Astronomy A305 - Modern Observational Techniques  
Lab Assignment 13/14

Observing with the WIYN 0.9-m Telescope & Data Analysis

**Goal:** This lab is in two parts (Labs 13 & 14). For Lab 13, apply the material covered in A305 and your knowledge of astronomy to develop a detailed observing sequence for the 0.9-m telescope. For Lab 14, continue to develop your IRAF and analysis skills to complete the observing project and prepare a formal lab report. Completion of Lab 14 is contingent on our actually obtaining the observations.

**What to hand in - Lab 13:**
- A science justification for taking the proposed observations.
- A description of what calibrations data are needed.
- A list of targets to be observed, including coordinates, filters, and exposure times.
- A detailed observing plan covering 2-4 hours of telescope time.
- A discussion of how the data will be reduced and analyzed.

An appropriate length is 1-2 typed pages, single spaced, 12-point font, with 1" margins, plus figures and tables. You may work with partners to develop the ideas for the observations, but your analysis and writeup should be entirely your own. Be sure to review the general lab instructions on the "lab options" sheet.

**What to hand in - Lab 14:** Submit a complete lab report including:
- An introduction describing the science goals of the project
- A description of the observing procedure and observations, including a log.
- A description of your reduction and analysis procedures, including error analysis.
- A discussion of your observations and results, including any figures and tables
- A conclusion summarizing the conclusions of your research.

An appropriate length is 3-5 typed pages, single spaced, 12-point font, with 1" margins, plus figures and tables. You may work with partners to obtain the data for the lab, but your analysis and writeup should be entirely your own. Be sure to review the general lab instructions on the "lab options" sheet.

**Observing on the WIYN 0.9-m Telescope**  
On Sept. 18-23, students have the opportunity to request observations to be taken with the CCD imager on the WIYN 0.9-m telescope at Kitt Peak during the second half of the night. Examples of an observing program might include a series of images for monitoring a variable star, images of a cluster to produce a color-magnitude diagram, images of a galaxy to make a pretty picture or determine isophotes, or to identify star-forming regions, or many other opportunities. Observing sequences should be limited to about 2-4 hours of telescope time.

Information on the telescope and imager are available on the web at:
http://www.noao.edu/0.9m/. The instrument available is the S2KB CCD, with 2048x2048 pixels. An exposure time calculator is available at http://www.noao.edu/gateway/ccdtime/.

We will be able to participate in the observations via remote observing from the Remote Observing Center in SW 403. Our connection will be by IPVideo, and the data will be made available promptly on the SW246 cluster for your evaluation.