PHYSICS 231 – CHAPTER 27: MAGNETIC FIELD AND FORCE

Magnetic force:

$$\vec{F} = q\vec{v} \times \vec{B}$$

Magnetic force on wire:

$$\vec{F} = I \int d\vec{l} \times \vec{B}$$

Magnetic flux through closed surface:

$$\Phi_B = \int \vec{B} \cdot d\vec{A} = 0$$

In a constant magnetic field a particle moves on circle of radius

$$R = \frac{mv}{|q|B}$$

Current loop:

- force

$$\vec{F} = \vec{0}$$

- torque

$$\vec{\tau} = \vec{\mu} \times \vec{B} \quad , \quad \vec{\mu} = I\vec{A}$$

- energy

$$U = -\vec{\mu} \cdot \vec{B}$$