

Activity 4 Overview

This activity shows the students that a primary part of an atom is the electrons. The second part of the activity helps them to understand that the nucleus is extremely small and very dense. Further investigation shows them that the protons are located in the nucleus and that the electron is located in the exterior of the atom.

Safety Requirements

In the margins of the student pages you will find safety warnings that should be rigorously followed.

- The demonstration must be secure. Prevent anyone from coming in contact with the high-voltage source.

Preparation and Materials Needed

Preparation

Make certain that the cathode-ray tube and power supply are secure and are properly grounded. This apparatus should be set up prior to the activity.

Time Requirements

You should plan on at least half of a class period for the demonstrations using electron-discharge tubes and answering questions during the demonstration. The battleship problem may force you to use part of a second lab period to complete this activity.

Materials/Chemicals needed

- Cathode-ray tube
- High-voltage power supply to power cathode-ray tube
- Horseshoe magnet
- Paper with 8×10 grid (at least two per student)