



1 Decay Scheme

Le thorium 232 se désintègre par émission alpha vers le radium 228 de période 5,75 a.
Th-232 disintegrates by alpha emissions to Ra-228 which has a half-life of 5,75 a.

2 Nuclear Data

$T_{1/2}(^{232}\text{Th})$:	14,02	(6)	10^9 a
$T_{1/2}(^{228}\text{Ra})$:	5,75	(4)	a
$Q^\alpha(^{232}\text{Th})$:	4081,6	(14)	keV

2.1 α Transitions

	Energy keV	Probability $\times 100$	F
$\alpha_{0,2}$	3876,9 (14)	0,068 (20)	16
$\alpha_{0,1}$	4017,8 (14)	21,0 (13)	1,02
$\alpha_{0,0}$	4081,6 (14)	78,9 (13)	1

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(\text{Ra})$	63,811 (10)	21,1 (13)	E2		59,1 (9)	16,05 (23)	80,4 (12)
$\gamma_{2,1}(\text{Ra})$	140,88 (1)	0,068 (20)	E2	0,283 (4)	1,450 (21)	0,394 (6)	2,26 (4)

3 Atomic Data

3.1 Ra

ω_K	:	0,968	(4)
$\bar{\omega}_L$:	0,452	(18)
n_{KL}	:	0,801	(5)

3.1.1 X Radiations

	Energy keV	Relative probability
X _K	K α_2	85,43
	K α_1	88,47
	K β_3	99,432
	K β_1	100,13
	K β_5''	100,738
		}
	K β_2	102,89
	K β_4	103,295
	KO _{2,3}	103,74
X _L		}
		}
		}
		}
		}
		}
X _L	L ℓ	10,624
	L α	12,196 – 12,338
	L η	13,662
	L β	14,237 – 15,448
	L γ	17,276 – 18,354

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	65,149 – 72,729	100
KLX	79,721 – 88,466	57,8
KXY	94,27 – 103,91	8,35
Auger L		
	5,71 – 19,09	

4 α Emissions

	Energy keV	Probability $\times 100$
$\alpha_{0,2}$	3810,0 (14)	0,068 (20)
$\alpha_{0,1}$	3948,5 (14)	21,0 (13)
$\alpha_{0,0}$	4011,2 (14)	78,9 (13)

5 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AL}	(Ra)	5,71 - 19,09	8,18 (29)
e _{AK}	(Ra)		0,00019 (6)
	KLL	65,149 - 72,729	}
	KLX	79,721 - 88,466	}
	KXY	94,27 - 103,91	}
ec _{2,1} L	(Ra)	121,65 - 125,44	0,030 (9)

6 Photon Emissions

6.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(Ra)	10,624 — 18,354	7,2 (3)	
XK α_2	(Ra)	85,43	0,0017 (5)	} K α
XK α_1	(Ra)	88,47	0,0028 (8)	}
XK β_3	(Ra)	99,432	}	
XK β_1	(Ra)	100,13	}	0,00097 (28) K' β_1
XK β_5''	(Ra)	100,738	}	
XK β_2	(Ra)	102,89	}	
XK β_4	(Ra)	103,295	}	0,00032 (10) K' β_2
XKO _{2,3}	(Ra)	103,74	}	

6.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}(\text{Ra})$	63,811 (10)	0,259 (15)
$\gamma_{2,1}(\text{Ra})$	140,88 (1)	0,021 (6)

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