

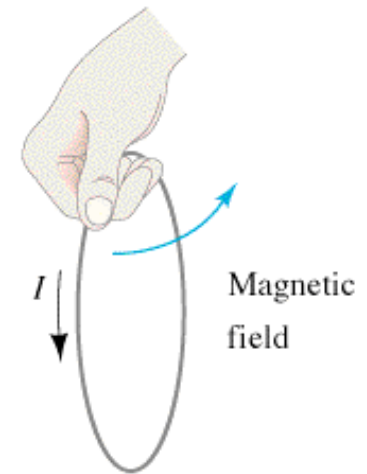
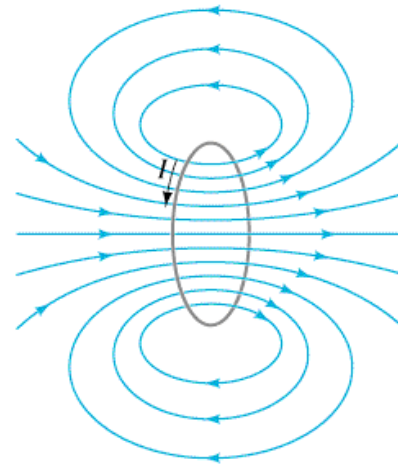
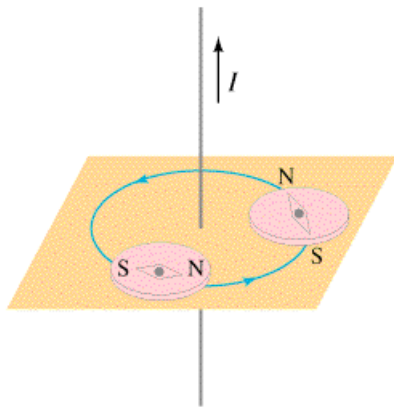
II. Current Produced Magnetism

Current & magnetic field directions:

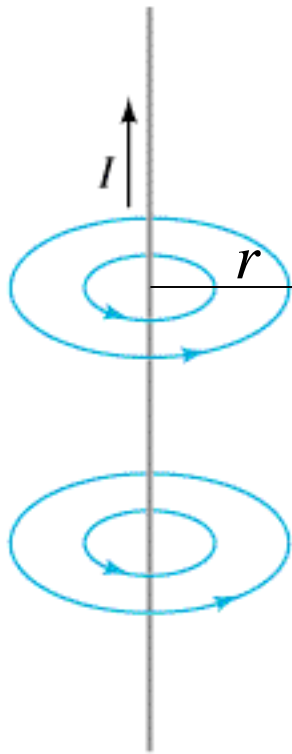
Right-hand rule:

thumb along current

fingers point along magnetic field



B Due to a Long Straight Wire



$$\underline{B = \frac{\mu_0 I}{2\pi r}} \quad \text{Field at } r \text{ from wire}$$

B- tesla (1T=1N/A-m)

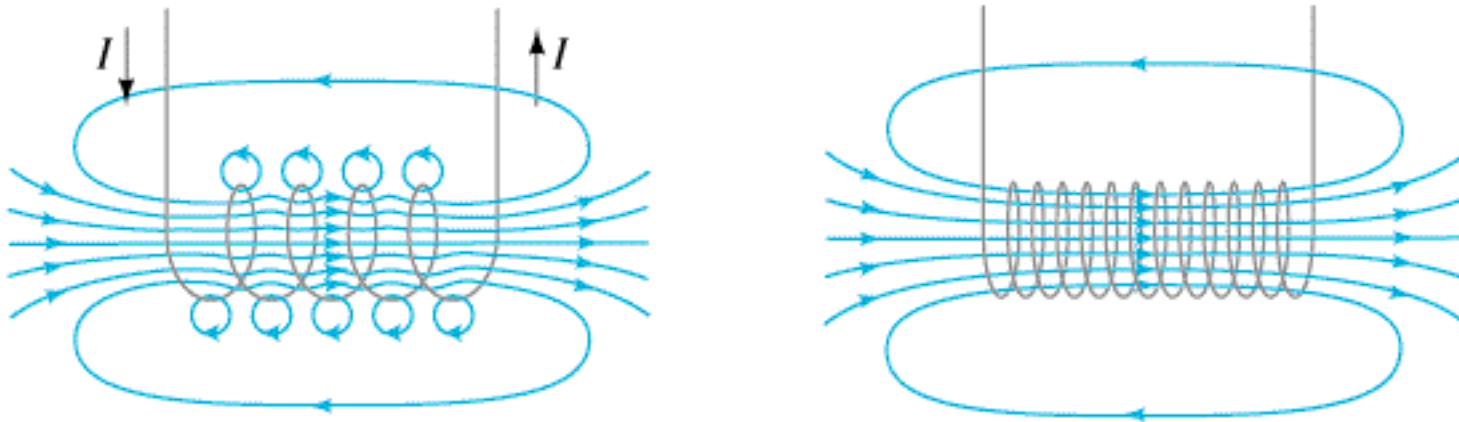
- gauss (1G=10⁻⁴T)

Earth magnetic field: 0.55G

Permeability of free space

$$\mu_0 = 4\pi \times 10^{-7} \text{ T-m/A}$$

B in a Solenoid



$B = \mu_0 n I$ Field inside the solenoid
 $n = N/l$ # of loops N per unit length l