# Commissioning of the FRoST telescope

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# What is FRoST?

- FRoST (Flagstaff Robotic Survey Telescope)
- Goal: Rapid response research of Near Earth Asteroids (NEAs)
- Status: Close to full robotic operation
- In collaboration with Lowell Observatory and University of Arizona's Catalina Sky Survey.

# What is FRoST?

- Anderson Mesa ~15km southeast of Flagstaff, AZ
- Formerly LONEOS under Lowell
- Funded in 2012 to fully roboticize
- 2016 Jan 1, facility was renamed FRoST

# Near earth asteroids

- Small Solar System bodies whose orbits pass close to Earth
- More than 15000 have been discovered
- Future data will be taken of orbit, composition, and taxonomic class

The Planetary Society

# My contribution

- Coding scripts
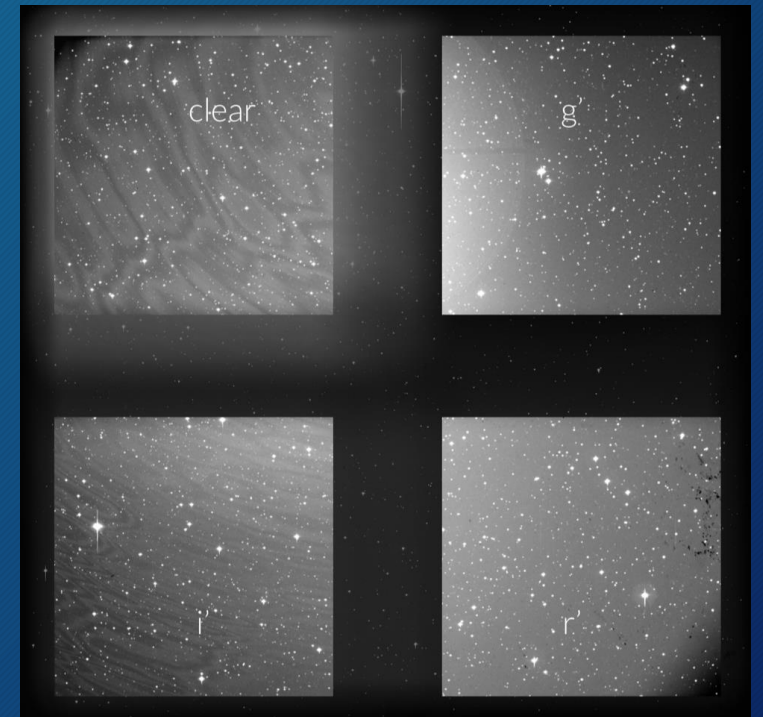- Suggestion of new hardware
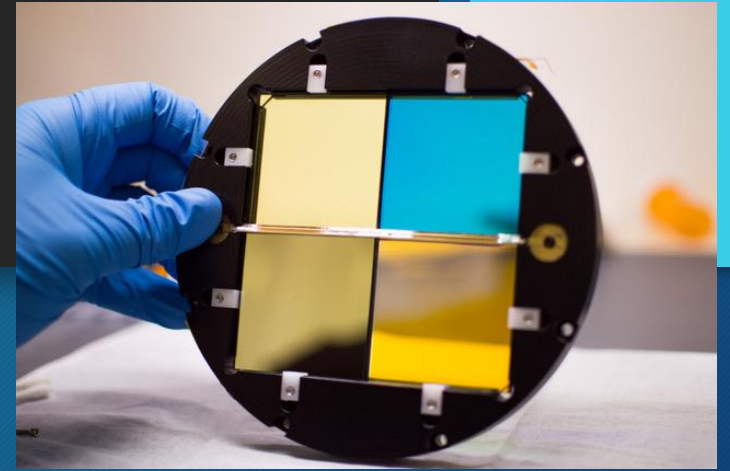- Test observing run

# Fits files

- Combining raw data files from the FRoST system into standard FITS files
- Image file supported by many coding programs for astronomy
- .temp image file and .head plain text file with meta data
- Primarily created in Python version 3.6

https://www.python.org/

# Bias subtraction and flat correction

- Cleans up image quality
- Bias: A zero second exposure with the shutter closed
- Flat: A greater than zero second exposure of the sky at twilight
- Created a filter with four quadrants
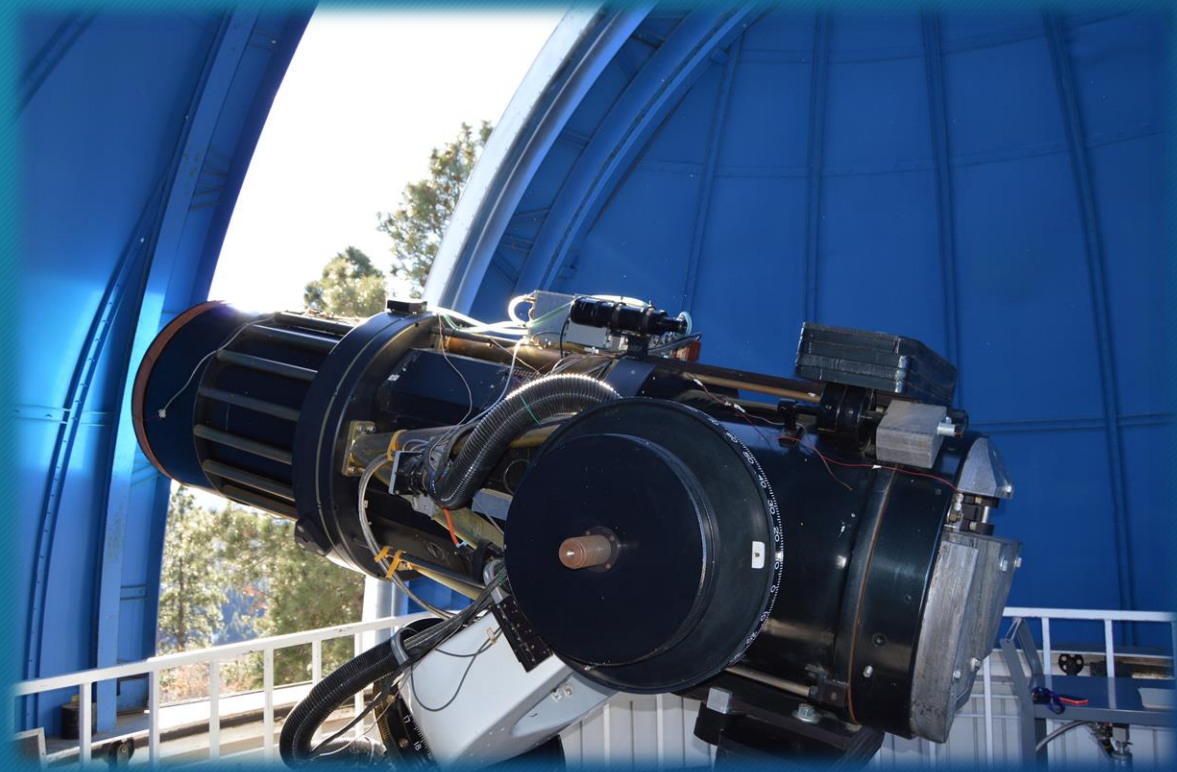- Took test frames at FRoST and fine tuned

# Calculation of local Sunrise/Sunset/weather

- Needed so that the telescope can know when to open and close.

- High humidity, rain, snow, and other weather conditions can harm the telescope and data
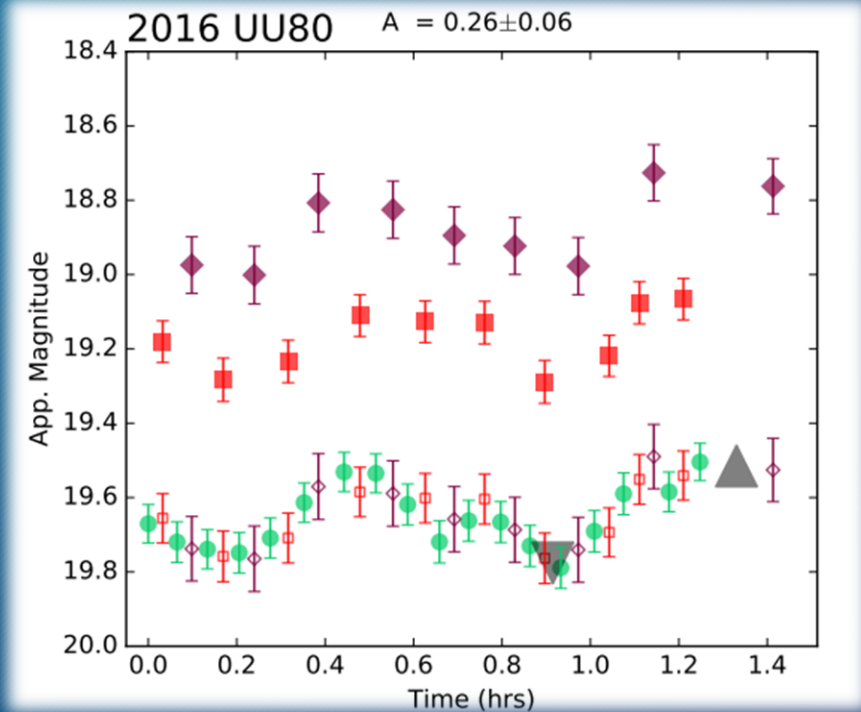
- Also conducted through Python

ScienceBlogs

Cray Inc.

# Hardware

- Locks
- Cameras
- Lens Cover

# Future Work

- Refining the orbits of NEOs
- Planetary defense
- Finding light curves and colors of NEOs
- Determines shape and composition



'Erasmus et al. 2017'

# Special thanks

- Dr. David Trilling
- Dr. Andrew McNeill
- Dan Avner
- Kathleen Stigmon
- Dr. Nadine Barlow

# References

- Andrew McNeill
- Dan Avner

# Questions?