

PHY140Y

Spring Term – Week 10 Discussion

22 March, 1999

1. (a) Classify all the total angular momentum substates for a hydrogen atom in an $l = 2$ orbital angular momentum state.
(b) How many different quantum states are there?
2. Suppose you put five electrons into an infinite 1-D square well of length 10 nm.
 - (a) What is the total energy of the ground state configuration?
 - (b) What is the wave function for ground state. Note that there is still only one entire wave function that describes this system, but it is now a function of the coordinates of all five electrons.
 - (c) Discuss the ways in which this system can be excited? What is the lowest energy excited state?