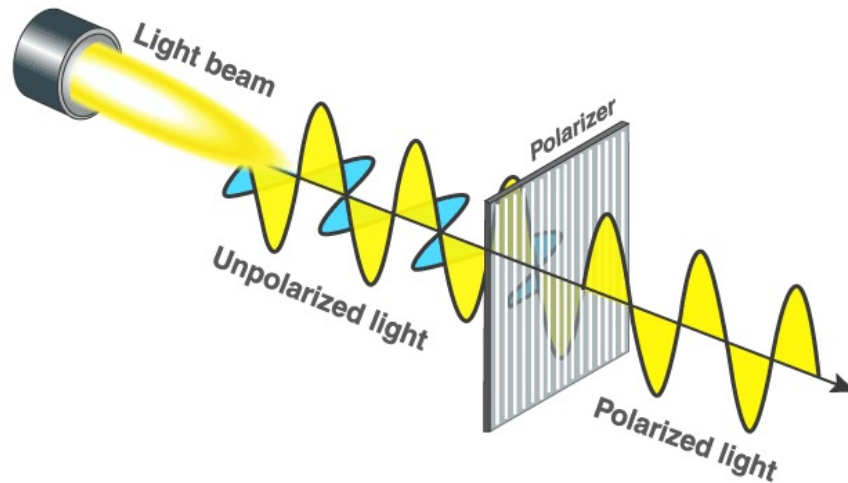


Progress Update: Week 4

Elyse Duley

Recap

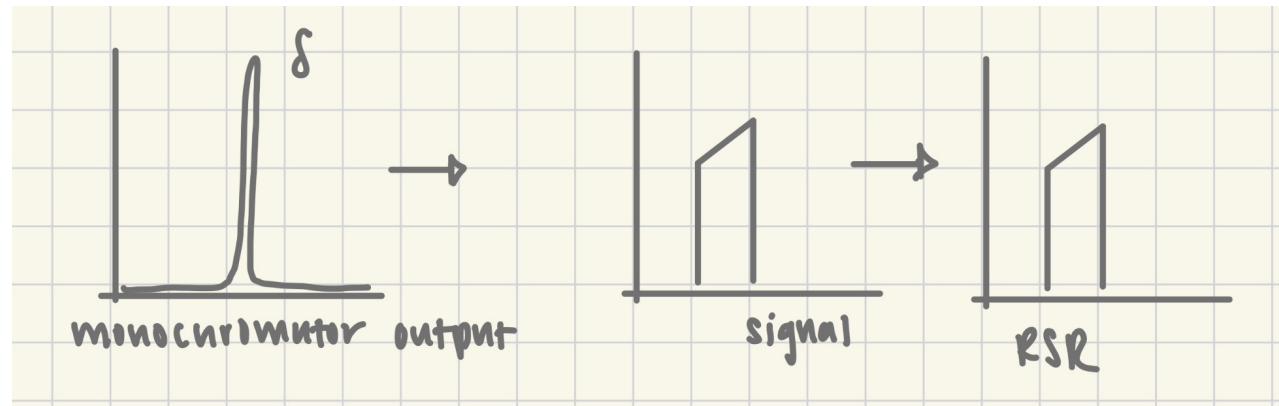
- Polarization occurs when a polarizing material allows oscillating electric field lines through in a specific direction
- My goal is to take polarized photos of the Moon and see how filters in the visible and near-IR change the degree of polarization



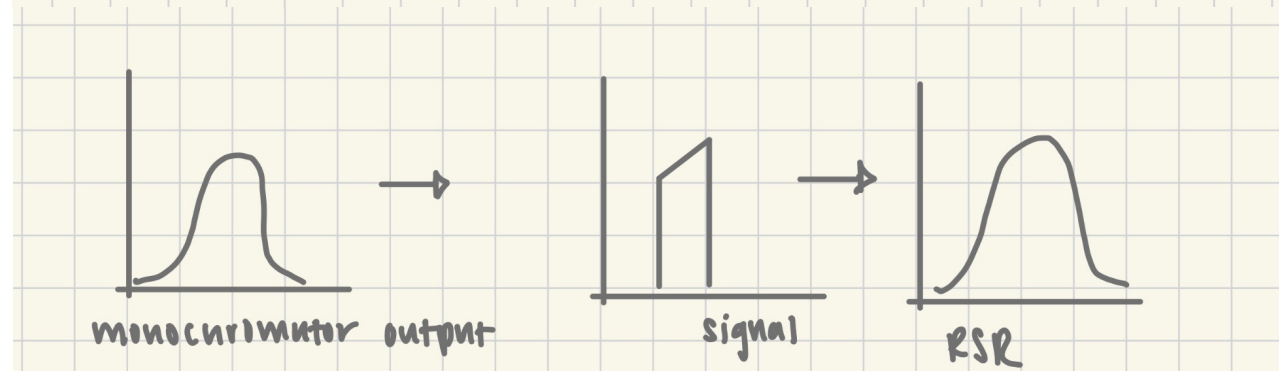
<https://byjus.com/physics/polarization-of-light/>

RSR Curve Update

What we want to happen:



What happened:



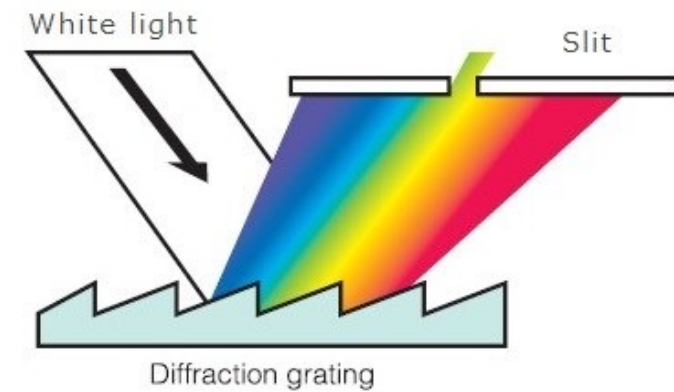
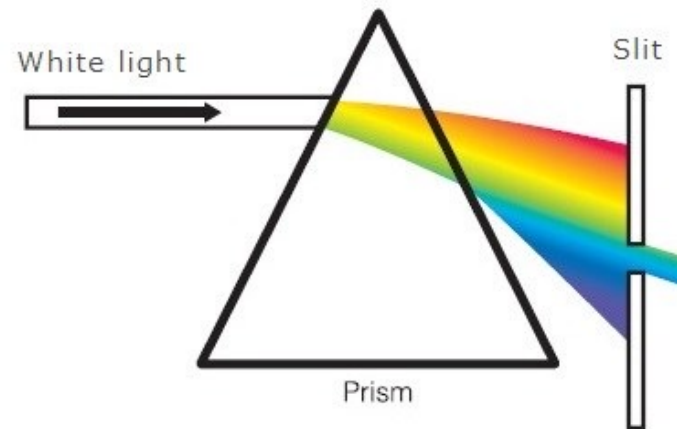
Monochromator Retuning

In order to correct the FWHM of the monochromator peak, we had to retune it to 100 microns

Did a power sweep to get power output

Plan to remake RSR curves next week

https://www.ssi.shimadzu.com/service-support/technical-support/analysis-basics/fundamentals-uv/single_double.html



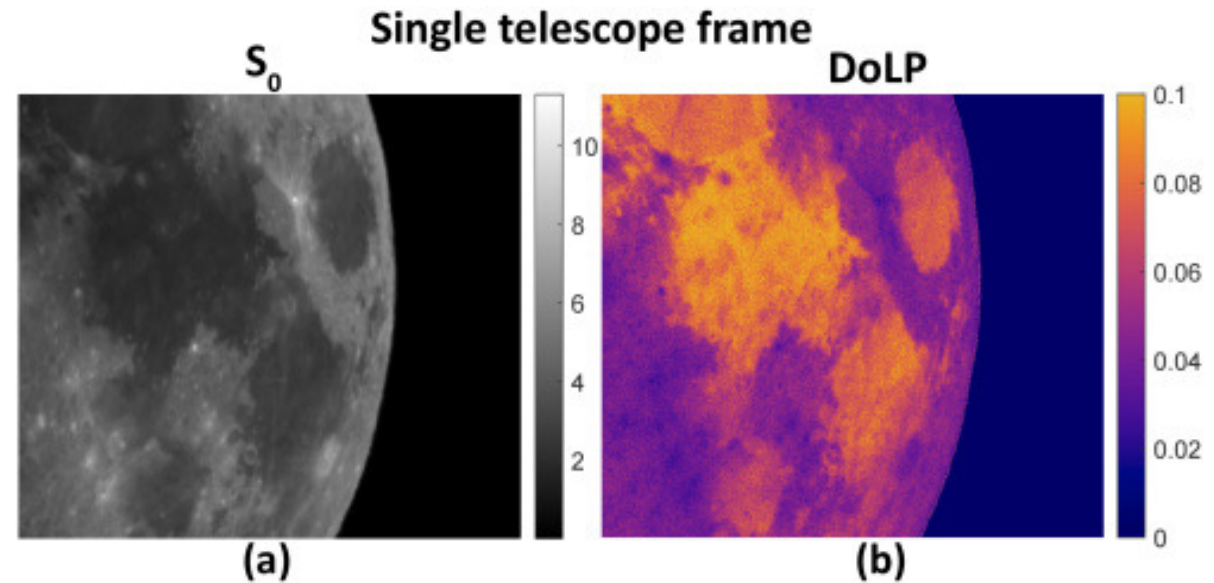
Began Recording Data

- In the last two weeks, I began observing
- I have been observing on top of Norm
- So far, the Moon has been up from around ten pm to midnight
- Next week it will be up from around two to five am
- Taking 3 pictures in broadband then a dark then switching out the filter and repeating the process



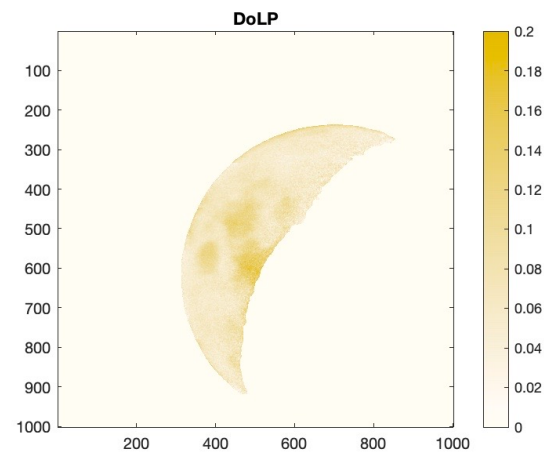
Data Processing

- Created DoLP colormaps for each filter
- Important things to note:
 - Color bars have the same axis
 - Plots are a position of the Moon
 - Each picture of the Moon was taken with a different filter so it is not the same

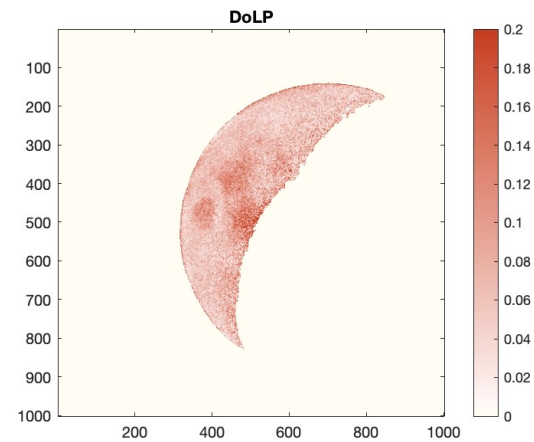


<https://opg.optica.org/oe/fulltext.cfm?uri=oe-32-14-24275>

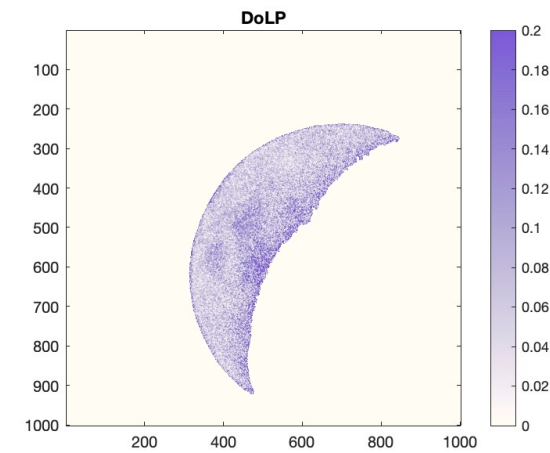
no filter



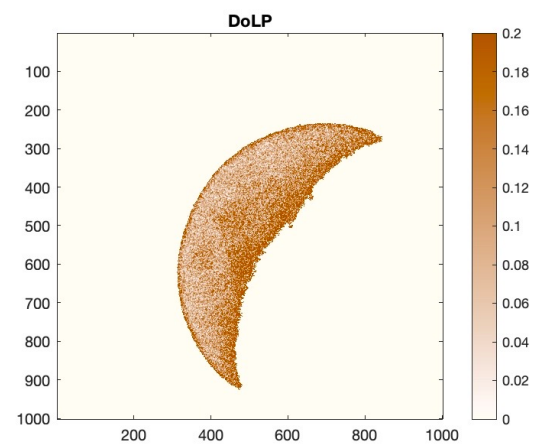
650 nm filter



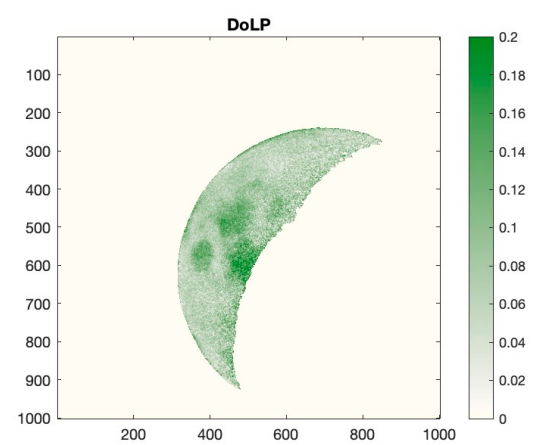
800 nm filter



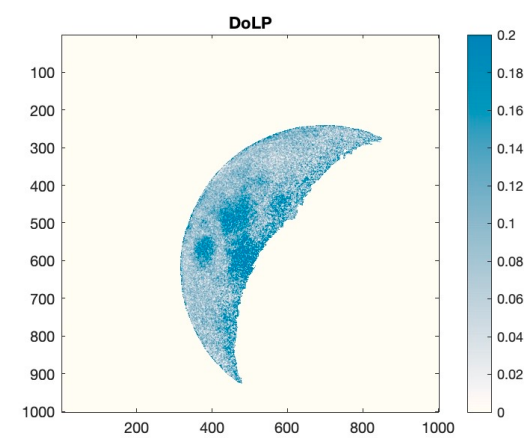
900 nm filter



G filter

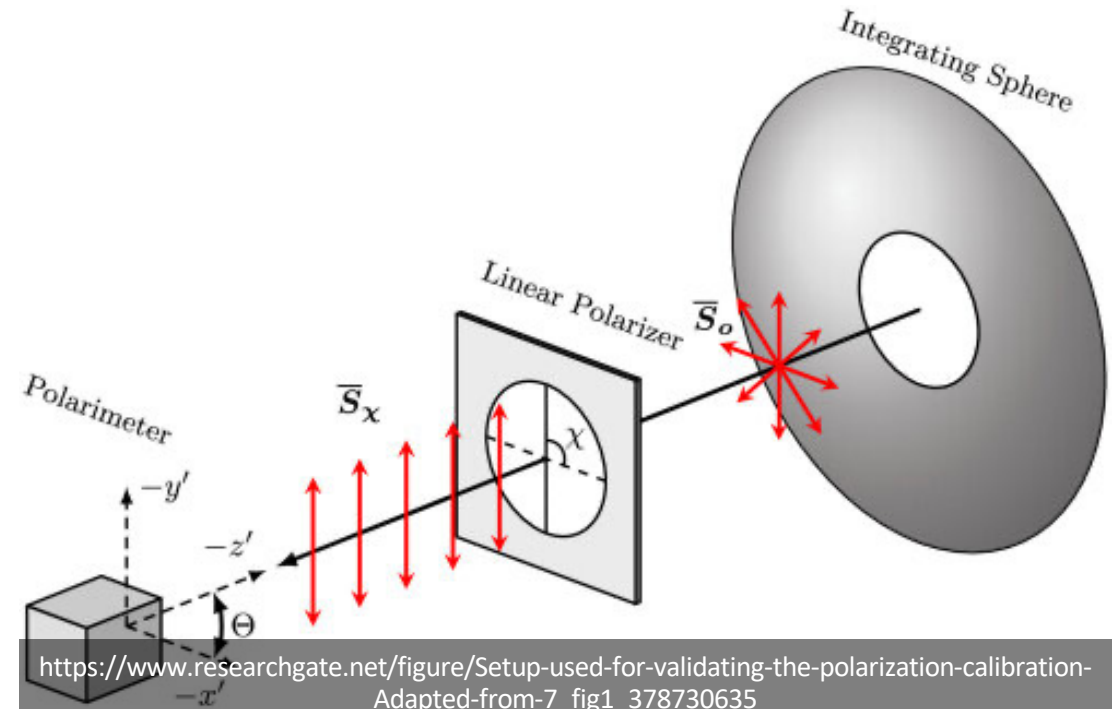


450 nm filter



Polarimetric Calibration

- Take integrating sphere
- Polarizer
- Calibrate instrument with polarizer
- Check for any nonuniformity on camera and correct for it
 - Rotate polarizer to different degrees of polarization
 - Take 10 images at each



What is Next?

- Flat Field Correction
- Finishing Data Processing
 - Process Polarimetric Calibration
 - Apply to images
- Begin data analysis
- Continue observing and recording data

