ABSTRACT

This research intends to compile a program while simulating the hydrogen atom and the state of orbital separation due to the Zeeman effect with the python programming language. The creation of the program uses several libraries from python that will later be used as a tool to calculate each function needed and display the visuals of the graph. The test was carried out by comparing the results rendered from the program and then comparing it with the textbook literature and also the results of the experiment. The results of the test show a match between the visual simulation of the program and also the results of the experiment or textbook literature. Accuracy shows 100% value in the aspects of wavefunction shape, number of nodes, and maximum probability location due to the help of calculations from the python library. In terms of magnitude and absolute value, they cannot be compared because they use different Bohr radius scales.

Keywords: Hydrogen atom, normal zeeman effect, perturbation theory, schrodinger equation, python.