$^{137}_{55}\mathrm{Cs}_{82}$

1 Decay Scheme

The ^{137}Cs decays by 100% beta-minus emission to the ground and excited states of the ^{137}Ba.
Le ^{137}Cs *se désintègre à 100 % par émission bêta moins vers l'état fondamental et les états excités du* ^{137}Ba.

2 Nuclear Data

$T_{1/2}(^{137}\mathrm{Cs}\ )$: 30,018 (22) a
$Q^{-}(^{137}\mathrm{Cs}\ )$: 1175,63 (17) keV

2.1 β^- Transitions

	Energy (keV)	Probability (%)	Nature	log ft
$\beta^-_{0,2}$	513,97 (17)	94,61 (30)	Forbidden 1^{st} unique	9,7
$\beta^-_{0,1}$	892,17 (18)	0,0006 (1)	Forbidden 2^{nd} unique	16,6
$\beta^-_{0,0}$	1175,63 (17)	5,39 (30)	Forbidden 2^{nd} non-unique	12,8

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K (10^{-2})	α_L (10^{-2})	α_M (10^{-2})	α_T (10^{-2})
$\gamma_{1,0}$(Ba)	283,46 (7)	0,00063 (11)	M1+E2	4,61 (7)	0,726 (11)	0,1516 (22)	5,52 (8)
$\gamma_{2,1}$(Ba)	378,20 (7)	0,0000202 (17)	E5	46,3 (7)	34,4 (5)	7,87 (11)	90,4 (13)
$\gamma_{2,0}$(Ba)	661,657 (5)	94,61 (35)	M4	9,15 (13)	1,648 (23)	0,352 (5)	11,24 (16)

3 Atomic Data

3.1 Ba

ω_K : 0,900 (4)
$\bar{\omega}_L$: 0,110 (5)
n_{KL} : 0,888 (4)

3.1.1 X Radiations

		Energy (keV)	Relative probability
X_K			
	$K\alpha_2$	31,8174	54,28
	$K\alpha_1$	32,1939	100
	$K\beta_3$	36,3045	29,41
	$K\beta_1$	36,3786	
	$K\beta_5''$	36,654	
	$K\beta_2$	37,258	7,41
	$K\beta_4$	37,312	
	$KO_{2,3}$	37,425	
X_L			
	$L\ell$	3,9544	
	$L\alpha$	4,4515 - 4,4666	
	$L\eta$	4,3307	
	$L\beta$	4,8278 - 5,207	
	$L\gamma$	5,3715 - 5,8104	

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	25,314 - 26,786	100
KLX	30,095 - 32,179	47,7
KXY	34,86 - 37,41	5,7
Auger L	2,6614 - 5,8064	

4 Electron Emissions

		Energy (keV)	Electrons (per 100 disint.)
e_{AL}	(Ba)	2,6614 - 5,8064	7,39 (5)
e_{AK}	(Ba)		
	KLL	25,314 - 26,786	0,78 (4)
	KLX	30,095 - 32,179	
	KXY	34,86 - 37,41	
$ec_{2,0\ T}$	(Ba)	624,216 - 661,642	9,56 (14)
$ec_{2,0\ K}$	(Ba)	624,216 (5)	7,78 (11)
$ec_{2,0\ L}$	(Ba)	655,668 - 656,410	1,402 (20)
$ec_{2,0\ M}$	(Ba)	660,364 - 660,876	0,2994 (44)
$\beta^-_{0,2}$	max:	513,97 (17)	94,61 (30)
	avg:	173,67 (6)	
$\beta^-_{0,1}$	max:	892,17 (18)	0,0006 (1)
	avg:	332,51 (7)	
$\beta^-_{0,0}$	max:	1175,63 (17)	5,39 (30)
	avg:	284,90 (5)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)	
XL	(Ba)	3,9544 - 5,8104	0,919 (16)	
$XK\alpha_2$	(Ba)	31,8174	1,99 (4)	$K\alpha$
$XK\alpha_1$	(Ba)	32,1939	3,66 (6)	
$XK\beta_3$	(Ba)	36,3045	1,078 (21)	$K'\beta_1$
$XK\beta_1$	(Ba)	36,3786		
$XK\beta''_5$	(Ba)	36,654		
$XK\beta_2$	(Ba)	37,258	0,272 (8)	$K'\beta_2$
$XK\beta_4$	(Ba)	37,312		
$XKO_{2,3}$	(Ba)	37,425		

5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{1,0}$(Ba)	283,46 (7)	0,0006 (1)
$\gamma_{2,1}$(Ba)	378,20 (7)	0,0000106 (9)
$\gamma_{2,0}$(Ba)	661,655 (5)	85,05 (29)

6 Main Production Modes

The ^{137}Cs is mainly produced by thermal neutron-induced fission of the ^{235}U in nuclear reactors.

7 References

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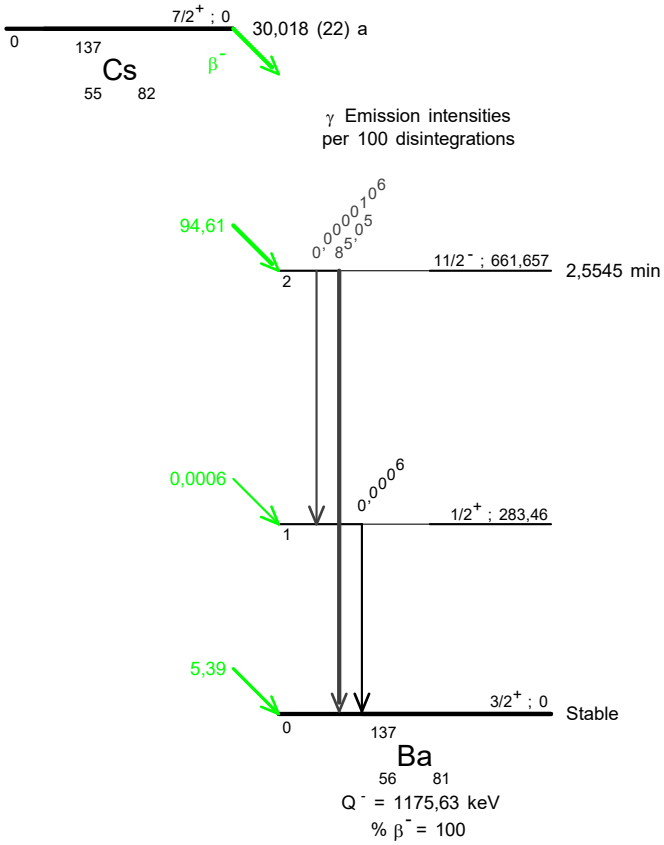
7/2+ ; 0
30,018 (22) a
0
137
Cs
55 82
β-
γ Emission intensities
per 100 disintegrations
94,61
0, 85
11/2- ; 661,657
2,5545 min
2
0,0006
0,0006
1/2+ ; 283,46
1
5,39
3/2+ ; 0
Stable
0
137
Ba
56 81
Q- = 1175,63 keV
% β- = 100