

## **Paige Bailey**

Laboratory for Atmospheric and Space Physics  
University of Colorado - Boulder

Mentors: Greg Holsclaw, Martin Snow

Title: Possible correlation between SOLSTICE reflectance measurements in the UV due to polarization effects of lunar surfaces

### Abstract:

It is known that sunlight reflected from the lunar surface is partially polarized. Measurements of the Moon by partially polarizing optical remote sensing instruments may therefore depend on the relative orientation of the instrument axis with the scattering plane. There are circumstances when polarizing effects could become significant, such as when instruments are simultaneously significantly polarizing, at short wavelengths (toward UV), and at phase angles  $\sim 100$  degrees, when the degree of polarization of light reflected from a surface peaks. At phase angles larger than 100 degrees, polarization decreases. The SOLar-STellar Irradiance Comparison Experiment (SOLSTICE) on the SOLar Radiation and Climate Experiment (SORCE) has been observing the Moon in the ultraviolet (115 – 300 nm) over a wide range of phase angles (0 to  $\sim 170^\circ$ ) on a routine basis since June 2006. Though we have observed a small distribution of reflectance measurements at any one phase angle, which we believe is due to polarization effects, further conclusions cannot be reliably drawn due to the large amount of noise in the data.