Quiz 1.1 – Origins of Quantum Mechanics

Name: _____

Early QM Experiments

Sodium metal has a work function of $2.28\ eV$. If sodium metal is irradiated with $450\ nm$ light, what will be the kinetic energy of the ejected photoelectrons?

Find the velocity of the ejected photoelectrons in the above example?

Find the de Broglie wavelength of the ejected photoelectrons in the above example?

Bohr Model

The "Bohr radius" is $529\ pm$. The Bohr model has the electrons revolving around the nucleus in an orbit at that radius. Assuming that the ground state must have a single wavelength equal to the orbital circumference, fine the velocity of the electron in its orbit.

Find the kinetic energy of the electron in the ground state of the Bohr model, and compare it to the true hydrogen atom ground state energy ($-2.18 \times 10^{-18} J$)