Electrical conductor

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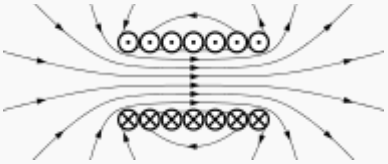
Electromagnetism



- Electricity ·
- Magnetism

Electrostatics[show]

- Electric charge ·
- Static electricity
- Electric field ·
- **Conductor**
- Insulator ·
- Triboelectricity
- Electrostatic discharge ·
- Induction
- Coulomb's law ·
- Gauss's law
- Electric flux / potential energy
- Electric dipole moment
- Polarization density

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- Lenz's law ·
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- Electromagnetic radiation
- Maxwell tensor ·
- Poynting vector
- Liénard–Wiechert potential
- Jefimenko's equations
- Eddy current

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- Electric potential
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- Resistance
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- Series circuit ·
- Parallel circuit
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- Alternating current
- Electromotive force ·
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- Inductance ·
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- Resonant cavities ·
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Covariant formulation[show]

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Scientists[show]

- Ampère ·
- Coulomb ·
- Faraday ·
- Gauss ·
- Heaviside ·
- Henry ·
- Hertz ·
- Lorentz ·

- Maxwell ·
- Tesla ·
- Volta ·
- Weber ·
- Ørsted

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Overhead conductors carry electric power from generating stations to customers.

In physics and electrical engineering, a **conductor** is an object or type of material which permits the flow of electric charges in one or more directions. For example, an insulated wire is an electrical conductor as it can carry electricity along its length (but not across its width).

In metallic conductive materials such as copper or aluminum, the movable charged particles are electrons (see electrical conduction). Positive charges may also be mobile, such as the cationic electrolyte(s) of a battery, or the mobile protons of the proton conductor of a fuel cell. Insulators are non-conducting materials with few mobile charges and which support only insignificant electric currents.

Semiconductor

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For information on devices using semiconductors and their history, see semiconductor device. For other uses, see Semiconductor (disambiguation).

This article **may be too technical for most readers to understand**. Please help improve this article to make it understandable to non-experts, without removing the technical details. The talk page may contain suggestions. *(August 2011)*

A **semiconductor** is a material which has electrical conductivity between that of a conductor such as copper and an insulator such as glass. The conductivity of a semiconductor increases with increasing temperature, behaviour opposite to that of a metal.[1] Semiconductors can display a range of useful properties

Photovoltaics

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Nellis Solar Power Plant at Nellis Air Force Base in the USA. These panels track the sun in one axis.

Photovoltaic SUDI shade is an autonomous and mobile station in France that replenishes energy for electric vehicles using solar energy.

Solar panels on the International Space Station

Photovoltaics (**PV**) is a method of generating electrical power by converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect. Photovoltaic power generation employs solar panels composed of a number of solar cells containing a photovoltaic material. Materials presently used for photovoltaics include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride, and copper indium gallium selenide/sulfide. Due to the increase demand for renewable energy sources, the manufacturing of solar cells and photovoltaic arrays has advanced considerably in recent years.

Solar photovoltaics have long been argued to be a sustainable energy source.[1] By the end of 2011, a total of 67.4 GW had been installed, sufficient to generate 85 TWh/year.[2]And by end of 2012, the 100GW installed capacity milestone was achieved. [3]Solar photovoltaics is now, after hydro and wind power, the third most important renewable energy source in terms of globally installed capacity. More than 100 countries use solar PV. Installations may be ground-mounted (and sometimes integrated with farming and grazing) or built into the roof or walls of a building (either building-integrated photovoltaics or simply rooftop).

Driven by advances in technology and increases in manufacturing