CHAPTER OVERVIEW

18: Electric potential

Learning Objectives

- Understand the difference between electrical potential energy and electric potential.
- Understand how to calculate stored electrostatic potential energy.
- Understand how to calculate the electric potential difference between two points near a point charge or a distribution of charges.
- Understand how to use electric potential to determine electrical potential energy.
- Understand how to determine electric potential from electric field.
- Understand how to determine electric field from electric potential.
- Understand how to model a capacitor.

In this chapter, we develop the concept of electric potential energy and electric potential. This will allow us to describe the motion of charges using energy instead of forces. We will also introduce the capacitor, a common circuit component that is used to store charge.

prelude

A proton and an electron are both accelerated by the 110 V electric potential difference from your outlet. Which particle has the highest speed?

A. The proton.
B. The electron.
C. They will have the same speed, since they were accelerated by the same potential difference.