

14. For a free charge q inside the metal strip with velocity \vec{v} we have $\vec{F} = q(\vec{E} + \vec{v} \times \vec{B})$. We set this force equal to zero and use the relation between (uniform) electric field and potential difference. Thus,

$$v = \frac{E}{B} = \frac{|V_x - V_y|/d_{xy}}{B} = \frac{(3.90 \times 10^{-9} \text{ V})}{(1.20 \times 10^{-3} \text{ T})(0.850 \times 10^{-2} \text{ m})} = 0.382 \text{ m/s}.$$