Superb Trucks LP: How to Conduct a Field Experiment

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Magnetic Field

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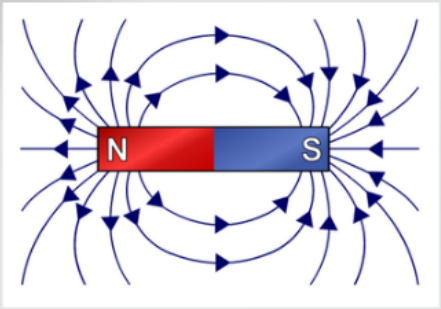
Magnetic fields are produced by electric currents, which can be macroscopic currents in wires, or microscopic currents associated with electrons in atomic orbits.



Magnetic field Source

When we introduced the electric field it was apparent that electric charges were the source of such a field. Experiments in the 19th century showed that the source of a magnetic field was a moving charge, or current.

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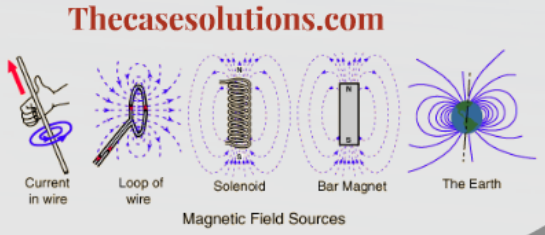

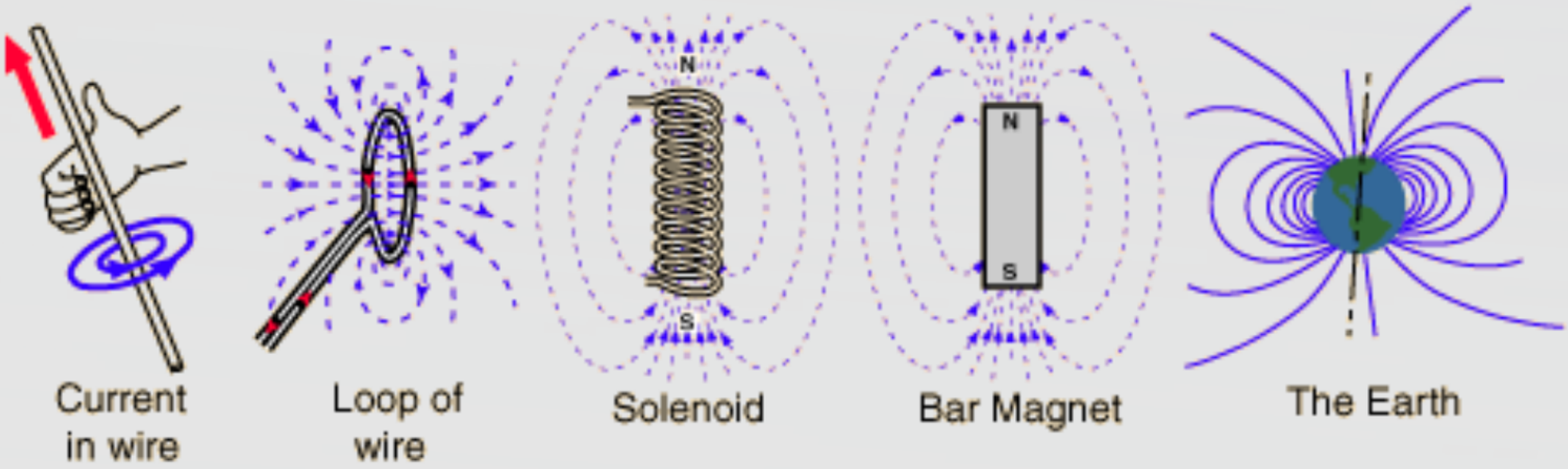

Magnetic Field Sources

Gravitational Field

There is a gravitational field, whose attractive or repulsive force depends on the mass and on the distance between the bodies.

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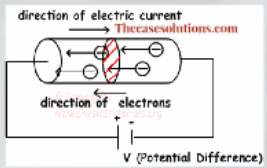
Just as the mass is responsible for the existence of a gravitational field, there is a responsible for the magnetic field which is caused by electric currents



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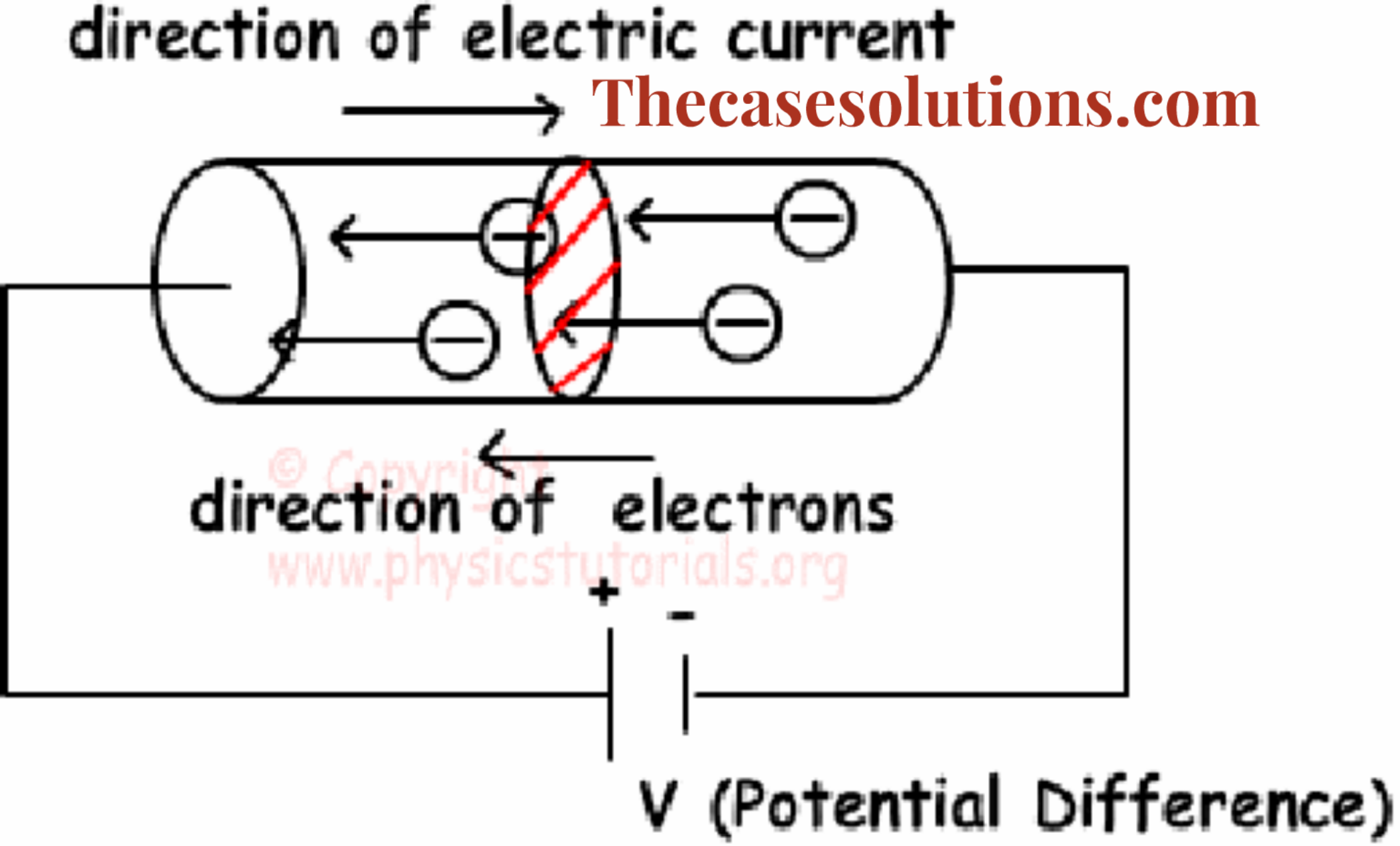
direction of electric current
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direction of electrons
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V (Potential Difference)

Oersted's Experiment

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The above observations of the experiment suggests that a current carrying wire produces a magnetic field around it and the magnetic needle of compass experiences a torque in this magnetic field, so it deflects to align it in the direction of the magnetic field. On reversing the direction of the current in the wire, the direction of the magnetic field reverses and so the direction of deflection of magnetic needle also reverses.

Thus we can say that a current (or moving charge) produces a magnetic field around it. This is called the magnetic effect of current.

Danish scientist Hans Christian Oersted

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Hans Christian Oersted is the first person that found that electric current produced a magnetic field, in XIX century; he discovered that the flow of a current passing through a wire caused the deviation of a compass. He found that the electric current was the source of the magnetic field and that it produced a torque over the compass needle.