# Inductors

April 28, 2020 2:53 PM

**Inductors**

- Current carrying coil:
  - generates magnetic flux lines → closed loops
  - pass through coil that created them → flux linkage

$$L = \frac{N\Phi}{I} \rightarrow \Phi = \frac{L \cdot I}{N}$$

**Self-Inductance L:** flux linked to coil that created the flux

**Mutual Inductance M:** flux generated in one coil linked to another

$$M_{12} = \frac{N_2 \Phi_{12}}{I_1} \qquad M_{12} = M_{21}$$

- flux linking circuit $C_2$ due to current in $C_1$ ÷ current in $C_1$

**Energy stored in Inductor**

$$W_H = \frac{1}{2} L I^2$$