

Things You Should Know

Chapter 6: Hydrogen Atom

Be able to define the following terms (using words, equations, or figures):

Atomic Orbital
Radial equation

Zeeman effect

Concepts and Exercises:

1. Know how to apply the technique of the separation of variables to solve simple differential equations. Know the special properties of the energy eigenvalues and wave functions when the Hamiltonian is separable.
2. Be familiar with the general procedure of solving differential equations by the power series method. You don't need to reproduce the solution, but be able to describe the steps.
3. Have a good qualitative understanding of the energies and wave functions of the hydrogen atom. This includes radial dependence and angular dependence of the wave functions. Understand the significance of the quantum numbers n , l , and m . Understand how to use the Rydberg formula to assign atomic spectra.
4. Be able to do all the exercises