

## Magnetic Fields

- Always form closed loops
- Can't isolate the poles
- $\vec{B}$ -fields are only created by moving charges
- Only moving charges interact with a  $\vec{B}$  field
- Creation of  $\vec{B}$  or interaction with  $\vec{B}$ , have to deal with all 3-dimensions

## Magnetic Force

- Centripetal
- $\vec{F}_m \perp \vec{v}$
- $\vec{F}_m \perp \vec{B}$

Lorentz Force:

$$\vec{F}_m = q(\vec{v} \times \vec{B})$$

Direction: RHR, if  $q$  is (-) flip  $180^\circ$

Units:  $1 \text{ N/Am} = 1 \text{ tesla} = 1 \text{ T}$

$1 \text{ gauss} = 1 \text{ G} = 10^{-4} \text{ T}$

## Equations

$$R = \frac{mv}{qB}$$