

Physics 202, Lecture 17

Today's Topics

- Inductance (Ch 32)
 - Reminder of Faraday's and Lenz's Laws
 - Self Inductance
 - Mutual Inductance
- Energy Stored in B Field
- RL Circuits

Review: Faraday's Law of Induction

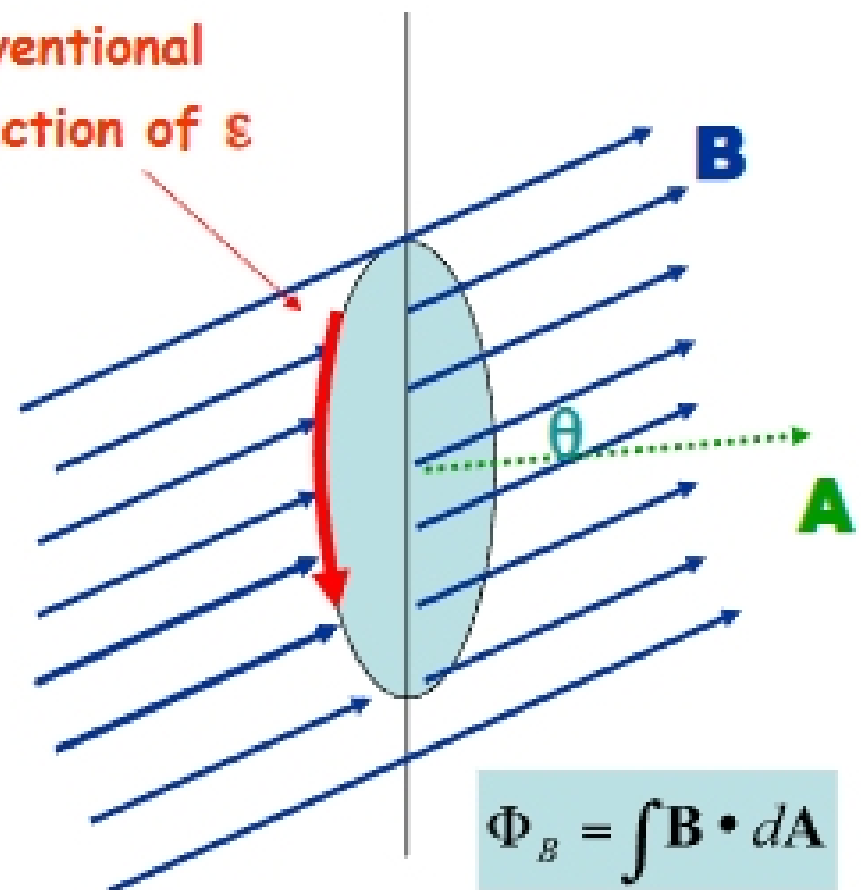
- Faraday's Law in plain words: When the magnetic flux through an area is changed, an emf is produced along the closed path enclosing the area.

Quantitatively:

$$\mathcal{E} = - \frac{d\Phi_B}{dt}$$

Note the - sign

conventional
direction of \mathcal{E}



Review: Lenz's Law

- Lenz's law in plain words: the induced emf always **tends to** work against the original cause of flux change

Cause of $d\Phi_B/dt$	"Current" due to Induced ϵ will:
Increasing B	generate B in opposite dir.
Decreasing B	generate B in same dir.
Relative motion	subject to a force in opposite direction of relative motions