$^{243}_{96}$Cm $_{147}$

1 Decay Scheme

Cm-243 decays by alpha emission mainly (99,71%) to excited levels and to the ground state of Pu-239. It exists a small electron capture branch to the Am-243 ground state level.
Le curium 243 se désintègre par émission alpha vers des niveaux excités et le niveau fondamental de plutonium 239 et par capture électronique, avec une faible intensité, vers le niveau fondamental de l'américium 243.

2 Nuclear Data

$T_{1/2}$(^{243}Cm)	:	28,9	(4)	a
$T_{1/2}$(^{243}Am)	:	7367	(23)	a
$T_{1/2}$(^{239}Pu)	:	24100	(11)	a
Q^{α}(^{243}Cm)	:	6168,8	(10)	keV
Q^{+}(^{243}Cm)	:	7,5	(17)	keV

2.1 α Transitions

	Energy keV	Probability × 100	F
$\alpha_{0,27}$	5319 (15)	0,00039	137
$\alpha_{0,26}$	5356 (3)	0,0015	60,6
$\alpha_{0,25}$	5406 (3)	0,001	184
$\alpha_{0,24}$	5413 (3)	0,003	67,7
$\alpha_{0,23}$	5423 (3)	0,003	77,9
$\alpha_{0,22}$	5612,6 (11)	0,002	1538
$\alpha_{0,21}$	5626 (3)	0,006	610
$\alpha_{0,20}$	5631 (3)	0,002	1955
$\alpha_{0,19}$	5663,2 (10)	0,007	854
$\alpha_{0,18}$	5670 (3)	0,007	930
$\alpha_{0,17}$	5676,7 (10)	0,009	792
$\alpha_{0,16}$	5682 (3)	0,02	381
$\alpha_{0,15}$	5688 (3)	0,01	823

	Energy keV	Probability × 100	F
$\alpha_{0,14}$	5699,0 (11)	≤ 0,01	951
$\alpha_{0,13}$	5707 (3)	0,03	351
$\alpha_{0,12}$	5718 (5)	0,06	202
$\alpha_{0,11}$	5735 (3)	0,14	108
$\alpha_{0,10}$	5742 (3)	0,03	549
$\alpha_{0,9}$	5777,2 (10)	0,2	129
$\alpha_{0,8}$	5781,4 (10)	1,6 (1)	17
$\alpha_{0,7}$	5838,7 (10)	11,3 (2)	4,94
$\alpha_{0,6}$	5883,3 (10)	73,4 (4)	1,32
$\alpha_{0,5}$	5976,0 (14)	0,7	427
$\alpha_{0,4}$	6005 (1)	0,1	4230
$\alpha_{0,3}$	6093,1 (10)	5,7 (2)	209
$\alpha_{0,2}$	6111,5 (10)	1,05 (12)	1410
$\alpha_{0,1}$	6160,9 (10)	4,4 (2)	593
$\alpha_{0,0}$	6168,8 (10)	1,3 (2)	2210

2.2 Electron Capture Transitions

	Energy keV	Probability × 100	lg ft
$\epsilon_{0,0}$	7,5	0,29 (3)	7,3

2.3 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{9,8}$(Pu)	4,16 (2)		E1				
$\gamma_{1,0}$(Pu)	7,860 (3)	85,5	M1+E2			4200 (300)	5700 (400)
$\gamma_{3,2}$(Pu)	18,430 (4)	0,8	(M1+E2)			6000 (6000)	8000 (6200)
$\gamma_{7,6}$(Pu)	44,663 (5)	12,7 (23)	M1+E2		72 (9)	18 (3)	96 (13)
$\gamma_{2,1}$(Pu)	49,412 (4)	25,4	M1+E2		92 (6)	24,8 (17)	126 (8)
$\gamma_{2,0}$(Pu)	57,273 (4)	13,38	E2		161,1 (23)	45,0 (7)	222 (4)
$\gamma_{8,7}$(Pu)	57,30 (2)	2,368	[M1]		21,5 (3)	5,24 (8)	28,6 (4)
$\gamma_{9,7}$(Pu)	61,460 (2)	0,0222 (19)	E1		0,354 (5)	0,0881 (13)	0,473 (7)
$\gamma_{3,1}$(Pu)	67,841 (7)	20 (5)	E2		71,5 (10)	20,0 (3)	98,5 (14)
$\gamma_{4,3}$(Pu)	88,06 (3)	0,024	M1+E2		9,07 (13)	2,36 (4)	12,26 (18)
$\gamma_{8,6}$(Pu)	101,96 (2)	0,123	E2		10,46 (15)	2,93 (5)	14,42 (21)
$\gamma_{9,6}$(Pu)	106,125 (2)	0,373 (34)	E1(+M2)		0,19 (3)	0,050 (8)	0,26 (4)
$\gamma_{4,2}$(Pu)	106,47 (4)	0,192	E2		8,56 (12)	2,40 (4)	11,80 (17)
$\gamma_{5,3}$(Pu)	117,1 (10)	0,7 (0)	[E2]		5,52 (24)	1,54 (7)	7,6 (4)
$\gamma_{7,4}$(Pu)	166,39 (6)	0,12 (5)	M1	4,91 (7)	0,984 (14)	0,239 (4)	6,22 (9)

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{6,3}$(Pu)	209,753 (2)	13,95 (45)	M1+E2	2,56 (4)	0,511 (8)	0,1241 (18)	3,24 (5)
$\gamma_{6,2}$(Pu)	228,183 (2)	37,7 (11)	M1+E2	2,02 (3)	0,403 (6)	0,0979 (14)	2,56 (4)
$\gamma_{7,3}$(Pu)	254,40 (3)	0,314 (29)	M1+E2	1,457 (21)	0,294 (5)	0,0716 (10)	1,85 (3)
$\gamma_{7,2}$(Pu)	272,87 (9)	0,201 (25)	M1+E2	1,198 (18)	0,241 (4)	0,0588 (9)	1,518 (22)
$\gamma_{6,1}$(Pu)	277,599 (2)	34,3 (10)	M1+E2	1,142 (16)	0,230 (4)	0,0560 (8)	1,448 (21)
$\gamma_{6,0}$(Pu)	285,460 (2)	0,910 (25)	E2	0,0843 (12)	0,1190 (17)	0,0326 (5)	0,247 (4)
$\gamma_{8,3}$(Pu)	311,7 (2)	0,0350 (42)	M1+E2	0,84 (3)	0,168 (4)	0,0408 (8)	1,06 (3)
$\gamma_{9,3}$(Pu)	315,880 (3)	0,0187 (21)	E1(+M2)	0,0294 (6)	0,00583 (16)	0,00141 (4)	0,0372 (9)
$\gamma_{7,1}$(Pu)	322,3 (2)	0,0082 (12)	[E2]	0,0679 (10)	0,0745 (11)	0,0203 (3)	0,1699 (24)
$\gamma_{9,2}$(Pu)	334,310 (3)	0,0248 (21)	E1(+M2)	0,0261 (5)	0,00511 (10)	0,001238 (24)	0,0329 (6)
$\gamma_{22,4}$(Pu)	392,4 (5)		E1+M2				
$\gamma_{19,3}$(Pu)	430,0 (3)		E1+M2				
$\gamma_{17,2}$(Pu)	434,7 (5)		E1+M2				
$\gamma_{19,2}$(Pu)	447,6 (5)						
$\gamma_{14,1}$(Pu)	461,9 (5)		E1+M2				
$\gamma_{14,0}$(Pu)	469,8 (5)		E1				
$\gamma_{17,1}$(Pu)	484,3 (5)						
$\gamma_{17,0}$(Pu)	492,3 (5)		E1+M2				
$\gamma_{19,1}$(Pu)	497,8 (3)		E1+M2				
$\gamma_{22,2}$(Pu)	499		E1+M2				
$\gamma_{(-1,1)}$(Pu)	640						
$\gamma_{(-1,2)}$(Pu)	680						
$\gamma_{(-1,3)}$(Pu)	720						
$\gamma_{(-1,4)}$(Pu)	740						
$\gamma_{(-1,5)}$(Pu)	760						

3 Atomic Data

3.1 Pu

ω_K	:	0,971	(4)
$\bar{\omega}_L$	:	0,521	(20)
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	}	36,7
	$K\beta_2$	120,54	}	
	$K\beta_4$	120,969	}	12,74
	$KO_{2,3}$	121,543	}	
X_L				
	$L\ell$	12,1246		
	$L\alpha$	14,0834 – 14,2791		
	$L\eta$	16,334		
	$L\beta$	16,4987 – 18,5427		
	$L\gamma$	20,7081 – 21,9844		

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	6,19 – 22,99	

4 α Emissions

	Energy keV	Probability × 100
$\alpha_{0,27}$	5231 (15)	0,00039
$\alpha_{0,26}$	5268 (3)	0,0015
$\alpha_{0,25}$	5317 (3)	0,001
$\alpha_{0,24}$	5324 (3)	0,003
$\alpha_{0,23}$	5333 (3)	0,003
$\alpha_{0,22}$	5520,1 (11)	0,002
$\alpha_{0,21}$	5533 (3)	0,006
$\alpha_{0,20}$	5538 (3)	0,002
$\alpha_{0,19}$	5569,9 (10)	0,007
$\alpha_{0,18}$	5576 (3)	0,007
$\alpha_{0,17}$	5583,2 (10)	0,009
$\alpha_{0,16}$	5588 (3)	0,02
$\alpha_{0,15}$	5594 (3)	0,01
$\alpha_{0,14}$	5605,1 (11)	≤ 0,01
$\alpha_{0,13}$	5613 (3)	0,03
$\alpha_{0,12}$	5624 (5)	0,06
$\alpha_{0,11}$	5640 (3)	0,14
$\alpha_{0,10}$	5647 (3)	0,03
$\alpha_{0,9}$	5682 (1)	0,2
$\alpha_{0,8}$	5686,1 (10)	1,6 (1)
$\alpha_{0,7}$	5742,5 (10)	11,3 (2)
$\alpha_{0,6}$	5786,4 (10)	73,4 (4)
$\alpha_{0,5}$	5877,6 (14)	0,7
$\alpha_{0,4}$	5906,1 (10)	0,1
$\alpha_{0,3}$	5992,7 (10)	5,7 (2)
$\alpha_{0,2}$	6010,8 (10)	1,05 (12)
$\alpha_{0,1}$	6059,4 (10)	4,4 (2)
$\alpha_{0,0}$	6067,2 (10)	1,3 (2)

5 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Pu)	6,19 - 22,99	49,3 (15)
e_{AK}	(Pu)		1,34 (19)
	KLL	75,263 - 85,357	}
	KLX	92,607 - 103,729	}
	KXY	109,93 - 121,78	}
$ec_{1,0\ M}$	(Pu)	1,93 - 4,09	63,0 (45)
$ec_{1,0\ N}$	(Pu)	6,30 - 7,44	17,4 (12)
$ec_{3,2\ M}$	(Pu)	12,50 - 14,66	0,6 (6)
$ec_{3,2\ N}$	(Pu)	16,87 - 18,01	0,16 (16)
$ec_{7,6\ L}$	(Pu)	21,559 - 26,606	9,4 (16)
$ec_{2,1\ L}$	(Pu)	26,308 - 31,355	18,4 (12)
$ec_{2,0\ L}$	(Pu)	34,169 - 39,216	9,67 (14)
$ec_{8,7\ L}$	(Pu)	34,2 - 39,2	1,720 (24)
$ec_{7,6\ M}$	(Pu)	38,730 - 40,888	2,36 (49)
$ec_{7,6\ N}$	(Pu)	43,104 - 44,239	0,66 (12)
$ec_{2,1\ M}$	(Pu)	43,479 - 45,637	4,96 (34)
$ec_{3,1\ L}$	(Pu)	44,737 - 49,784	14,3 (36)
$ec_{2,1\ N}$	(Pu)	47,853 - 48,988	1,36 (10)
$ec_{2,0\ M}$	(Pu)	51,340 - 53,498	2,700 (42)
$ec_{8,7\ M}$	(Pu)	51,4 - 53,5	0,419 (6)
$ec_{8,7\ N}$	(Pu)	55,7 - 56,9	0,1142 (16)
$ec_{2,0\ N}$	(Pu)	55,714 - 56,849	0,742 (11)
$ec_{3,1\ M}$	(Pu)	61,908 - 64,066	4 (1)
$ec_{3,1\ N}$	(Pu)	66,282 - 67,417	1,10 (28)
$ec_{4,2\ L}$	(Pu)	83,37 - 88,41	0,1284 (18)
$ec_{6,3\ K}$	(Pu)	87,962 (2)	8,42 (29)
$ec_{5,3\ L}$	(Pu)	94 - 99	0,442 (19)
$ec_{6,2\ K}$	(Pu)	106,392 (2)	21,4 (7)
$ec_{5,3\ M}$	(Pu)	111,2 - 113,3	0,123 (6)
$ec_{7,3\ K}$	(Pu)	132,61 (3)	0,160 (15)
$ec_{6,1\ K}$	(Pu)	155,808 (2)	16,0 (5)
$ec_{6,3\ L}$	(Pu)	186,649 - 191,696	1,68 (6)
$ec_{6,3\ M}$	(Pu)	203,820 - 205,978	0,408 (14)
$ec_{6,2\ L}$	(Pu)	205,079 - 210,126	4,27 (14)
$ec_{6,3\ N}$	(Pu)	208,194 - 209,329	0,1112 (38)
$ec_{6,2\ M}$	(Pu)	222,250 - 224,408	1,038 (33)
$ec_{6,2\ N}$	(Pu)	226,624 - 227,759	0,282 (9)
$ec_{6,1\ L}$	(Pu)	254,495 - 259,542	3,22 (11)
$ec_{6,1\ M}$	(Pu)	271,666 - 273,824	0,784 (25)
$ec_{6,1\ N}$	(Pu)	276,040 - 277,175	0,213 (7)

6 Photon Emissions

6.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Pu)	12,1246 — 21,9844		52,1 (16)	
$XK\alpha_2$	(Pu)	99,525		13,34 (28)	} $K\alpha$
$XK\alpha_1$	(Pu)	103,734		21,1 (5)	}
$XK\beta_3$	(Pu)	116,244	}		
$XK\beta_1$	(Pu)	117,228	}	7,75 (21)	$K'\beta_1$
$XK\beta_5''$	(Pu)	117,918	}		
$XK\beta_2$	(Pu)	120,54	}		
$XK\beta_4$	(Pu)	120,969	}	2,69 (8)	$K'\beta_2$
$XKO_{2,3}$	(Pu)	121,543	}		

6.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}$(Pu)	7,861 (2)	0,015
$\gamma_{3,2}$(Pu)	18,430 (4)	0,0001
$\gamma_{7,6}$(Pu)	44,663 (5)	0,131 (16)
$\gamma_{2,1}$(Pu)	49,414 (2)	0,2
$\gamma_{2,0}$(Pu)	57,273 (4)	0,06
$\gamma_{8,7}$(Pu)	57,30 (2)	0,08
$\gamma_{9,7}$(Pu)	61,460 (2)	0,0151 (13)
$\gamma_{3,1}$(Pu)	67,841 (7)	0,20 (5)
$\gamma_{4,3}$(Pu)	88,06 (3)	0,0018
$\gamma_{8,6}$(Pu)	101,96 (2)	0,008
$\gamma_{9,6}$(Pu)	106,125 (2)	0,296 (25)
$\gamma_{4,2}$(Pu)	106,47 (4)	0,015
$\gamma_{5,3}$(Pu)	117,1 (10)	0,08
$\gamma_{7,4}$(Pu)	166,39 (6)	0,016 (7)
$\gamma_{6,3}$(Pu)	209,753 (2)	3,29 (10)
$\gamma_{6,2}$(Pu)	228,183 (2)	10,6 (3)
$\gamma_{7,3}$(Pu)	254,40 (3)	0,11 (1)
$\gamma_{7,2}$(Pu)	272,87 (9)	0,08 (1)
$\gamma_{6,1}$(Pu)	277,599 (2)	14,0 (4)
$\gamma_{6,0}$(Pu)	285,460 (2)	0,73 (2)
$\gamma_{8,3}$(Pu)	311,7 (2)	0,017 (2)
$\gamma_{9,3}$(Pu)	315,880 (3)	0,018 (2)
$\gamma_{7,1}$(Pu)	322,3 (2)	0,007 (1)
$\gamma_{9,2}$(Pu)	334,310 (3)	0,024 (2)

7 Main Production Modes

Am – 241(n,γ)Am – 242

Am – 242(β^-)Cm – 242

Cm – 242(n,γ)Cm – 243

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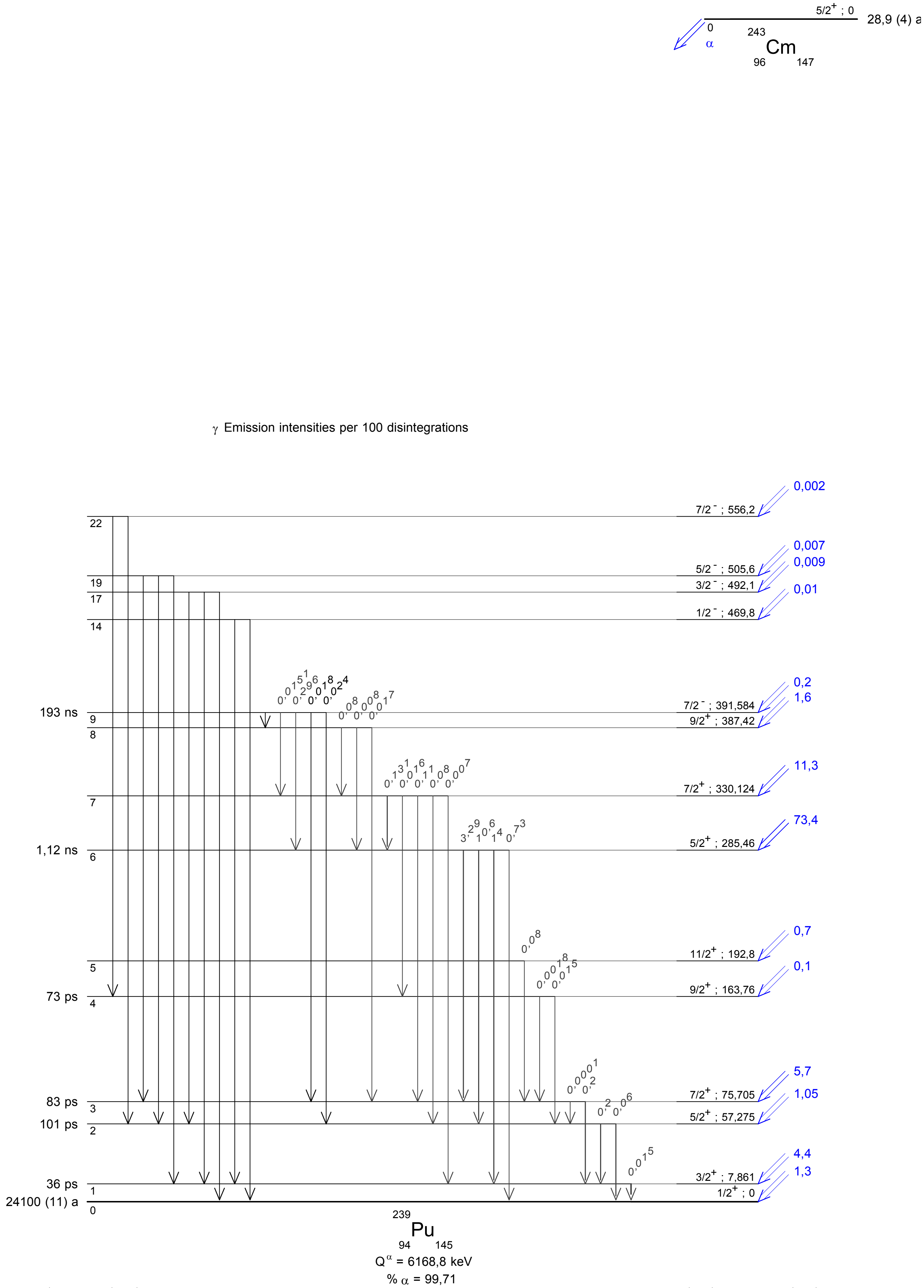
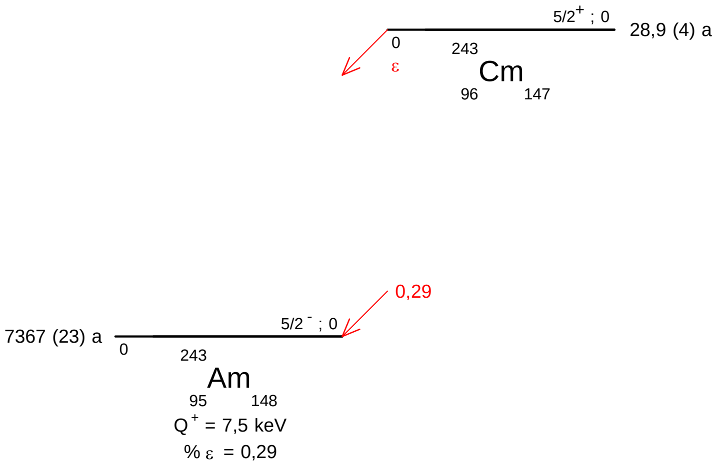

5/2+ ; 0
28,9 (4) a
0
α
243
Cm
96 147
γ Emission intensities per 100 disintegrations
7/2 - ; 556,2
0,002
5/2 - ; 505,6
0,007
3/2 - ; 492,1
0,009
1/2 - ; 469,8
0,01
7/2 - ; 391,584
0,2
9/2+ ; 387,42
1,6
7/2+ ; 330,124
11,3
5/2+ ; 285,46
73,4
11/2+ ; 192,8
0,7
9/2+ ; 163,76
0,1
7/2+ ; 75,705
5,7
5/2+ ; 57,275
1,05
3/2+ ; 7,861
4,4
1/2+ ; 0
1,3
193 ns
1,12 ns
73 ps
83 ps
101 ps
36 ps
24100 (11) a
22
19
17
14
9
8
7
6
5
4
3
2
1
0
239
Pu
94 145
Qα = 6168,8 keV
% α = 99,71


5/2+ ; 0
28,9 (4) a
0
ε
243
Cm
96
147
0,29
7367 (23) a
5/2 - ; 0
0
243
Am
95
148
Q + = 7,5 keV
% ε = 0,29