$^{207}_{83}\mathrm{Bi}_{124}$

1 Decay Scheme

Le bismuth 207 se désintègre par capture électronique vers le plomb 207. Une faible transition par émission bêta plus a été mise en évidence.
Bi-207 disintegrates by electron capture to Pb-207. A weak transition by positron emission has been reported.

2 Nuclear Data

$T_{1/2}(^{207}\mathrm{Bi}\ )$: 32,9 (14) a
$Q^{+}(^{207}\mathrm{Bi}\ )$: 2397,5 (21) keV

2.1 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg ft	P_K	P_L	P_{M+}
$\epsilon_{0,4}$	57,6 (21)	7,03 (23)	Allowed	8,3		0,651 (6)	0,349 (6)
$\epsilon_{0,3}$	764,1 (21)	84,1 (6)	Unique 1st Forbidden	10,58	0,733 (7)	0,199 (4)	0,069 (1)
$\epsilon_{0,1}$	1827,8 (21)	8,8 (6)	2nd Forbidden	12,1	0,797 (8)	0,150 (3)	0,049 (1)

2.2 β^+ Transitions

	Energy keV	Probability × 100	Nature	lg ft
$\beta^+_{0,1}$	805,8 (21)	0,012 (2)	2nd Forbidden	12,6

2.3 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K (10^{-2})	α_L (10^{-2})	α_M (10^{-2})	α_T (10^{-2})
$\gamma_{2,1}$(Pb)	328,11 (10)	0,0044 (35)	[M1]				
$\gamma_{1,0}$(Pb)	569,699 (2)	99,87 (4)	E2	1,583 (23)	0,439 (7)	0,1081 (16)	2,16 (3)
$\gamma_{2,0}$(Pb)	897,8 (1)	0,1313 (48)	M1+8,3%E2	1,82 (8)	0,304 (12)	0,071 (3)	2,22 (9)
$\gamma_{3,1}$(Pb)	1063,659 (3)	84,11 (31)	M4+0,01%E5	9,53 (23)	2,47 (7)	0,591 (33)	12,78 (24)
$\gamma_{4,2}$(Pb)	1442,2 (2)	0,1319 (22)	E2	0,271 (4)	0,0468 (7)	0,01098 (16)	0,337 (5)
$\gamma_{4,1}$(Pb)	1770,236 (9)	6,901 (26)	M1+0,0025%E2	0,342 (5)	0,0556 (8)	0,01292 (19)	0,442 (7)

3 Atomic Data

3.1 Pb

ω_K : 0,963 (4)
$\bar{\omega}_L$: 0,379 (15)
$\bar{\omega}_M$: 0,0346
n_{KL} : 0,811 (5)
$\bar{n}_{LM}$: 1,294

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	$K\alpha_2$	72,8049		59,5
	$K\alpha_1$	74,97		100
	$K\beta_3$	84,451	}	
	$K\beta_1$	84,937	}	
	$K\beta_5''$	85,47	}	34,2
	$K\beta_2$	87,238	}	
	$K\beta_4$	87,58	}	10,3
	$KO_{2,3}$	87,911	}	
X_L				
	$L\ell$	9,18		
	$L\alpha$	10,4496 – 10,5516		
	$L\eta$	11,3494		
	$L\beta$	12,143 – 13,015		
	$L\gamma$	15,101 – 15,84		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	56,028 – 61,669	100
KLX	68,181 – 74,969	55,8
KXY	80,3 – 88,0	7,78
Auger L	5,2 – 15,7	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e_{AL}	(Pb)	5,2 - 15,7	54,8 (7)
e_{AK}	(Pb)		2,9 (4)
	KLL	56,028 - 61,669	}
	KLX	68,181 - 74,969	}
	KXY	80,3 - 88,0	}
$ec_{1,0\ T}$	(Pb)	481,694 - 569,680	2,112 (29)
$ec_{1,0\ K}$	(Pb)	481,694 (2)	1,548 (22)
$ec_{1,0\ L}$	(Pb)	553,838 - 556,664	0,429 (7)
$ec_{1,0\ M}$	(Pb)	565,848 - 567,215	0,1057 (16)
$ec_{3,1\ T}$	(Pb)	975,655 - 1063,640	9,53 (18)
$ec_{3,1\ K}$	(Pb)	975,655 (3)	7,11 (17)
$ec_{3,1\ L}$	(Pb)	1047,798 - 1050,624	1,84 (5)
$ec_{3,1\ M}$	(Pb)	1059,808 - 1061,175	0,441 (25)
$ec_{3,1\ N}$	(Pb)	1062,765 - 1063,523	0,1193 (30)
$\beta^+_{0,1}$	max:	805,8 (21)	0,012 (2)
$\beta^+_{0,1}$	avg:	383,4 (9)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Pb)	9,18 — 15,84		32,9 (6)	
XKα_2	(Pb)	72,8049		21,75 (30)	} Kα
XKα_1	(Pb)	74,97		36,6 (5)	}
XKβ_3	(Pb)	84,451	}		
XKβ_1	(Pb)	84,937	}	12,49 (25)	K$'\beta_1$
XKβ''_5	(Pb)	85,47	}		
XKβ_2	(Pb)	87,238	}		
XKβ_4	(Pb)	87,58	}	3,77 (10)	K$'\beta_2$
XKO$_{2,3}$	(Pb)	87,911	}		

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{2,1}$(Pb)	328,11 (10)	0,0044 (35)
$\gamma^{\pm}$	511	0,024 (4)
$\gamma_{1,0}$(Pb)	569,698 (2)	97,76 (3)
$\gamma_{2,0}$(Pb)	897,8 (1)	0,1284 (47)
$\gamma_{3,1}$(Pb)	1063,656 (3)	74,58 (22)
$\gamma_{4,2}$(Pb)	1442,2 (2)	0,1315 (22)
$\gamma_{4,1}$(Pb)	1770,228 (9)	6,871 (26)

6 Main Production Modes

Pb − 206(d,n)Bi − 207
Pb − 207(d,2n)Bi − 207
Pb − 208(d,3n)Bi − 207

7 References

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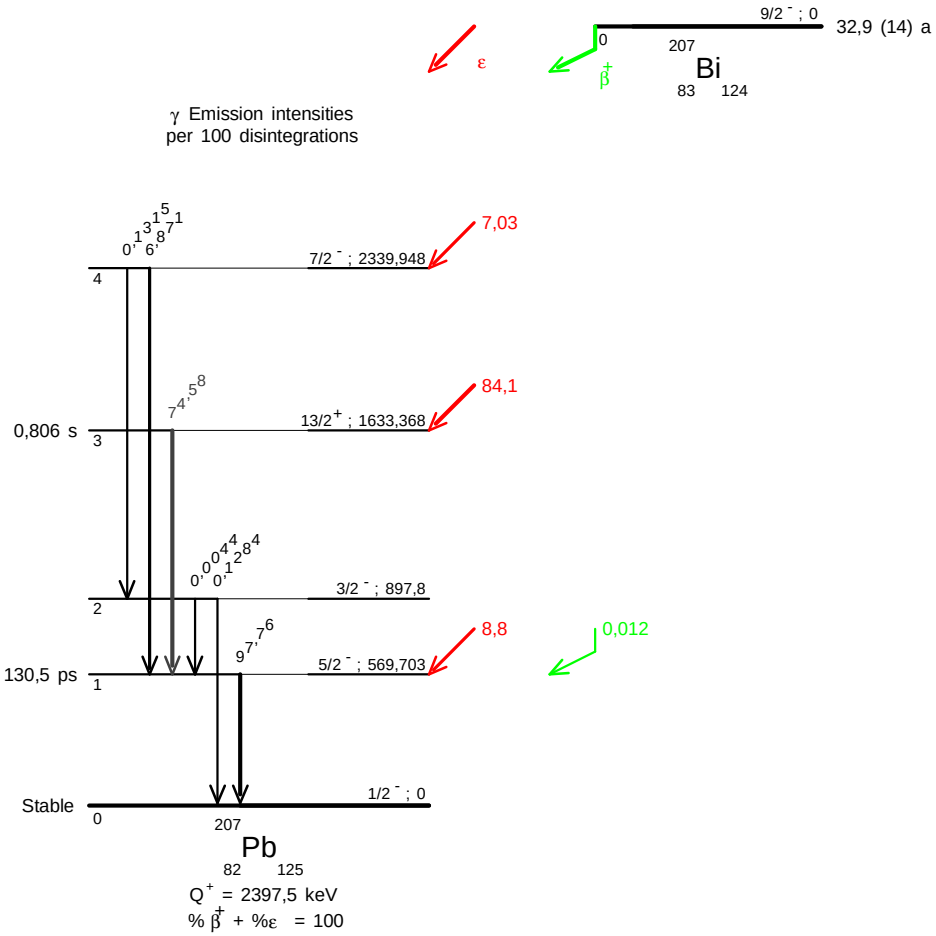
9/2 - ; 0
32,9 (14) a
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207
Bi
83 124
ε
β+
γ Emission intensities
per 100 disintegrations
7,03
7/2 - ; 2339,948
4
84,1
13/2+ ; 1633,368
0,806 s
3
3/2 - ; 897,8
2
8,8
0,012
5/2 - ; 569,703
130,5 ps
1
1/2 - ; 0
Stable
0
207
Pb
82 125
Q+ = 2397,5 keV
% β+ + %ε = 100