

EJERCICIO F2BE2530:

$$E_c = ? \Rightarrow e^- \Rightarrow \lambda_{\text{BROGLIE}} = \lambda_{10^5 \text{ eV (fotón)}}$$

$$e^- \text{ con } E = 10^5 \text{ eV} \frac{1.6 \cdot 10^{-19} \text{ J}}{1 \text{ eV}} = 1.6 \cdot 10^{-14} \text{ J}$$

PLANCK

$$E = h \cdot f = h \cdot \frac{c}{\lambda} \Rightarrow \lambda = \frac{h \cdot c}{E}$$

$$\lambda_{\text{fotón}} = \frac{6.63 \cdot 10^{-34} \cdot 3 \cdot 10^8}{1.6 \cdot 10^{-14}} = 1.24 \cdot 10^{-11} \text{ m}$$

$$\lambda_{\text{BROGLIE}} = \frac{h}{m \cdot v}$$

$$\lambda_{\text{fotón}} = \lambda_{\text{BROGLIE}}$$

$$1.24 \cdot 10^{-11} = \frac{h}{m_e \cdot v} \Rightarrow v = \frac{h}{m_e \cdot 1.24 \cdot 10^{-11}}$$

$$v = \frac{6.63 \cdot 10^{-34}}{9.11 \cdot 10^{-31} \cdot 1.24 \cdot 10^{-11}} = 5.87 \cdot 10^7 \text{ m/s}$$

$$E_c = \frac{1}{2} m v^2 = \frac{1}{2} 9.11 \cdot 10^{-31} \cdot (5.87 \cdot 10^7)^2$$

$$E_c = 1.57 \cdot 10^{-15} \text{ J}$$