

Simulation: Electric Field Hockey

Open the [Phet simulation: Electric Field Hockey](#). Turn on the field. Add some positive or negative charges and see how the positive puck moves.

1. What does a positive charge do when it passes over a field arrow that is pointing the same direction as the charge's motion?
2. How can you cause the positive puck to decelerate?
3. This simulation represents electric field with arrows, rather than lines.
 - a. How do traditional electric field line drawings indicate a strong electric field?
 - b. How does this simulation indicate a strong electric field?
4. Enable "trace." When you set up a complicated array of charges on the hockey rink, the arrows seem to point out a path for the positive charge. In the beginning, the charge follows the path, but then it veers off.
 - a. Does the charge veer off to the outside of the turn or to the inside?
 - b. Why does it veer off? Why doesn't the charge exactly follow the apparent path indicated by the arrows?
 - c. Which would you expect to veer off the path more severely, a more massive object or a less massive object – or neither (assuming the object charge is equal in both cases)? Try it. What happens, and why do you think it happens?
5. Optional: Try level 2 until you score a goal. How many tries did it take?