John Travoltage

Tips for Teachers

In ***John Travoltage*** students explore concepts of static electricity including transfer of charge, repulsion, and grounding.

DRAG John's foot across the carpet to accumulate static electricity

MOVE John's finger closer to the door knob to discharge

TURN off the sound

Model Simplifications

- The electrons are represented in a macroscopic view, and each depicted electron represents billions of negative charges in the underlying model.
- John can get a shock from the door knob at a distance much larger than is typically possible. This was done to demonstrate that a larger charge is needed to cause the dielectric breakdown of air at larger distances from the door knob.
- For visualization purposes, the time for discharge has been made longer than in reality.
- Due to the long time for discharge depicted in the simulation, a continuous discharge is possible if John's foot is continually rubbed against the carpet. This feature is useful for explaining devices such as a Van de Graaff generator, though it is divergent from the reality of a static electric shock from a door knob.

Suggestions for Use

Sample Challenge Prompts

- Predict what will happen to John if he drags his foot on the carpet. What happens when his finger gets close to the door knob?
- Observe discharges with John's arm in several different positions. Explain how arm location and charge accumulation affect discharge.

Rouinfar & Paul, March 2016

- How do charging and discharging compare? How charging can go unnoticed, but discharging is often accompanied by a shock? Explain.
- Try building up charges while John's finger is touching the doorknob. Explain your observations.
- Compare John Travoltage to Balloons and Static Electricity. How does bringing a charged a balloon close to the wall compare to rubbing John's foot on the carpet and brining his finger close to the door knob? How do these situations differ?

See all published activities for John Travoltage here.
For more tips on using PhET sims with your students, see Tips for Using PhET.