Lab 5. The Sun

Equipment
- Good weather & a telescope (8" or larger)
- White cardboard to project the image of the sun; Ruler
- A solar filter and an H-alpha filter
- A simple light-meter or photon counter (to measure relative fluxes)
- Optional: Sun Glasses; Solar-Eclipse-Glasses

Lab Setup
- This lab really does take some preparation and testing out the equipment prior to the lab. All telescopes should be ready to go once the lab starts.
- It is easiest to set up two telescopes if you have them – one to be used for projecting the Sun onto a cardboard, and another one for direct viewing. Have a stronger eyepiece and the H-alpha filter ready to be put on after the students have observed the whole Sun through the telescope.
- Please make sure solar filter is mounted on the direct-viewing telescope before you let the students to the telescopes.

Mini Lecture prior to Lab
- This lab can be done without any previous knowledge about the Sun, and no big introduction is needed – in fact it can be done on the spot, should it be a nice day (as long as you have an hour of free time to set up the telescopes)
- You can give several mini-lectures about the Sun while students are looking through the telescope.

General Procedure
- Let all students look through the telescope, one after the other
- Let the entire class (or groups of ten) look at the projected cardboard image, have several students measure the diameters of the sun and of sun spots; do the same with flux measurements
- You can give several mini-lectures about the Sun while students are looking through the telescope.
- You could also bring the darkened solar-eclipse-glasses. Sometimes you can Sunspots…

Notes & Suggestions
- This is a less work-intensive, easier, and faster lab than the others (and quite some fun!). If you like, you can require the students to write a "Formal Report".
- Ask the students to bring sun glasses
- Make sure students do not look though the telescope without a filter.

General Concepts & What students might get out of this Lab
- That the Sun is "active" and what happens on the surface of the Sun and why
- A sense of the size of the Sun and of Sun Spots – in relation to the Earth
- Importance of back ground measurements; importance of taking means

Scientific Methodologies
- How "just looking" at the Sun can provide so much information
- The challenge is to describe and draw what they see, and then come up with conclusions from that.
- The need for a deeper understanding of the concepts – like in the case of limb darkening, where the surface temperature of the Sun is the same all over the Sun, yet we "observe" an apparent decrease in temperature when looking at the limb.