

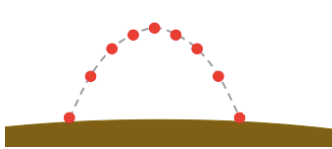
Electric Field Concept Lesson Notes

Focus Questions:

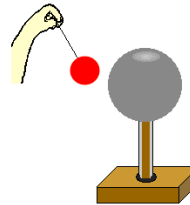
- What is meant by the term electric field?
- How can the concept of an electric field be used to explain charge interactions?

Action-at-a-Distance

Action-at-a-distance forces are often referred to as **non-contact forces** or **field forces**.



Earth exerts a force upon a projectile even when it is not in physical contact with the projectile.



A charged sphere exerts a force upon a balloon even when it is not in physical contact with the

The Logic Behind the Electric Field Concept

- A charged object alters the electrical properties of the space that surrounds it.
- Other objects that are in that space experience the effect of that charge.
- The charged object has created an **electric field** - an alteration of the surrounding space.
- Other objects that enter that space feel the effects of that space and interact differently because of the electrical field that has been established.

The Stinky Field Analogy

- A *poopy* diaper is known to alter the olfactory properties of the surrounding space. It creates a **stinky field** that permeates the surrounding space.
- Without ever contacting the diaper, every nose in the room knows that the space has been altered by the presence of a **stinky field**.
- And the strength of that **stinky field** depends on how close you get to its source (the diaper) and the amount of stink in that source.

Stinky Field vs. Electric Field

- A nose is used to detect a stinky field. Another charged object (*test charge*) is used to detect an electric field.
- The detector is interacting with the field ... not with the source.
- The strength of the field varies inversely with the distance from the source of the field.
- The strength of the field depends upon the properties of the source - the amount of stink or charge on the source.