554,52 (4)	0,000087 (11)
$\gamma_{5,0}$(Pu)	597,34 (4)	0,000053 (7)
$\gamma_{6,1}$(Pu)	606,03 (4)	0,0000081 (14)
$\gamma_{8,2}$(Pu)	758,63 (5)	0,0000138 (19)
$\gamma_{7,1}$(Pu)	817,89 (7)	0,000068 (9)
$\gamma_{8,1}$(Pu)	857,50 (4)	0,0000057 (8)
$\gamma_{7,0}$(Pu)	860,71 (7)	0,0000082 (20)
$\gamma_{9,1}$(Pu)	895,24 (6)	0,0000018 (6)
$\gamma_{8,0}$(Pu)	900,32 (4)	0,0000013 (6)
$\gamma_{9,0}$(Pu)	938,06 (6)	0,0000004 (4)

7 Main Production Modes

$$\begin{cases} \mathrm{Am-243(n,\gamma)Am-244} \\ \mathrm{Am-244(\beta^-)Cm-244} \\ \text{Possible impurities : } \mathrm{Am-243,Cm-245,Cm-246} \end{cases}$$

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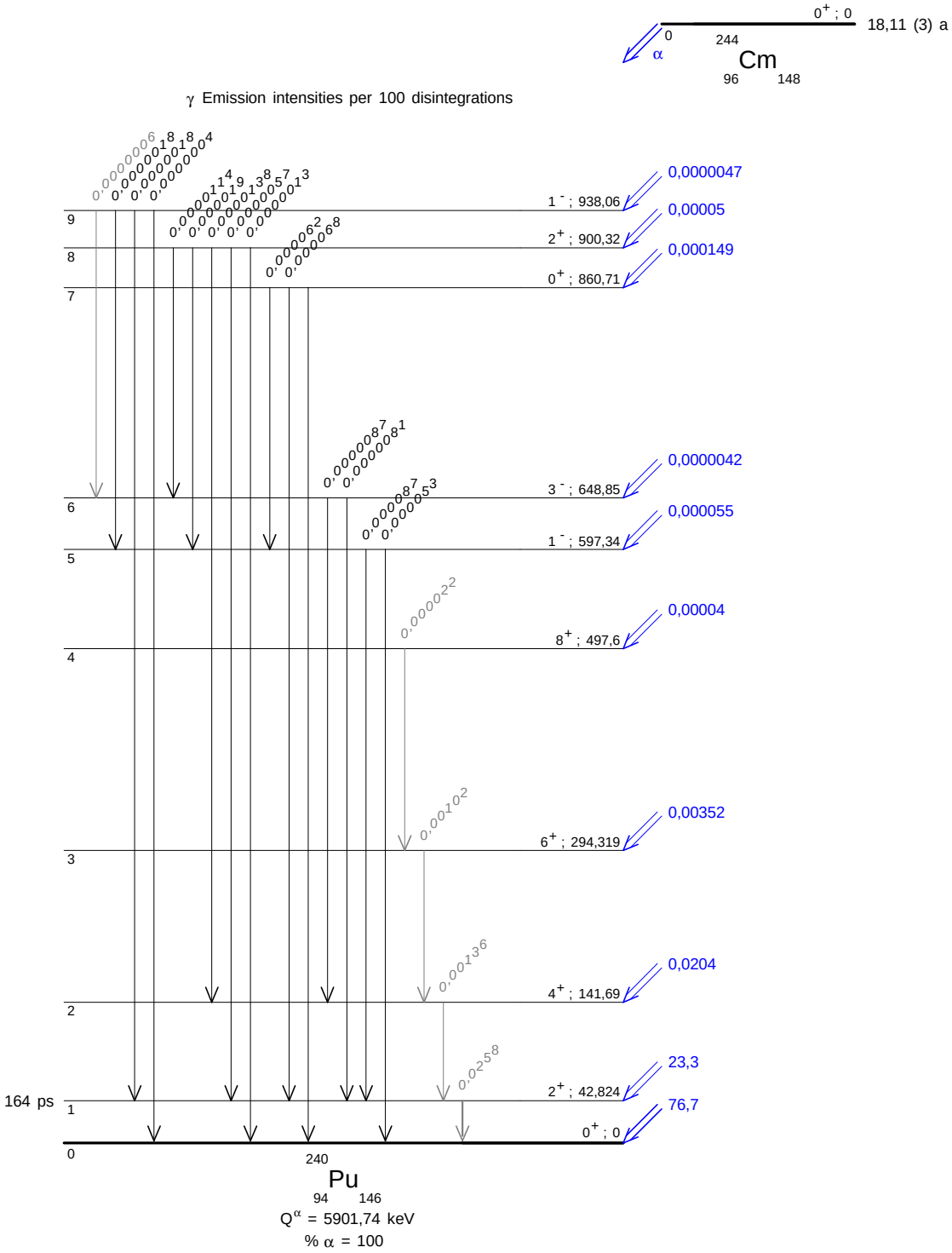
0+ ; 0
18,11 (3) a
0
α
244
Cm
96
148
γ Emission intensities per 100 disintegrations
1- ; 938,06
0,0000047
2+ ; 900,32
0,00005
0+ ; 860,71
0,000149
3- ; 648,85
0,0000042
1- ; 597,34
0,000055
8+ ; 497,6
0,00004
6+ ; 294,319
0,00352
4+ ; 141,69
0,0204
2+ ; 42,824
23,3
0+ ; 0
76,7
164 ps
240
Pu
94
146
Qα = 5901,74 keV
% α = 100