

Tarefa 11: Cálculo de $N_c(T)$ e $N_v(T)$

- Expanda as seguintes passagens

$$n = \frac{1}{V_r} \int_{E_c}^{\infty} \rho_c(\varepsilon) f_D^{(c)}(\varepsilon, T, \mu) d\varepsilon \quad (\varepsilon - \mu \gg k_B T) \Rightarrow n = N_c(T) e^{-\frac{E_c - \mu}{k_B T}}$$

$$p = \frac{1}{V_r} \int_{-\infty}^{E_v} \rho_v(\varepsilon) \left[1 - f_D^{(v)}(\varepsilon, T, \mu) \right] d\varepsilon \quad (\mu - \varepsilon \gg k_B T) \Rightarrow p = N_v(T) e^{-\frac{\mu - E_v}{k_B T}}$$

e calcule $N_c(T)$ e $N_v(T)$ em termos das massas efetivas e outras constantes.

- Mostre que $N_c N_v \propto T^3$