

PHY 251 Fall 2009: homework problem set 8, due in the PHY 251 drop box in room A-129 by noon on Friday, Nov. 13.

1. Serway 8.7
2. Write out the full wavefunction ψ for the $2p$ state of hydrogen with $L_z = -\hbar$. What's the Bohr model energy for this state?
3. Calculate numerical values for the net angular momentum, and for all possible \hat{z} axis angular momenta, for the $2p$ and $4d$ states of hydrogen.
4. Serway 8.19
5. Calculate $\langle r \rangle$, $\langle r^2 \rangle$, and σ_r for the $2s$ state of hydrogen.
6. Serway 8.23
7. Serway 8.26
8. Serway 9.4
9. Serway 9.11
10. Serway 9.12
11. Serway 9.21
12. Serway 9.22