

Helpful constants for you:

$$c = 3 \cdot 10^8 \text{ m/s}$$

$$e = 1.6 \cdot 10^{-19} \text{ coulombs}$$

$$h = 6.63 \cdot 10^{-34} \text{ J-s}$$

$$m = 9.1 \cdot 10^{-31} \text{ kg}$$

$$k_B = 1.38 \cdot 10^{-23} \text{ J/K}$$

$$k_B T / e = 0.029 \text{ V at room temperature}$$

Schroedinger Equation:

$$i\hbar \frac{\partial}{\partial t} \Psi(\vec{r}, t) = -\frac{\hbar^2}{2m} \nabla^2 \Psi(\vec{r}, t) = -\frac{\hbar^2}{2m} \left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} + \frac{\partial^2}{\partial z^2} \right) \Psi(\vec{r}, t)$$

Drift-Diffusion:

$$\frac{\partial \delta n}{\partial t} = D_n \frac{\partial^2 \delta n}{\partial x^2} + \mu_n E \frac{\partial (\delta n)}{\partial x} - \frac{\delta n}{\tau} + G_n$$

Fermi-Dirac:

$$P(E) = \frac{1}{e^{(E-E_f)/kT} + 1}$$