Electromagnets

2. Current

CONCEPT 4

ELECTRIC FIELDS

NOTES

When an object becomes positively or negatively charged with static electricity, a field of electrostatic force exists around the object. This field is a region around the charged object that can attract or repel other materials and may be strong enough to lift them. The other materials do not need to be touching the charged object to feel the force, which is why we call it a non-contact force. For example, a charged balloon brought close to someone's head can attract strands of hair and lift them up without the balloon coming into contact with the hair.

When two objects of the same material become charged their electrostatic fields interact and they repel each other. This is because they have the same type of charge. Like charges repel, opposite charges attract.

The strength of an electrostatic field created by a charged object will depend on two things:

1. The strength of charge on the object; the greater the charge the stronger the field
2. The distance away from the charged object; the field gets stronger the closer the object is

A charged object can also attract a neutral insulating object. This is because in many insulators charged particles are free to rotate in an electrostatic field. For example, if a negatively charged balloon is held against a neutrally charged wall, the negatively charged part of the wall's particles are repelled so rotate away from the balloon. This leaves the wall's surface with a positive charge and so it is attracted to the balloon.