CSTARS



Photo credit: T. Arai

<u>Cryogenic Star Tracking and Attitude Regulation System</u>

A sounding rocket experiment using scientific CMOS detectors to improve star tracking technology for future space missions.

- CMOS has many advantages over other types of detectors but have not been tested for space application.
- CSTARS take pictures of the sky in real time and tracks the positions of the stars to determine where the rocket is pointing at.
 Built by an interdisciplinary team of RIT undergraduate/graduate students and faculty.
 Funded by NASA Undergraduate Student Instrument Project.



What are sounding rockets?

- Capable of carrying scientific experiments for short flights into space and returning to Earth.
- An affordable opportunity to study space and develop flight technology on a short timescale.
- The on-board experiments can be recovered and fly again.

A sounding rocket launched from Wallops Island, Virigina.





Typical flight plan of a sounding rocket



CSTARS quick facts

- Telescope: 71-mm primary lens.
- Camera: CMOS detector, 1024x1024 pixels, optical wavelength, operating at 77K.
- The on-board computer collects, processes, and sends data to the ground.

Compartment

for electronics

protect the

camera inside

from stray light

Photo credit: CSTARS team.

• To be launched on a Black Brant IX sounding

rocket from NASA Wallops Flight Facility, Virgina.

Poster designed by C. Nguyen/RIT (2017)