Espectroscopia β

Mestrado em Engenharia Física Tecnológica
LFAOFR

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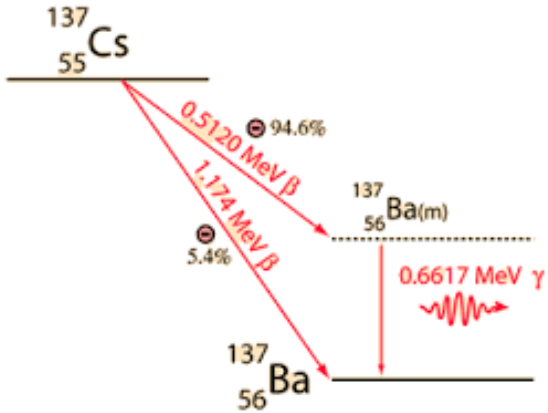
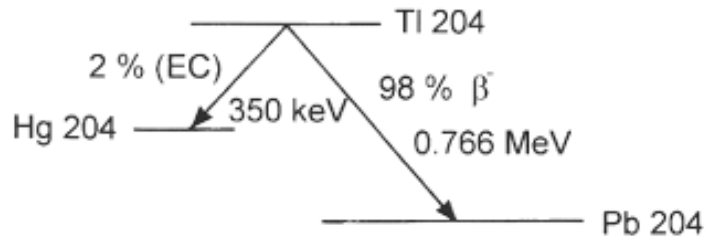
Decaimento β

$$n \rightarrow p + e^{-} + \overline{\nu_e}$$



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



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

Electrões de conversão

$$p + e^- \rightarrow n + \nu_e \tag{1}$$

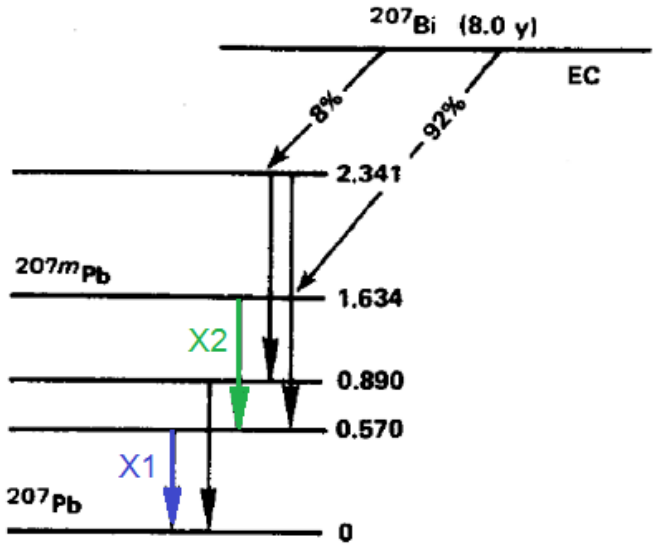
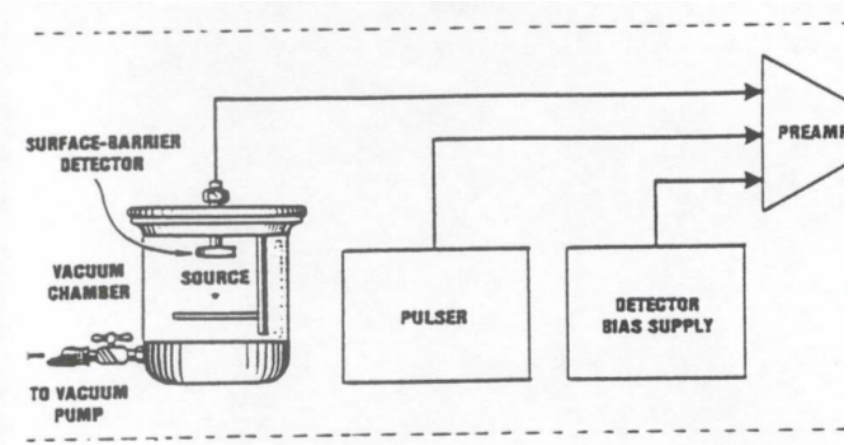


Figura : Esquema Decaimento $^{207}_{83}Bi$

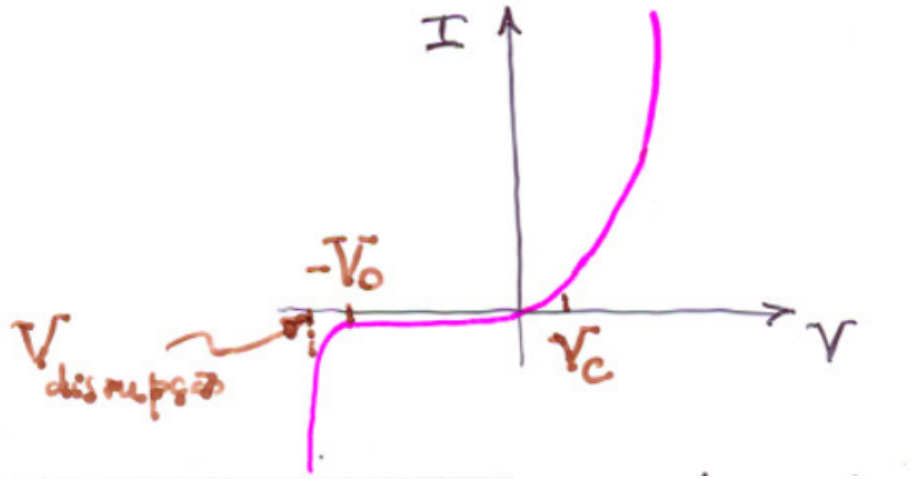
$$E_{e^-} = E_X - E_{L_j} \tag{2}$$

Montagem

Detector semicondutor de barreira de superfície



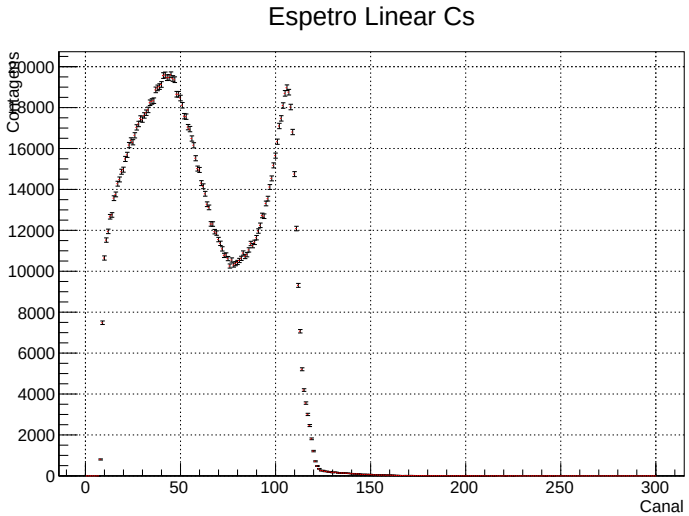
(a) Esquema da Montagem

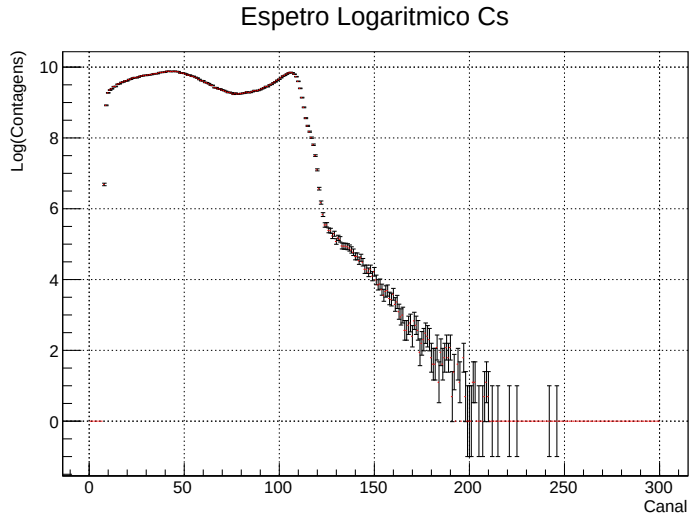


(b) Caraterística Tensão-Corrente de uma junção PN

Espectro de $^{137}_{55}Cs$

Calibração





Calibração canal-tensão

Calibração

$$\overline{c} = \frac{\sum_{n=1}^{n} c_i n_i}{A} \tag{3}$$

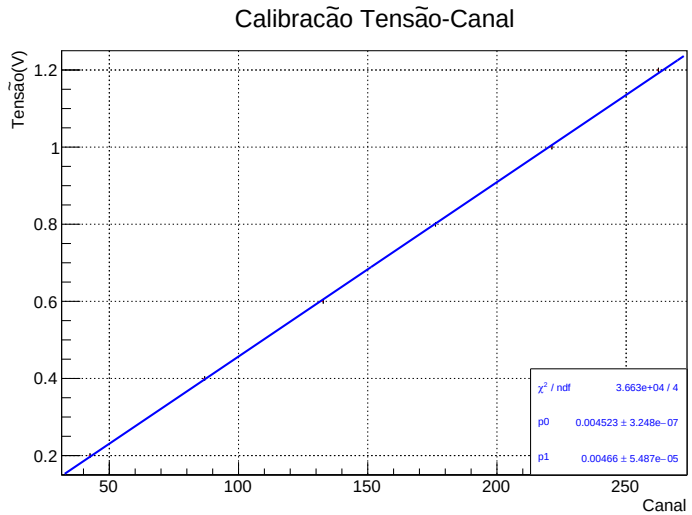
$$A = \sum_{n=1}^{n} n_i \tag{4}$$

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

Calibração canal-tensão

Calibração

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



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

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

Ajuste de Kurie

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