Experiment EB

• Electrical Breakdown
  – You have seen many examples
    • Lightning!
    • Sparks (e.g. Faraday Cage Demo!)
    • Fluorescent tubes
  – Study in more detail
  – Reminder: Ionization

Ionization

• Electrons and nucleus bound together
• Electrons stuck in potential well of nucleus
• Need energy $DU$ to jump out of well
• How to provide this energy?
Impact Ionization

![Image of impact ionization](image)

- Define $V_{ion} = DU/q$
- Ionization potential

Magnets

- Permanent Magnets
- Two poles (called ‘north’ and ‘south’)
- Dipole
- Let’s look at some properties
**Magnetic Force**

- New Force between Magnets
- Unlike Poles attract

- ![Diagram showing attraction between unlike poles](image)

- Like Poles repel

- ![Diagram showing repulsion between like poles](image)

**Magnetic Force**

- Magnets also attract non-magnets!

- ![Diagram showing attraction](image)

**Magnet and Current**

- Force on wire if $I \neq 0$
- Direction of Force depends on Sign of $I$
- Force perpendicular to $I$

- ![Diagram showing force on wire](image)

**Current and Current**

- Attraction

- ![Diagram showing attraction](image)

- Repulsion

- ![Diagram showing repulsion](image)