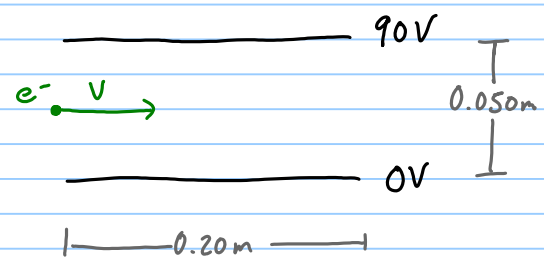
Quiz 3c

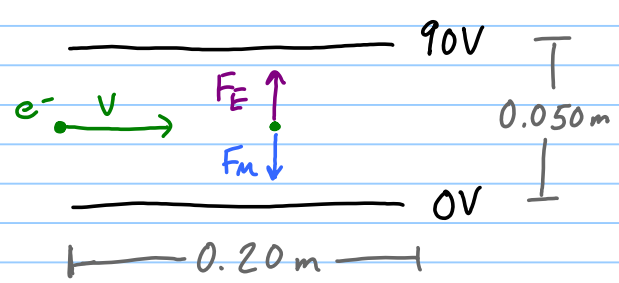
Note Title 29/05/2011



A beam of electrons passes between two electrically charged plates at a speed of 5.4×10^4 m/s. If a magnetic field is added so that the beam goes undeflected, find:

a.) The magnitude of the mag field.

b.) The direction of the mag field.



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a) $F_M = F_E$ ✓

$\cancel{q} v \vec{B} = \vec{E} \cancel{q}$

$v \vec{B} = \vec{E}$

$\vec{B} = \frac{\vec{E}}{v} = \frac{1800 \text{ N/C}}{5.4 \times 10^4 \text{ m/s}} = 0.033 \text{ T}$ ✓

$\vec{E} = \frac{\Delta V}{d} = \frac{90 \text{ V}}{0.050 \text{ m}} = 1800 \text{ N/C}$ ✓

b.) From LHR $\vec{B}$ is into page ✓✓