

Magnetic field around a long straight conductor

$$B = \frac{\mu_0 \cdot I}{2\pi \cdot r}$$

Magnetic field in long straight coil

$$B = \frac{\mu_r \mu_0 N \cdot I}{l}$$

Induced Voltage

$$u_{ind} = -\frac{d\Phi_m}{dt}$$

Self induction in coil

$$u_{ind} = -L \cdot \frac{di}{dt}$$

Energy in coil

$$w = \frac{L \cdot I^2}{2}$$

Angular frequency

$$\omega = 2\pi \cdot f = \frac{2\pi}{T}$$

Instantaneous value, alternating voltage

$$u = \hat{u} \cdot \sin(\omega t + \alpha)$$