

## Fall Term 2009-2010

**Project Description**

Due on Nov 4, 2009 by 5pm

1. **Transmission Curves:** During the week of Nov 9-13, 2009, when Anneila is gone, you will measure the transmission curves of some broad-pass filters, which were used on the Robinson rooftop observatory, using a spectroscope setup that Prof George Rossman from GPS has been good to allow us to use. This will give you an idea of how filters work, how they affect the images that are obtained using them etc.

Before we use the spectroscope, I would like you to do some reading about spectroscopes, spectroscopy, transmittance, major telescopes that do spectroscopy, the photometric system and some of the popular ones in use today (do this before your turn in the lab). Then right up a 1-2 page basic explanation about all of these to show that you understand the concepts. And no pasting together Wikipedia articles for your report.

There are 12 students in class right now. You will be divided into 3 groups with 4 students each. Each group will be given 5 filters that they have to measure the transmission curves for. You will then plot these curves using the data taken, say what part of the spectrum that is and try to match them with the generally used filters. Also find out the wavelength ranges of the major filters used on major telescopes like Hubble telescope, Spitzer, SDSS, 2MASS etc and see if any of the filters you measured had similar ranges. What are some of the major atomic/molecular lines that are observable using the filters you just measured the transmission curves for? What spectral types do these correspond to? (Due on Nov 23, 2009).

2. **Star Gazing:** The second part of this project is the fun part. During the same week, you guys will get to go up on the Cahill rooftop and use an 8 inch to star-gaze (yay!!). We will do this on 2 nights, half the class on each of the nights. What you need to do is look up bright stars, clusters, nebulae, etc that will be visible during that night in Pasadena. There are many sources of such information online that will help you find objects that are easily visible through an 8 inch from a city like Pasadena. Find at least 5 such objects and list them with their right ascension, declination, local altitude and azimuths. I will check if we can indeed observe them. If not, then we will have some back up objects to look at. A good site to look at maybe <http://www.skyandtelescope.com>. (Due on Nov 4, 2009)