Reading: I plan to finish perturbation theory this week; please finish reading chapter 6 in the text.

Reminder: The midterm is scheduled for Thursday October 15 — one week from this coming Thursday. Please remember that Monday October 12 is a holiday and there is a Monday class schedule on Tuesday October 13. There will be no lecture on October 13th and no homework due during the midterm week.

1. Griffiths 6.20. This problem asks for a numerical estimate of weak and strong Zeeman field. Also, please compare your answers with the magnetic field of the Earth.

2. Griffiths 6.21. The problem asks for the energy-level diagram for the weak-field Zeeman effect.

3. Griffiths 6.29. The problem asks for the correction to the ground state energy of hydrogen due to the finite size of the nucleus.

4. A two-part problem: (i) Griffiths 6.32(a) — prove the Feynman-Hellmann theorem and (ii) Griffiths 6.33. In the latter you are asked to compute $\langle 1/r \rangle$ and $\langle 1/r^2 \rangle$ for the hydrogen atom. Please note that the angle brackets mean an average with respect to the quantum states labeled by $nlm$. 