

# Espectroscopia $\beta$

Mestrado em Engenharia Física Tecnológica  
LFAOFR

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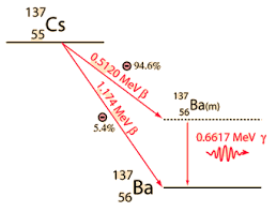
Instituto Superior T3cnico

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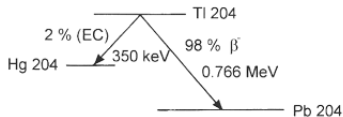
15 de Janeiro de 2016

# Decaimento $\beta$

$$n \rightarrow p + e^{-} + \bar{\nu}_e$$



(a) Esquema Decaimento  $^{137}_{55}\text{Cs}$



(b) Esquema Decaimento  $^{204}_{81}\text{Tl}$

# Decaimento $\beta$

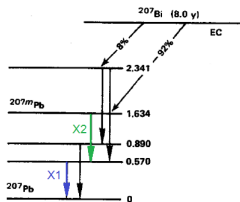


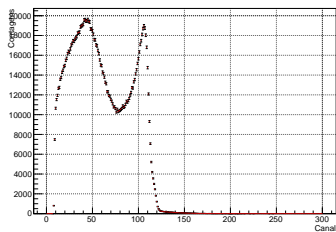
Figura : Esquema Decaimento  $^{207}_{83}\text{Bi}$

$$E_{e^{-}} = E_X - E_{L_j} \quad (2)$$

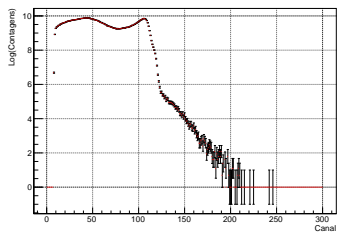
# Espectro de $^{137}_{55}\text{Cs}$

Calibração

Espectro Linear Cs



Espectro Logaritmico Cs



# Calibração canal-tensão

## Calibração

$$\bar{c} = \frac{\sum_{n=1}^n c_i n_i}{A} \quad (3)$$

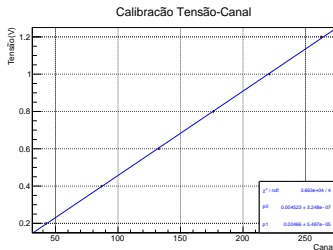
$$A = \sum_{n=1}^n n_i \quad (4)$$

$$\sigma_{\bar{c}} = \frac{\sqrt{\sum_{n=1}^n (c_i - \bar{c})^2 \cdot n_i}}{A} \quad (5)$$

# Calibração canal-tensão

## Calibração

Tensão(V)	Canal	Contagens	Canal Médio	Contagens Totais
0.2	41	106	$42.54 \pm 0.01$	$2429 \pm 10$
	42	1028		
	43	1180		
	44	113		
	45	1		
0.4	46	1	$86.88 \pm 0.01$	$2427 \pm 3$
	85	12		
	86	604		
	87	1477		
	88	328		
0.6	89	6	$132.79 \pm 0.01$	$2427 \pm 6$
	131	40		
	132	699		
	133	1424		
	134	260		
0.8	135	4	$176.23 \pm 0.01$	$2428 \pm 2$
	174	6		
	175	224		
	176	1434		
	177	735		
1	178	29	$221.26 \pm 0.01$	$2428 \pm 1$
	219	2		
	220	229		
	221	1368		
	222	791		
1.2	223	38	$262.49 \pm 0.01$	$2427 \pm 2$
	260	33		
	261	95		
	262	1054		
	263	1137		
	264	108		



# Espectro de $^{204}_{81}Tl$

Endpoint de  $^{204}_{81}Tl$

# Ajuste de Kurie

Endpoint de  $^{204}_{81}Tl$



# Ajuste de Kurie

Endpoint de  $^{204}_{81}Tl$