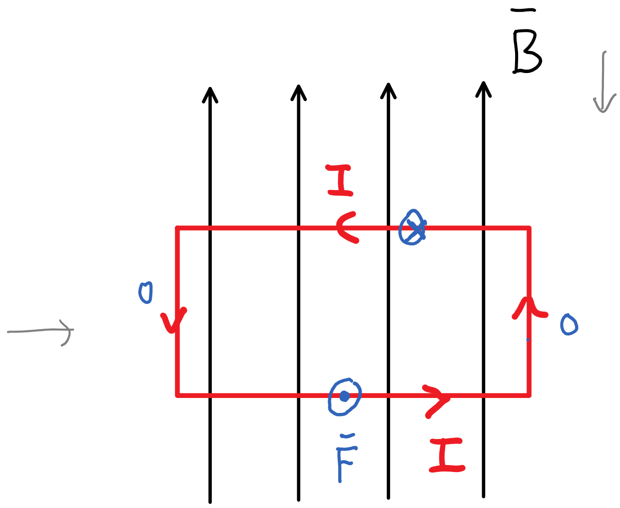
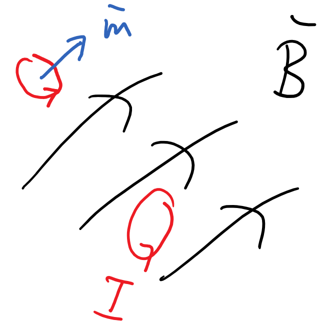
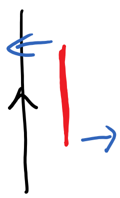
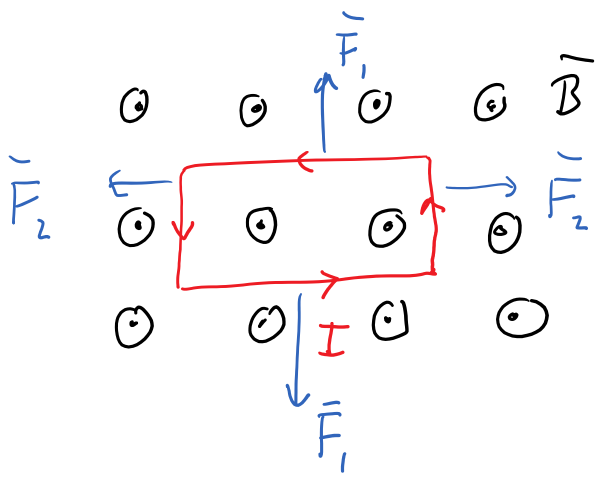
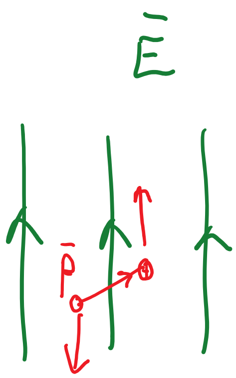




$$\bar{F} = q\left(\bar{E} + \bar{u} \times \bar{B}\right)$$







$\bar{E}$ $\frac{V}{m}$

$\bar{D}$ $\frac{As}{m^2}$

$\varepsilon_0 = 8.854 \cdot 10^{-12} \frac{As}{Vm}$

$\nabla \times \bar{E} = 0$ (STATICS)

$\nabla \cdot \bar{D} = \rho_v$ $\frac{As}{m^3}$

$\bar{H}$ $\frac{A}{m}$

$\bar{B}$ $\frac{Vs}{m^2} = T$

$\mu_0 = 4\pi \cdot 10^{-7} \frac{Vs}{Am}$

$\nabla \times \bar{H} = \bar{J}$ $\frac{A}{m^2}$

$\nabla \cdot \bar{B} = 0$ (STATICS)

MAXWELL'S EQUATIONS

$\bar{f}(\bar{R}, t)$

1831

$\nabla \times \bar{E} = -\frac{\partial \bar{B}}{\partial t}$

$\nabla \cdot \bar{D} = \rho_v$

1820

$\nabla \times \bar{H} = \bar{J} + \frac{\partial \bar{D}}{\partial t}$

$\nabla \cdot \bar{B} = 0$

FARADAY'S LAW

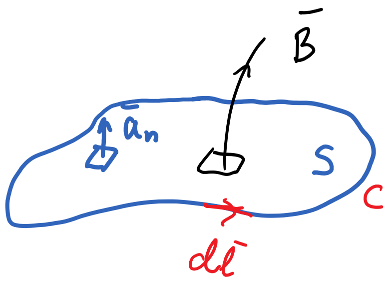
$\nabla \times \bar{E} = -\frac{\partial \bar{B}}{\partial t}$

A

B

C (no light)

FARADAY



$$\underbrace{\int_S \nabla \times \bar{E} \cdot d\bar{s}}_{\oint_C \bar{E} \cdot d\bar{l}} = \int -\frac{\partial \bar{B}}{\partial t} \cdot d\bar{s}$$

$$= -\frac{\partial}{\partial t} \underbrace{\int \bar{B} \cdot d\bar{s}}_{\Phi}$$

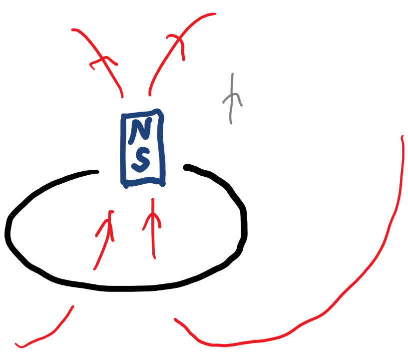
Φ magnetic flux

$$= V$$

EMF (electromotive force)

$$V = -\frac{\partial \Phi}{\partial t}$$

$$[\Phi] = Vs$$

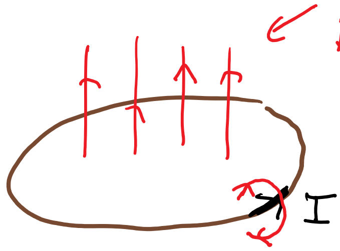


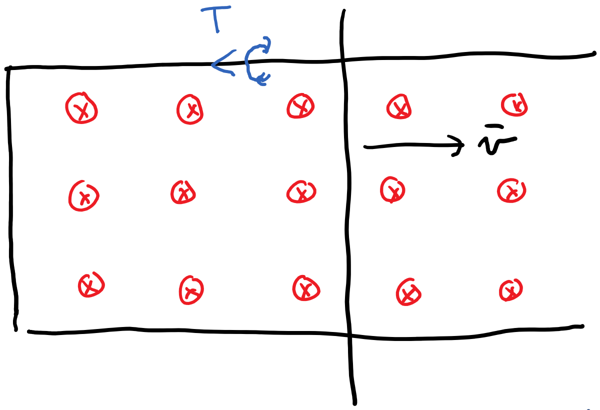
LENZ LAW

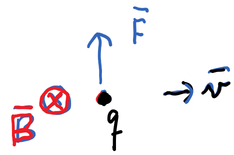
INDUCED CURRENT

→ SECONDARY MAGNETIC FIELD WHICH OPPOSES THE PRIMARY CHANGE

$\bar{B} \downarrow$ (decreases)







LENZ: OPPOSE Φ INCREASE
(INTO SCREEN)