

Physics 202, Lecture 16

Today's Topics

- Faraday's Law (Ch 31)
 - Review Lenz's Law
 - Faraday's Law Explained
 - Example: Electric Generator
 - Motional Emf

- Expected Preview: Ch 31

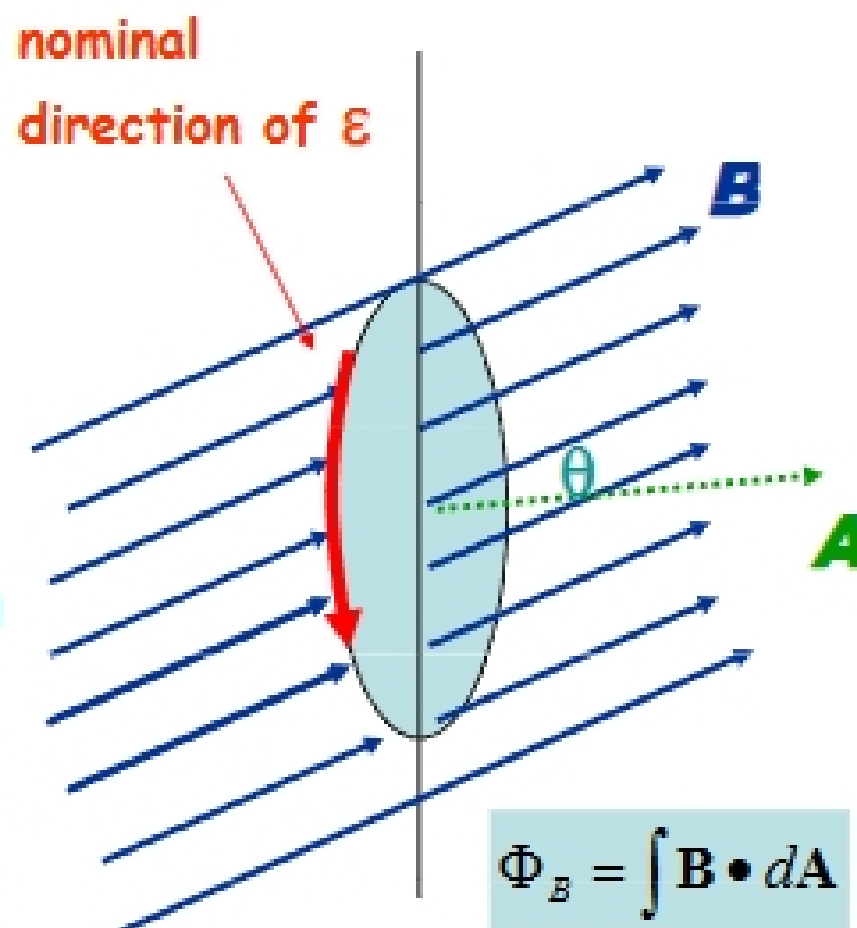
Faraday's Law of Induction

- The emf induced in a “circuit” is proportional to the time rate of change of magnetic flux through the “circuit”.

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

- Notes:

- “Circuit”: any closed path
→ does not have to be real conducting circuit
- The path/circuit does not have to be circular, or even planar



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

Note: "Current" may not actually produced if no circuit)