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$\vec{F} = q\vec{v} \times \vec{B}$

$\vec{F} = I\vec{L} \times \vec{B}$

$\prod$ ↳ spinner

$\vec{v} = 8\times10^{6} \frac{m}{s} \hat{x}$

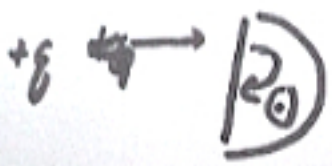
$q = 1\times10^{-11} C$ $\vec{B} = -.25\hat{y}\ T$

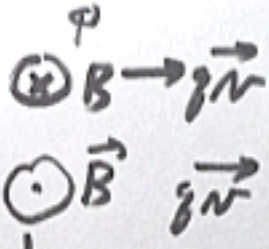
F out ⊙ ⊗ in

F ↓ $\hat{x}$ → B!

$|F| = (1\times10^{-11})(8\times10^{6})(.25)$

$F_1 + F_2 = 0$



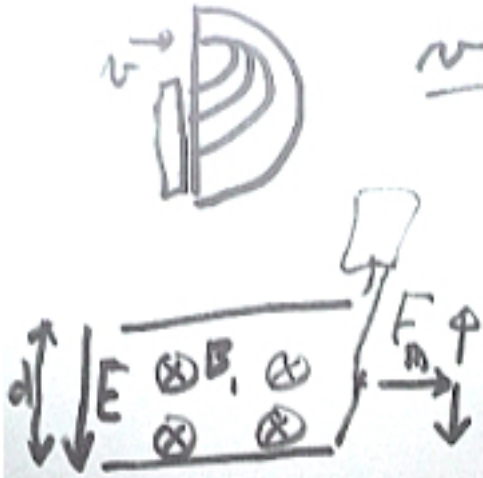


$F = qvB$

$F = m\frac{v^2}{R}$ $\quad m\frac{v^2}{R} = qvB$

$R = \frac{mv}{qB}$

$\underline{v}$



E: qE

M: qvB

$qE = qvB_1 \Rightarrow B_1 = \frac{E}{v}$

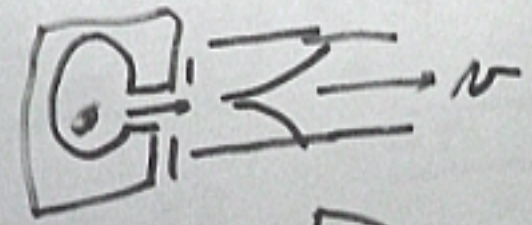
$v = \frac{E}{B_1}$

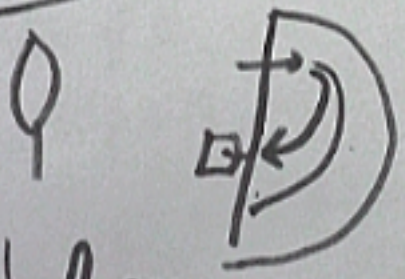
$E = \frac{V}{d} \Rightarrow$

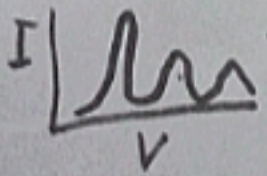
$$\boxed{v = \frac{V}{dB_1}}$$

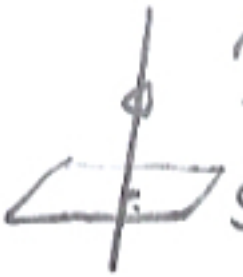
$E = \frac{V}{d} \Rightarrow$

$$v = \frac{V}{dB_1}$$









Ampere's Law

$$\oint \vec{B} \cdot d\vec{s} = \mu_0 I_c$$

$\mu_0 = 4\pi \times 10^{-7}$

$\left[\frac{Tm}{A}\right]$

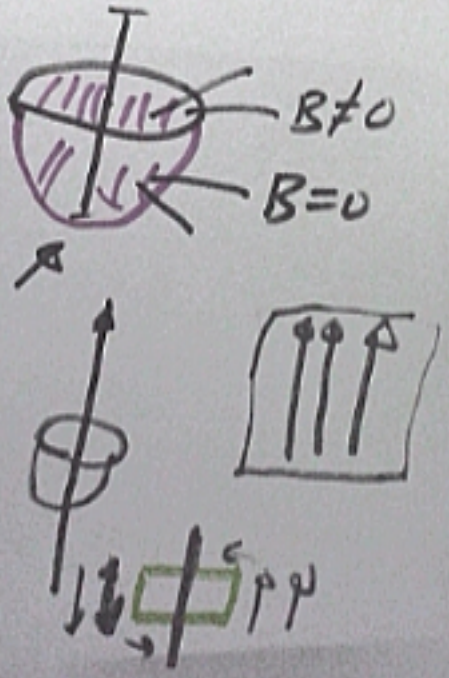
on path: $|\vec{B}|$ constant

$$\oint \vec{B} \cdot d\vec{s} = \oint B\, ds$$

$$= B \oint ds$$

$$B(2\pi s) = \mu_0 I$$

$$B = \frac{\mu_0 I}{2\pi s}$$



$\left[\frac{Tm}{A}\right]$

$\oint \vec{B} \cdot d\vec{s} = \mu_0 I_C$

$\vec{B} \parallel \vec{s}$.

on Path: $|\vec{B}|$ constant

$\oint \vec{B} \cdot d\vec{s} = \oint B\, ds$

$= B \oint ds$

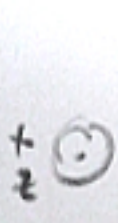
$= B(2\pi s)$

$I_C = I$

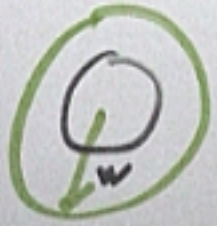
$$\oint \vec{B} \cdot d\vec{s} = \mu_0 I_c$$

$$\oint B\,ds = B \oint ds = B(2\pi$$

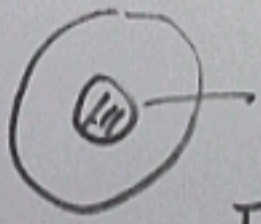
$$I_c = I \Rightarrow \vec{B} = \frac{\mu_0 I}{2\pi s}\,\hat{\theta}$$



$$J = \frac{I}{A}$$



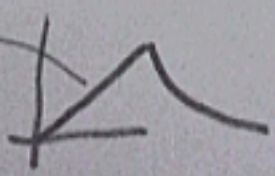
$$B = \frac{\mu_0 I}{2\pi w}$$



Radius < w_a

$$I_c = J \cdot (2\pi w)$$

$$B = \frac{\mu_0 J w}{\pi 2}$$



$\oint \vec{B} \cdot d\vec{s} = \mu_0 I_c$

⊙ ⊗ on path:

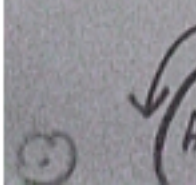
$\vec{B} \parallel$ ⊗ path

$|\vec{B}|$ uniform

$\oint \vec{B} \cdot d\vec{s} = \mu_0 I_c$

$\oint B\,ds = B \oint ds = B(2\pi b)$

$I_c = I \Rightarrow \vec{B} = \frac{\mu_0 I}{2\pi s}\hat{\theta}$



$J = \frac{I}{A}$