

Magnetic Fields

Permanent magnet

when the fields of the particles making an object up are aligned resulting in a significant magnetic field

Magnets create magnetic fields represented by B

can be visualized by drawing north to south or by using materials that are sensitive to magnet fields like iron.

earth has a pretty insane magnetic field

Electromagnetism

moving electric current produces a magnetic field. the direction of the field is determined with the right hand rule *Fingers curl in the direction of the magnetic field, thumb points towards the direction of the conventional current*

Field Strength

$$1T = 1 \frac{kg}{C \times s}$$

Strength of magnetic field is measured in Tesla's

Magnetic force can be calculated by knowing the charge of a particle, it's velocity, magnetic field strength and the angle between the path of the particle and the magnetic field

$$F_m = qvB\sin\theta$$

Magnetic force and current

electric current passing through a wire is made of a series of charged particles, so a wire placed in an electric field will experience a magnetic force.

$$F_{m(onwire)} = ILB\sin\theta$$

where I is current, L is length of wire, B is the magnetic field, and theta is the angle between the wire and the electric field

practice

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