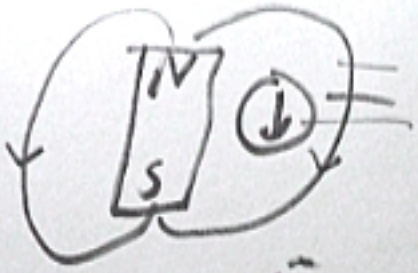
(32)

N – S



$\vec{E}\vec{v}$ → ⊗ ⊙

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

$\hat{x} \times \hat{y} = \hat{z}$ $\quad \hat{x} \times \hat{x} = \vec{0}$

$\hat{y} \times \hat{x} = -\hat{z}$

$\vec{E}\perp\vec{v}$ → (x) (·)

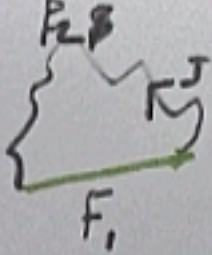
$$\vec{F} = q\vec{v} \times \vec{B}$$

$\hat{x} \times \hat{y} = \hat{z}$ $\quad \hat{y} \times \hat{x} = -\hat{z}$ $\quad \hat{x} \times \hat{x} = \vec{0}$

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

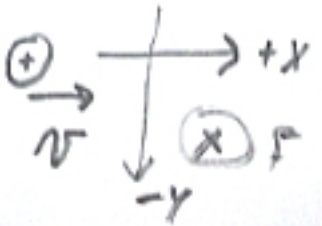
$= ILB\sin\theta$

$$B = \frac{F}{IL}$$



$F_1 + F_2 = 0$

$F_2 = -F_1$



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

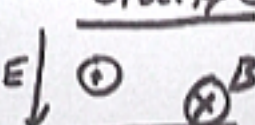
$$R = \frac{mv}{qB}$$

$$F = q\vec{v} \times \vec{B} = 0$$

if $\vec{B} = B\hat{k}$

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

Velocity Selector



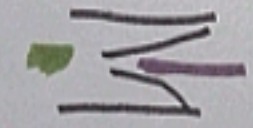
$F_E = qE$

$F_M = qvB_1$

$F_M = F_E \;//\; F_M + F_E = 0$

$qE = qvB_1$

$v = \frac{E}{B_1}$ $\quad v = \frac{V}{dB_1}$



$V = Ed$

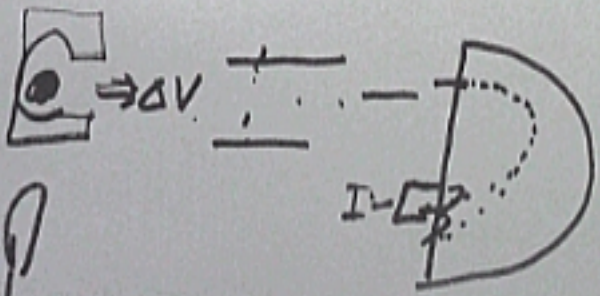
$qE = qvB_1$

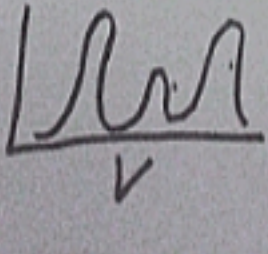
$v = \frac{E}{B_1}$ $v = \frac{V}{dB_1}$

$V = Ed$

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

$$= \frac{m\left(\frac{V}{dB_1}\right)}{qB}$$





Ampere's Law

$$\sum_{\Delta S_i} \vec{B}_i \cdot \Delta \vec{S}_i = \mu_0 I_c$$

on path:

$\vec{B} \parallel \vec{S}$

$|\vec{B}|$ constant

$$\sum_{\Delta S_i} \vec{B}_i \cdot \Delta \vec{S}_i = \sum_{\Delta S_i} B_i (\Delta S_i)$$

$$B \sum_{\Delta S_i} (\Delta S_i) = (2\pi R) B$$

$\mu_0 : 4\pi \times 10^{-7} \left[\frac{Tm}{A}\right]$

$\varepsilon_0 : \frac{1}{\sqrt{\varepsilon_0 \mu_0}}$

$|\vec{B}|$ constant

$$\sum_{\Delta S_i} \vec{B}_i \cdot \Delta \vec{S}_i = \sum_{\Delta S_i} B_i (\Delta S_i)$$

$$B \sum_{\Delta S_i} (\Delta S_i) = (2\pi R) B$$

μ_0 : $4\pi \times 10^{-7}$ $\left[\frac{Tm}{A}\right]$

ε_0 : $\frac{1}{\sqrt{\varepsilon_0 \mu_0}}$

I_c

Φ

$I_c = I$

$\leq \vec{R} \cdot \times \vec{S} = 5R(\Delta S.)$

$\mu_0 : 4\pi \times 10^{-7} \left[\frac{Tm}{A}\right]$

$\varepsilon_0 : \frac{1}{\sqrt{\varepsilon_0 \mu_0}}$

I_c

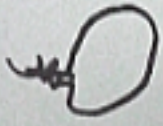
$I_c = I$

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

$\vec{B} = \frac{\mu_0 I}{2\pi R} \hat{\theta}$.

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

$B = 0$



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

Amp Law:

$$\sum_{\Delta S_i} \vec{B} \cdot \Delta \vec{S}_i = \mu_0 I_c$$

on path: $\vec{B} \parallel \vec{S}$

$|\vec{B}| = \text{const}$

$I_c = I$

$$\sum B_i \Delta S_i = B \sum \Delta S_i = 2\pi R$$

$$\vec{B} = \mu_0 I / 2\pi R \, \hat{\theta}$$