

October 12, 2011

Physics 131

Prof. E. F. Redish

■ **Theme Music:**

**Moby**  
*Electricity*

■ **Cartoon:**

**Gary Larson**  
*The Far Side*



Late at night, and without permission, Reuben would often enter the nursery and conduct experiments in static electricity.

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## Outline

- Foothold ideas: Electric phenomena
- Model of Matter
  - Conductors and Insulators
  - Polarization

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## Experiencing Electrostatics



[http://phet.colorado.edu/simulations/sims.php?sim=Balloons\\_and\\_Static\\_Electricity](http://phet.colorado.edu/simulations/sims.php?sim=Balloons_and_Static_Electricity)



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A key player in the development of the theory of electricity.



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## Model: Charge

### A hidden property of matter



- Matter is made up of two kinds of electric matter (positive and negative) that cancel when they are together and hid matter's electrical nature.
- Matter with an equal balance is called neutral.
- Like charges repel, unlike charges attract.

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## Conductors and Insulators



- Insulators
  - In some matter, the charges they contain are bound and cannot move around freely.
  - Excess charge put onto this kind of matter tends to just sit there.
- Conductors
  - In some matter, charges in it can move around throughout the object.
  - Excess charge put onto this kind of matter redistributes itself or flows off (if there is a conducting path to ground).
- Unbalanced charges attract neutral matter (polarization)

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