

Ampere's Law ve omaci nedir?

Gauss Law and Ampere's Law (ses1)

#by analogy between

$E = \frac{q}{r^2} \hat{r}$

$\oint dE = \int K \frac{dq}{r^2}$

$E = K \int \frac{dq}{r^2} \hat{r}$

$\Phi_E = \oint \vec{E} \cdot d\vec{A} = \frac{Q_{in}}{\epsilon_0}$

$B = \frac{\mu_0 I}{4\pi} \int \frac{d\vec{s} \times \hat{r}}{r^2}$

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

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

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

Amper Gevuru

Kesik电流 I

Kesik面積 dA

Kesik电流密度 dI

Kesik电流 I

Kesik面積 dA

Kesik电流密度 dI

Kesik电流 I

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

B ik $d\vec{s}$ birbirine tegetdir. (Aradaki $\alpha = 0^\circ$)

$B ds = B 2\pi r$

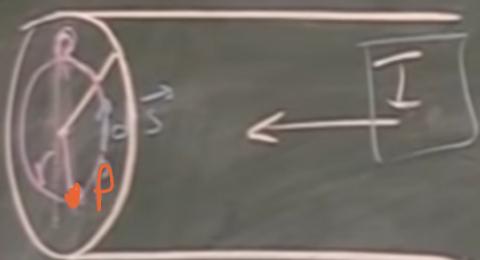
$\frac{\mu_0 I}{2\pi r} \cdot 2\pi r = \mu_0 I$

B nin degeri her naktada esit boyuktur.

$\boxed{\oint \vec{B} \cdot d\vec{s} = \mu_0 I_{in}}$ Ampere's Law

iletken, okim tasyan silindirin icerisinde ve disorisinda oluşturduyu manyetik alan.

A) NLR



I , kesit alanina homojen bir silinde dagilmis

$$I = nqVsA$$

$$\frac{I}{I_{in}} = \frac{\pi R^2}{\pi r^2} \text{ or } \left(\frac{\pi R^2}{\pi r^2} \times \frac{I}{I_{in}} \right)$$

$$I\pi r^2 = I_{in}\pi R^2$$

$$\frac{I}{I_{in}} = \frac{\pi R^2}{\pi r^2}$$

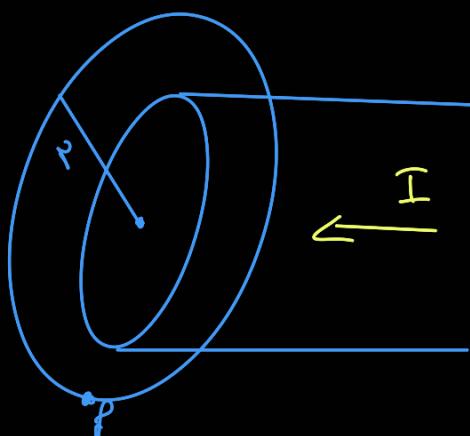
$$I_{in} = \frac{I r^2}{R^2}$$

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

Let's find I_{in}

$$B = \left(\frac{\mu_0 I}{2\pi r^3} \right) r$$

$r > R$



$$r > R$$

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

$$B 2\pi r = \mu_0 I_{iq}$$

$$B = \frac{\mu_0 I_{iq}}{2\pi r}$$

$$I_{iq} = I \rightarrow \text{So}$$

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

$$r > R$$

