

## Incomplete Maxwell's Equations

$$\oint \vec{E} \cdot d\vec{A} = \frac{q_{\text{inside}}}{\epsilon_0}$$

Gauss's Law  
for electricity

$$\oint \vec{B} \cdot d\vec{A} = \emptyset$$

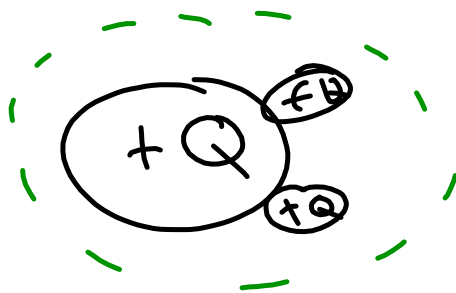
Gauss's Law for  
Magnetism

$$\oint \vec{E} \cdot d\vec{l} = \emptyset$$

Incomplete

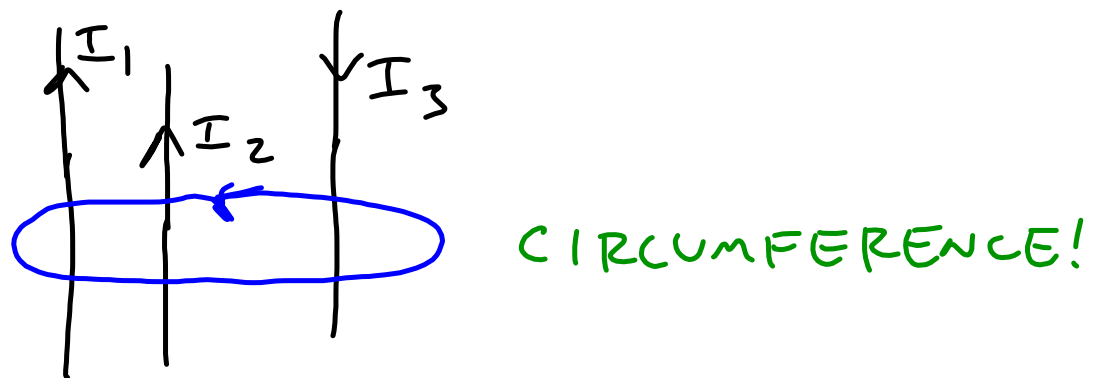
$$\oint \vec{B} \cdot d\vec{l} = \mu_0 \sum I_{\text{inside}}$$

Incomplete



$$\oint \vec{E} \cdot d\vec{A} = \frac{+Q + Q + Q}{\epsilon_0}$$

$$\vec{E} (4\pi r^2) = \frac{3Q}{\epsilon_0}$$

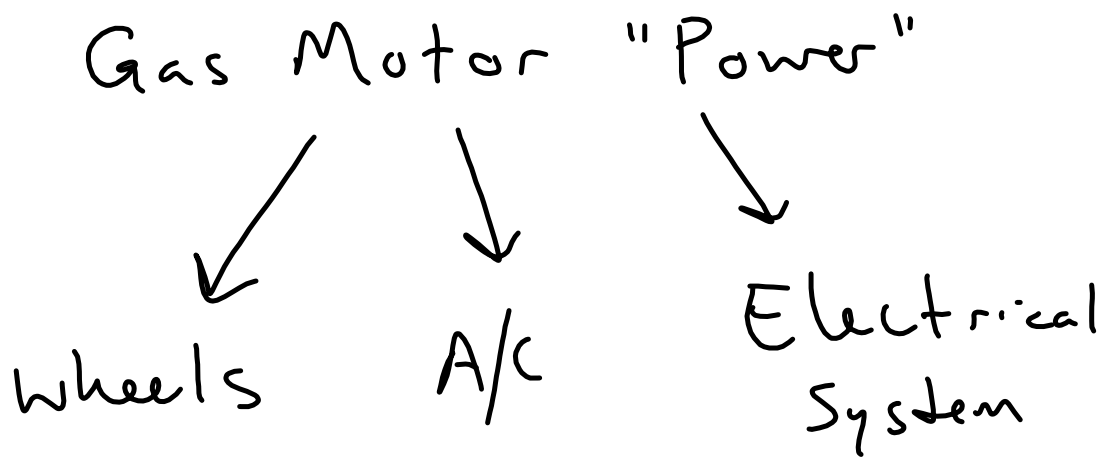


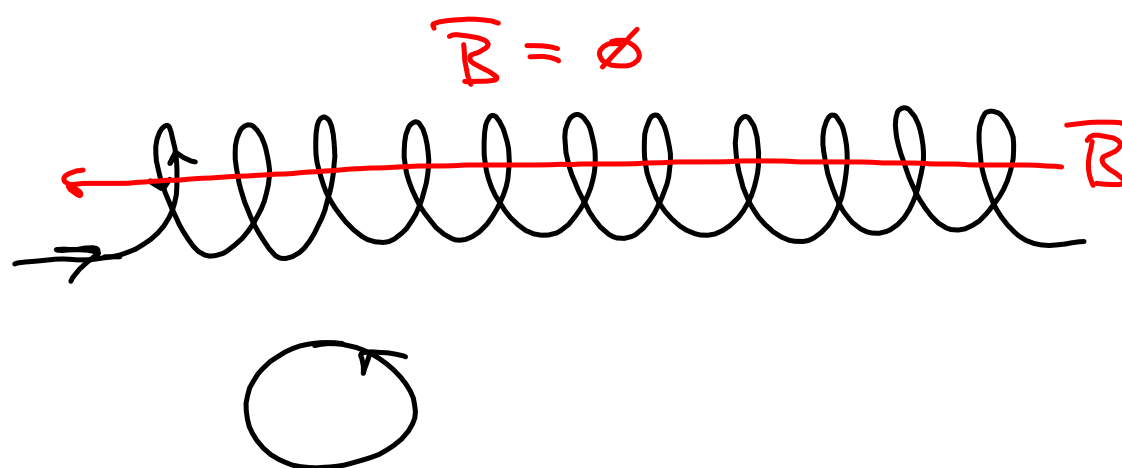
$$\oint \vec{B} \cdot d\vec{\ell} = \mu_0 \sum I_{\text{inside}}$$

$$B(2\pi r) = \mu_0 (+I_1 + I_2 - I_3)$$

Generator  $\rightarrow$  creating current  
by mechanical means

Motor  $\rightarrow$  creating mechanical  
movement by electrical means





DC in solenoid  
(time-constant)

Time-varying current (AC)



Time-varying magnetic field



Time-varying current in a different  
coil of wire