

Physics Unit 6 Standards-Based Worksheet

District of Columbia Public Schools – Science

STANDARD

P.8.4. Describe Niels Bohr's model of the atom, its electron arrangement, and the correlation with the hydrogen spectrum.

Concepts:

- Bohr model
- atom
- electron arrangement
- hydrogen spectrum

Skills:

- describe

Big Ideas:

- Bohr showed that only certain atomic orbits are allowed for electrons.
- The energy difference of an electron jump is a single quantum of energy, called a photon.
- Bohr's model cannot account for most larger atoms or a magnetic field's effect on the electrons.

Essential Questions:

- How can electrons be located?
- Why does the nuclear force overcome the electrostatic force?
- Why do fundamental forces interact inside the atom?
- What technologies have used radioactivity and the ability of atoms to take in or give off energy?
- How does radioactivity explain the inner workings of the atom?

Engaging Scenario:

As an astronomer your job is to analyze recent data from the Hubble Space Telescope about local stars. From a detailed examination of the spectral data, you need to figure out how much hydrogen can be found in each star. By examining the absorption spectra from several different stars and comparing with the spectra from an unknown star, you can propose a way to determine the age and composition of each star you find.