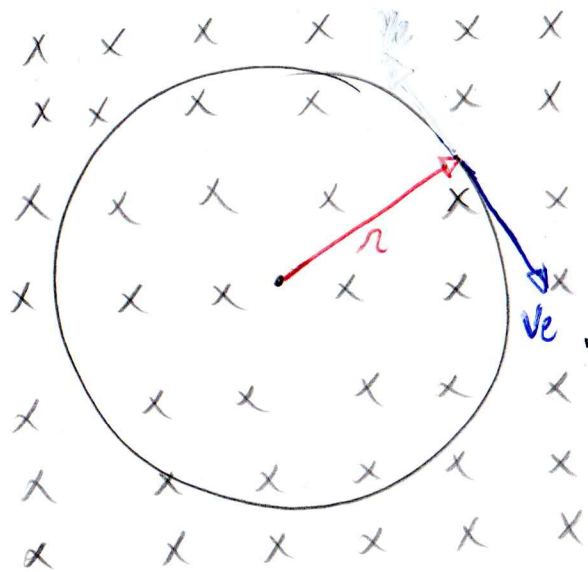


Cap 28 Ex 17



$e^- \Rightarrow 1,2 \text{ keV}$

$r = 25 \text{ cm}$

a) velocidade escalar?

b) módulo de \vec{B} ?

c) f_e ?

d) T_e ?

a) Energia Cinética

$$K = \frac{1}{2} m_e v^2$$

$$v = \sqrt{\frac{2K}{m_e}}$$

convertendo eV em J

$$1 \text{ eV} \cong 1,6 \times 10^{-19} \text{ J}$$

Portanto:

$$v = \sqrt{\frac{2 \cdot 1200 \cdot 1,6 \times 10^{-19}}{9,1 \times 10^{-31}}}$$

$$v \cong 2,05 \times 10^7 \text{ m/s}$$

b) $F_B = F_c$

$$|q| v B = m_e \frac{v^2}{r}$$

$$B = \frac{m_e v^2}{|q| \cdot r}$$

$$B = \frac{9,1 \times 10^{-31} \cdot (2,05 \times 10^7)^2}{1,6 \times 10^{-19} \cdot (25 \times 10^{-2})}$$

$$B = \frac{1,865 \times 10^{-23}}{4,0 \times 10^{-20}}$$

$$B \cong 4,7 \times 10^{-4} \text{ T}$$

c) $f = \frac{v}{2\pi r} = \frac{2,05 \times 10^7}{2 \cdot \pi \cdot 0,25}$

$$f = 1,3 \times 10^7 \text{ Hz}$$

d) $T = \frac{1}{f}$

$$T = 7,6 \times 10^{-8} \text{ s}$$