

Act 2

Consider an electron around a nucleus that has two protons, like an ionized Helium atom.

1. Compare the “effective Bohr radius” $a_{0,\text{He}}$ with the usual Bohr radius for hydrogen, a_0 :

a. $a_{0,\text{He}} > a_0$

b. $a_{0,\text{He}} = a_0$

c. $a_{0,\text{He}} < a_0$

$$r \approx \frac{\hbar^2}{m\kappa e^2} \equiv a_0 = 0.053 \text{ nm}$$

The “Bohr radius”
of the H atom.

2. What is the ratio of ground state energies $E_{0,\text{He}}/E_{0,\text{H}}$?

a. $E_{0,\text{He}}/E_{0,\text{H}} = 1$

b. $E_{0,\text{He}}/E_{0,\text{H}} = 2$

c. $E_{0,\text{He}}/E_{0,\text{H}} = 4$