

Application Note PE004

Magnetic Field Basics

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Right Hand Grip Rule 1

Magnetic Field Lines

Magnetic field lines are always closed. Contrary to electrical lines of flux they have neither a beginning nor an end. By convention, magnetic field lines leave magnets or current-carrying coils at the north pole, they reenter at the south pole and they turn back within from S to N.

The field of a coil corresponds to that of a bar magnet.

There are no magnetic monopoles, only magnetic dipoles.

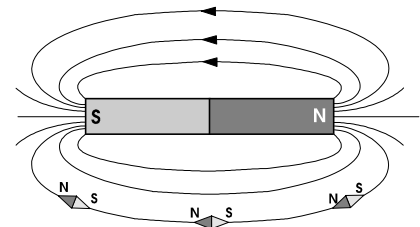


Fig. 1: Magnetic field lines

Right Hand Grip Rule

Magnetic force lines encircle a current in the sense in which you need a corkscrew turn, so that it progresses in the direction of positive current. Around a straight, current-carrying conductor, they form concentric circles, lying in planes, that are perpendicular to the conductor. The direction of the magnetic field is given by the

“Right hand grip rule”!

If one embraces the current-carrying conductor with the right hand such that the thumb points in the (positive) current direction, then the other fingers indicate the positive direction of the magnetic field.

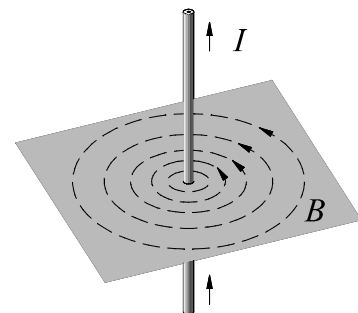


Fig. 2: Field lines of a current-carrying conductor