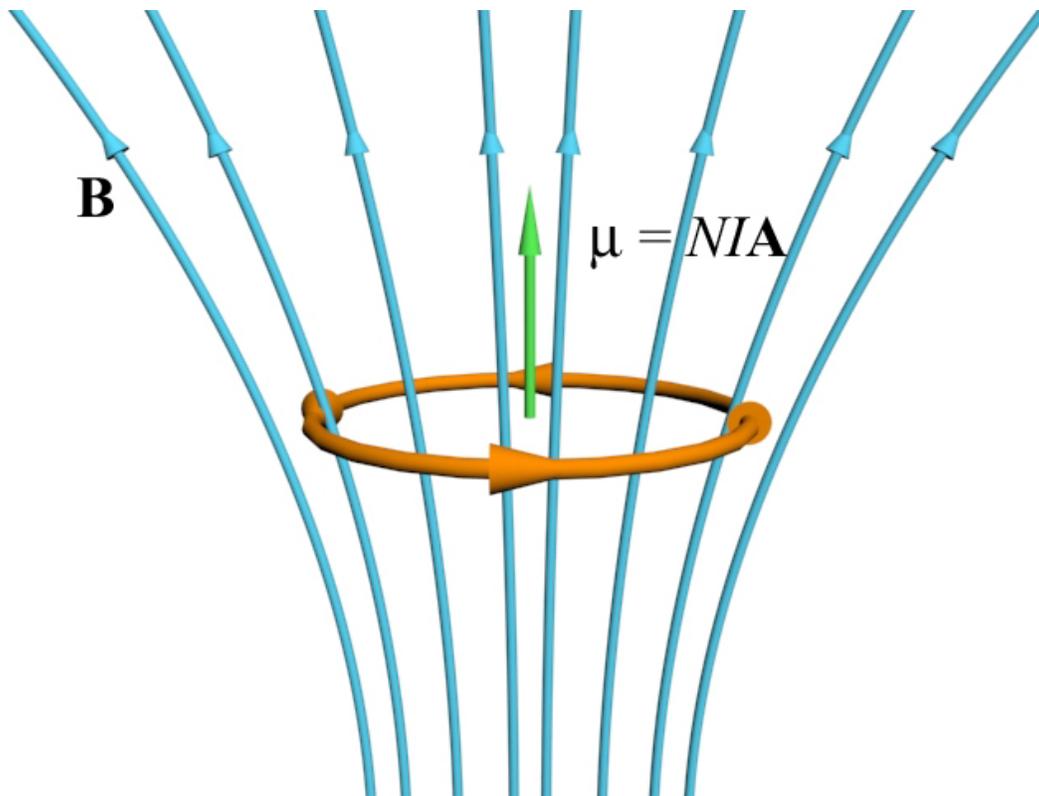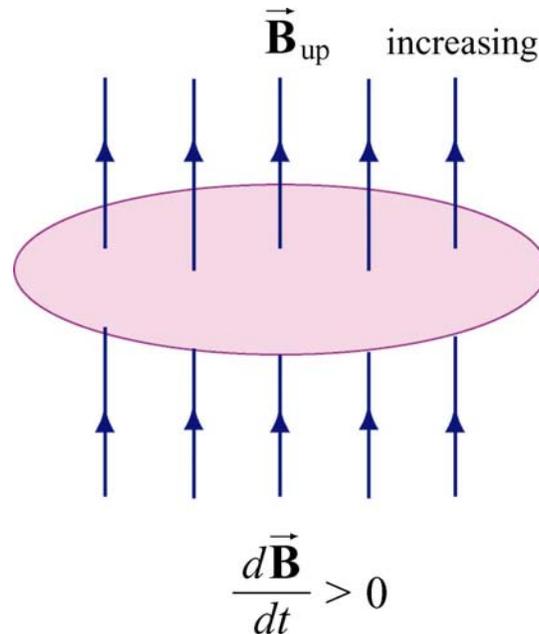# Dipole in Field

The current carrying coil above will move
1. upwards
2. downwards
3. stay where it is because the total force is zero

Loop in Changing Field

$$\vec{\mathbf{B}}_{up} \quad \text{increasing}$$
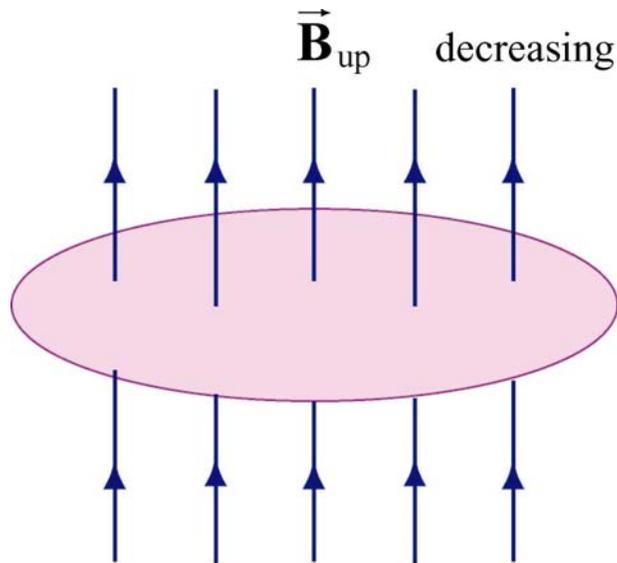
$$\frac{d\vec{\mathbf{B}}}{dt} > 0$$

Φ is up and increasing

The magnetic field through a wire loop is pointed upwards and *increasing* with time. The induced current in the coil is

1. **Clockwise as seen from the top**
2. **Counterclockwise**
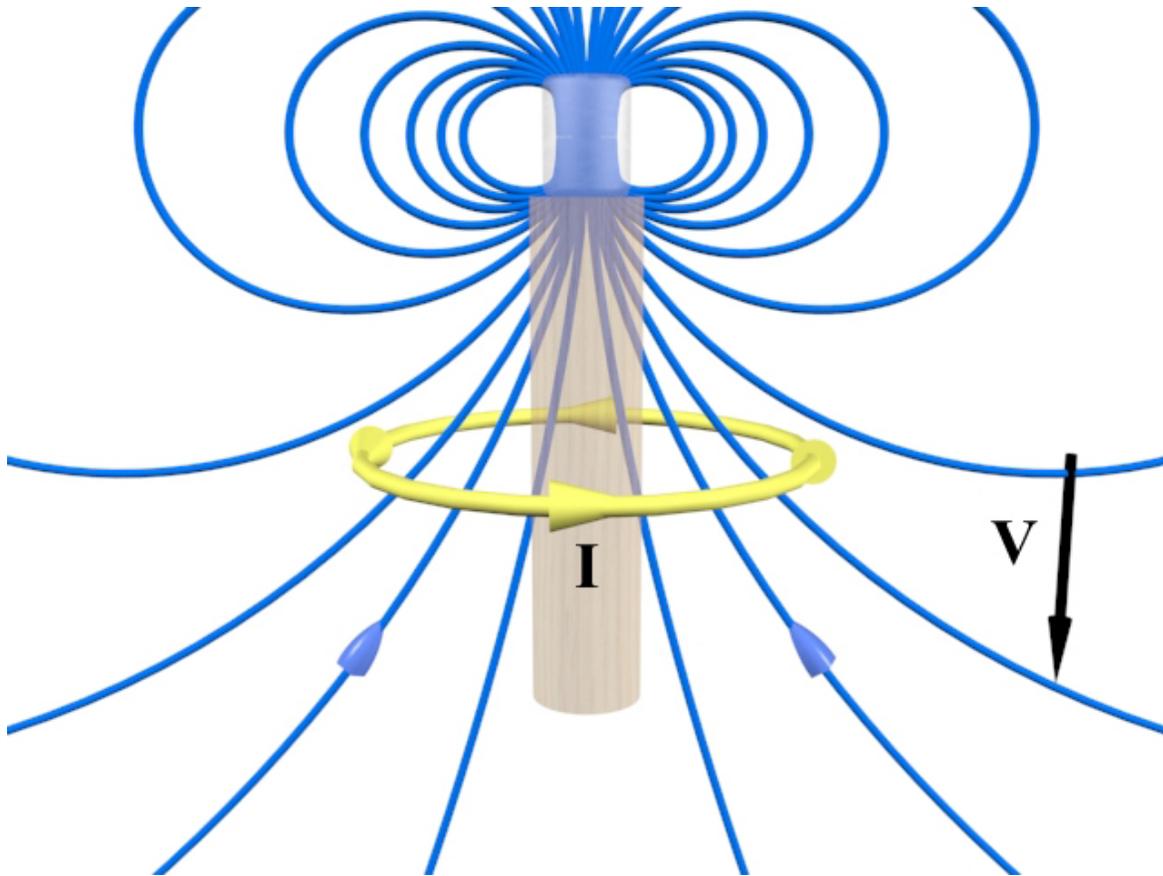
Loop in Changing Field

$$\vec{\mathbf{B}}_{up} \quad \text{decreasing}$$

$$\frac{d\vec{\mathbf{B}}}{dt} < 0$$

Φ is up and decreasing

The magnetic field through a circular wire loop is pointed upwards and *decreasing* with time. The induced current in the coil is

1. **Clockwise as seen from the top**
2. **Counterclockwise**

When the coil is below the magnet and moving downwards. This induces a current as pictured. The *I ds x B* force on the coil is

1. **Upwards**

2. **Downwards**

3. **Zero**