

Sunspot Lab

Due August 26, 2002 (6 pm)

Basic Goal:

- To observe sunspots, flares, and surface granularity without going blind.

Overview:

This lab is very simple. Your three tasks are to

- Go to the telescope that is set up next to the observatory and observe the Sun. Use the H-alpha filter to see flares.
- Compare your sketch of the Sun with images from the SOHO satellite.
- Answer a few general questions about sunspots and flares.

You'll be using a telescope that we've set up in one of the sheds next the observatory. Sign-up sheets are on our web site.

You'll also want to get a space picture of the Sun for comparison with your sketch. Recommended source: the SOHO home page.

1. Go to <http://sohowww.nascom.nasa.gov/>
2. Click on "Latest Images" on the left side of the page.
3. The "Images by Date" column (middle of the page) has recent images. Click on the date you're interested in.
4. Click on "SOHO MDI: Intensitygram, full disk,..." to get a space-based image showing sunspots. Save this image and include with your write-up.
5. For images from earlier dates, click "Earlier Dates" in the "Images by Date" column.
6. Enter the earlier date as a single long number. Example: August 2, 2002 would be entered as "20020802". Click the "Submit Request" button.
7. Click on "SOHO MDI: Intensitygram, full disk,..." to get a space-based image showing sunspots. Save this image and include with your write-up.

Finally, some questions. Answer these and you're done! The answers are on the web at <http://science.nasa.gov/ssl/pad/solar/sunspots.htm>.

1. What is the temperature of the solar surface? What is the temperature of a sunspot?
2. What keeps the sunspots from being overwhelmed by hotter material?
3. How long is the sunspot cycle?
4. Are we currently in a solar maximum?
5. How is the sunspot cycle relevant to us on the Earth?
6. What causes flares and prominences?
7. Estimate the size of a flare that you've sketched.
8. Estimate the rotation rate of the Sun's surface.