



- ### Comment on Homework Grading
- Grader is spending more time than contract covers!
 - has requested reduced number of sets
 - Grader will grade 10 problems from HW sets
 - I will assign the HW problems that will be graded
 - I will provide the solutions to all HW problems
 - HW set #3 is not affected (only has 9 problems)
 - HW set #4 will be reduced from 13 to 10 problems
 - Let's try that and see how things evolve
 - Questions?

Physics 390: Homework set #4

Due Wednesday March 8, 2006

Reading: Tipler & Llewellyn, Chapter 7

Questions:

- (1.) The 2s electron has a greater probability to be close to the nucleus than the 2p electron, and also a greater probability to be farther away (see Figure 7-10a). Make an analogy to classical orbits to explain how this is possible.
2. Spherical harmonics, which are eigenfunctions of angular momentum, contain the imaginary number $i = \sqrt{-1}$ (see Table 7-1). Is it all right for a function that is supposed to be associated with observable quantities to contain imaginary numbers? Why or why not?
3. Consider a penny spinning about an axis through its center at the rate of a few revolutions per second. Estimate the value of l .

Problems: 1, 13, (15) 23, 31, 36, 42, (45,) 68, 75

Note: Problems in parentheses are optional and will not be graded!