**Physics 235L**
Spring 2008

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**Office Hours**: Mon 1-2, Tues 10-11, Wed 1-2, Fri 2-3 in MASH room

**Laboratory Manual**: Download from my home page. (It's Free)

**Grading**:

Weekly Reports (4 Experiment Reports) 100%

**Weekly Reports**: The format of the laboratory report will vary from experiment to experiment, and will be due one week after the experiment is completed. Every student will turn in his/her own report. The contents of the laboratory report will be stated in the Laboratory Manual.

In general the laboratory report should consist of a few pages containing the most important aspects of the experiment. These will include:

a) All data (units and an estimate of the uncertainty when appropriate)
b) Any graphs that are required
c) Any calculations that are required
d) Answers to any questions that are assigned

## Outline of the Experiments

1. **Electron Interference Effects** (1 week)

We will perform two short experiments that demonstrate quantum effects with electrons: electron diffraction and the Frank-Hertz experiment. Since there is only one set-up for each experiment, we will share our data.

2. **Atomic Spectroscopy** (3 weeks)

We will examine the spectra from different sources of visible radiation which include: incandescant bulbs, hydrogen, helium, various light emitting diodes, flourescent bulbs, and a diode laser.

3. **Radioactive Decay** (2 weeks)

We will learn how to use the Geiger Counter and then take data of the time between the detection of ionizing radiation. We will investigate the probability of these times, measure the dead time of the Geiger tube and the half-life of a short-lived isotope.

4. **X-ray and Gamma spectra** (2 weeks)

After learning how to use the NaI gamma detector, we will identify an unknown isotope, investigate Compton scattering and measure the characteristic x-rays of 4 nuclei.