

46. The orbital radius for the electron is

$$r = \frac{mv}{eB} = \frac{mv}{e\mu_0 ni}$$

which we solve for i :

$$\begin{aligned} i &= \frac{mv}{e\mu_0 nr} \\ &= \frac{(9.11 \times 10^{-31} \text{ kg})(0.0460)(3.00 \times 10^8 \text{ m/s})}{(1.60 \times 10^{-19} \text{ C})(4\pi \times 10^{-7} \text{ T} \cdot \text{m/A})(100/0.0100 \text{ m})(2.30 \times 10^{-2} \text{ m})} \\ &= 0.272 \text{ A} . \end{aligned}$$