Student handout

- Physics Content Learning Objectives
    1. Explain the consequences of energy and angular momentum conservation in a system of two particles interacting via a central force, in both classical and quantum systems.
    2. Use effective potential diagrams to determine properties of classical orbits.
    3. Solve for the quantum properties of a particle confined to a ring, rigid rotor, and the hydrogen atom in several different representations.
    4. Relate the state of a quantum system (ring, rigid rotor, hydrogen atom) to graphs of a wave function.
    5. Apply Schrödinger time dependence to central force systems (ring, rigid rotor, H atom).
- Mathmatics Content Learning Objectives
    1. Solve ordinary differential equations using power series methods.
    2. Use eigen expansions as an orthonormal basis.
    3. Solve the initial value problem for partial differential equations with more than one spatial variable.
- Professional Learning Objectives
    1. Communicate scientific ideas in writing and with other representations (e.g. graphs, code), using good scientific language and practices, concisely and without ambiguity.
    2. Learn to work with and communicate productively and respectfully with peers and collaborators of different backgrounds.
    3. Cite the information and ideas obtained from or with others in a clear and professional manner.
    4. Communicate in a timely and professional manner with others in the work environment when things don't go to plan.