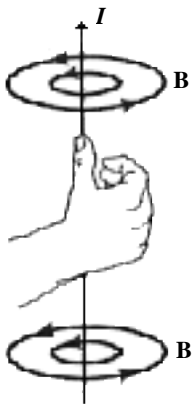
Ampere Rule

When a current (***I***) is passed through a length of wire, the movement of the electrons produces a magnetic field (***B***) that wraps around the wire. The direction of the field may be determined by the "right hand rule".



The *Ampere Rule* may be used to demonstrate this concept. The apparatus consists of a thick 'L' shaped wire mounted on a clear acrylic base, a number of small compasses, and a large compass.

Directions

Place the *Ampere Rule* on a flat surface and position it so that the horizontal wire is aligned north-south.

Horizontal wire

Connect a low voltage DC power supply to the end terminals.
Place the large compass on the clear acrylic base and position it directly underneath the horizontal wire.
Switch the power on momentarily* and observe the large deflection in the compass needle caused by the magnetic field produced in the current carrying wire.
* NB as the metal wire will effectively short out your power supply, it is recommended that a low voltage of 1 or 2 volts should be applied, and then only for a moment whilst the effect on the compasses is observed.
Investigate the effect of reversing the direction of the direction of the current.

Now repeat the exercise by moving the compass sideways to the left or right side of the horizontal wire.
Apply power once again and observe the minimal change in the deflection of the compass needle.

Vertical wire

Demonstrate that a magnetic field wraps around a current carrying wire. Place the small compasses on to the circular platform and arrange them so that they are equally spaced. Once again, apply a small DC voltage and observe the effect of the compass needles. Investigate the effect of reversing the direction of the current.