Magnetic field

Across an electric current

$$\left|\left|\vec{B}\right|\right| = \frac{\mu_0 \times \left|\left|\vec{i}\right|\right|}{2\pi \times r}$$

$\mu_0 = 4\pi \times 10^{-7} \frac{T \times m}{A}$: Permeability of free space (Vacuum)
r: Distance between a certain point to the current

Magnetic force

Of a single charged particle

$$\vec{F}_B = q \times \left(\vec{B} \times \vec{V}\right)$$

Across an electric current

$$\vec{F}_B = L \times \left(\vec{B} \times \vec{i}\right)$$

Maxwell's equations

$$\begin{array}{cc} \mathrm{div}\vec{E} = \frac{\rho}{\epsilon_0} & \oint \vec{E} \cdot \vec{n}\, dA = \frac{q}{\epsilon_0} \\ \mathrm{div}\vec{B} = 0 & \oint B \cdot \vec{n}\, dA = 0 \\ \mathrm{curl}\vec{E} = -\frac{\partial B}{\partial t} & \oint \vec{E} \cdot d\vec{S} = -\frac{d\Phi_B}{dt} \\ \mathrm{curl}\vec{B} = \mu_0 \left(J + \epsilon_0 \frac{\partial E}{\partial t}\right) & \end{array}$$