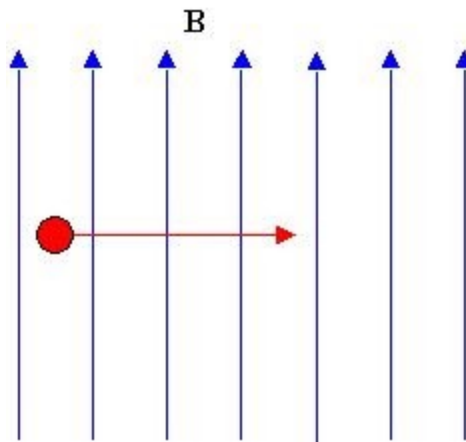


Physics 12

Section 20-4 Forces on an electric Charge Moving in a Magnetic Field

1. The force that a moving charge experiences while in a magnetic field is given by the following formula:



In most cases θ will be 90°

Example: A proton having a speed of 5.0×10^6 m/s in a magnetic field feels a force of 8.0×10^{-14} N towards the West when it moves vertically upwards. When moving horizontally in a Northerly direction, it feels zero force. What is the magnitude and direction of the magnetic field in this region?

2. When a charge enters a uniform magnetic field, the charge experiences a force perpendicular to its motion; the resulting path is circular.

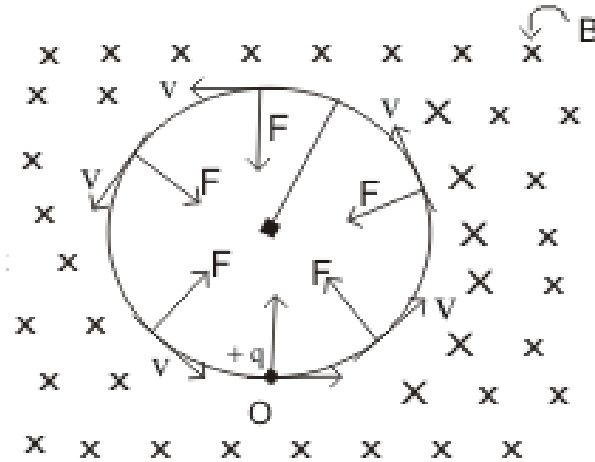


Figure 3. Motion of charged particle in uniform magnetic field

3. Using the second right hand rule

4. The centre seeking force is constant and as a result orbits with

Example: An Electron travels at $2.0 \times 10^7 \text{ m/s}$ in a plane perpendicular to a 0.010 T magnetic field. Determine the radius of curvature of the resulting path.

