physics2 lecture 1 notes

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1 Electric Charge

1.1 Properties of electric charge

- Electric charge is a coherent physical property of certain subatomic particles that is responsible for electrical and magnetic properties
- Subatomic particles can be charged or uncharged

1.1.1 Particle charge examples:

Positively Charged Particles:

- proton
- atomic nuclei
- positrons

Negatively Charged Particles:

- electron
- muons

Particles without charge:

- neutrons

1.2 Fundamental Unit of electric charge

The fundamental unit of electrical charge is the Colomb.
charge of an electron: e = $1.6 * 10^{-19}$

2 Conductors, insulators, and charge

Conductors: Electrons move freely through the medium. More likely to transfer electrons to other objects.
Insulators: Electrons do not move freely through the medium. Less likely to transfer electrons to other objects.

2.1 Charging by Direct contact

One way to charge an object is two rub two objects made of materials with different conductivity. The more conductive object will transfer electrons to the more conductive one, thus changing the object's total charge.

The drier the climate, the more likely the charge is to transfer.