Lab Test #11
The Photo Electric Affect:
Lab T/A Elton Freeman

You will only have two problems to turn in for this week. I want you to use the hints that I gave you in class and think about the problems on the final. Most of the more complex problems are covered in chapter 39 of page 1498 in your text. Here you will find the uncertainty for the momentum and position and for the uncertainty in energy and time will be given on page 1499. Make sure you are familiar with example 39.3 in your text, it will have a similar meaning for the question of proof if the electron or alpha particle exists in the nucleus. Final is not due until May 1st.

For your test on the photoelectric affect look over these two questions. They should not take you very long!

#1. Look at example 38.2 in your text, yound and freedman, instead of using 1.25 volts as the stopping potential $V_o$, use instead the following value $V_o = 2.00$ volts. Again, from this example what is the maximum velocity that we expect for the photo-electron? Make sure you go through the same steps, include all details!
What does the author mean when we consider relativistic affects? I want you to do this by estimating the boost factor, called $\beta = v/c$. This is a measure of how fast a reference is moving to the speed of light. Then I want you to give me the value of gamma $= \gamma$. What do you conclude for values of gamma that are equal to one, or a thousand. Under which conditions would we have to use a correction factor of the speed, so it doesn’t violate the speed of light?

#2. Do problem number 3 on page 368.

Don’t forget to read ahead in uncertainty, usually if you read ahead and think about the problem you will normally get and idea of how to work it out. This usually happens when you are not studying! Good Luck on the test!