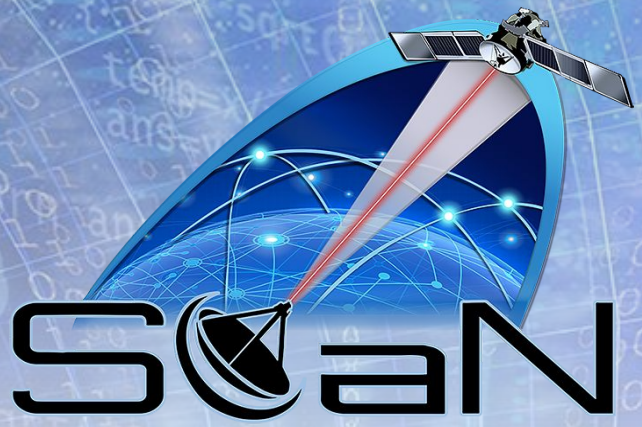
National Aeronautics and Space Administration



What's Next?

Jonathan (JQ) Quartin and Alan Hylton

How I heard about the NASA internship?

https://lists.lehigh.edu/mailman/listinfo/algtop-l

"In the past, we have hosted internships for students who pursued sheaf theory for networking, algebraic geometry, topological data analysis, and graph theory. This year, we are focusing on the analysis of time-varying networks, network simulation, and applications of tropical geometry to space networking."

What I did to prepare/apply

- Googled papers involving “NASA” and “Sheaf theory for networking”
- Looked up authors, and reached out
- Met to discuss interests further
- Applied (CV, cover letter, etc.)

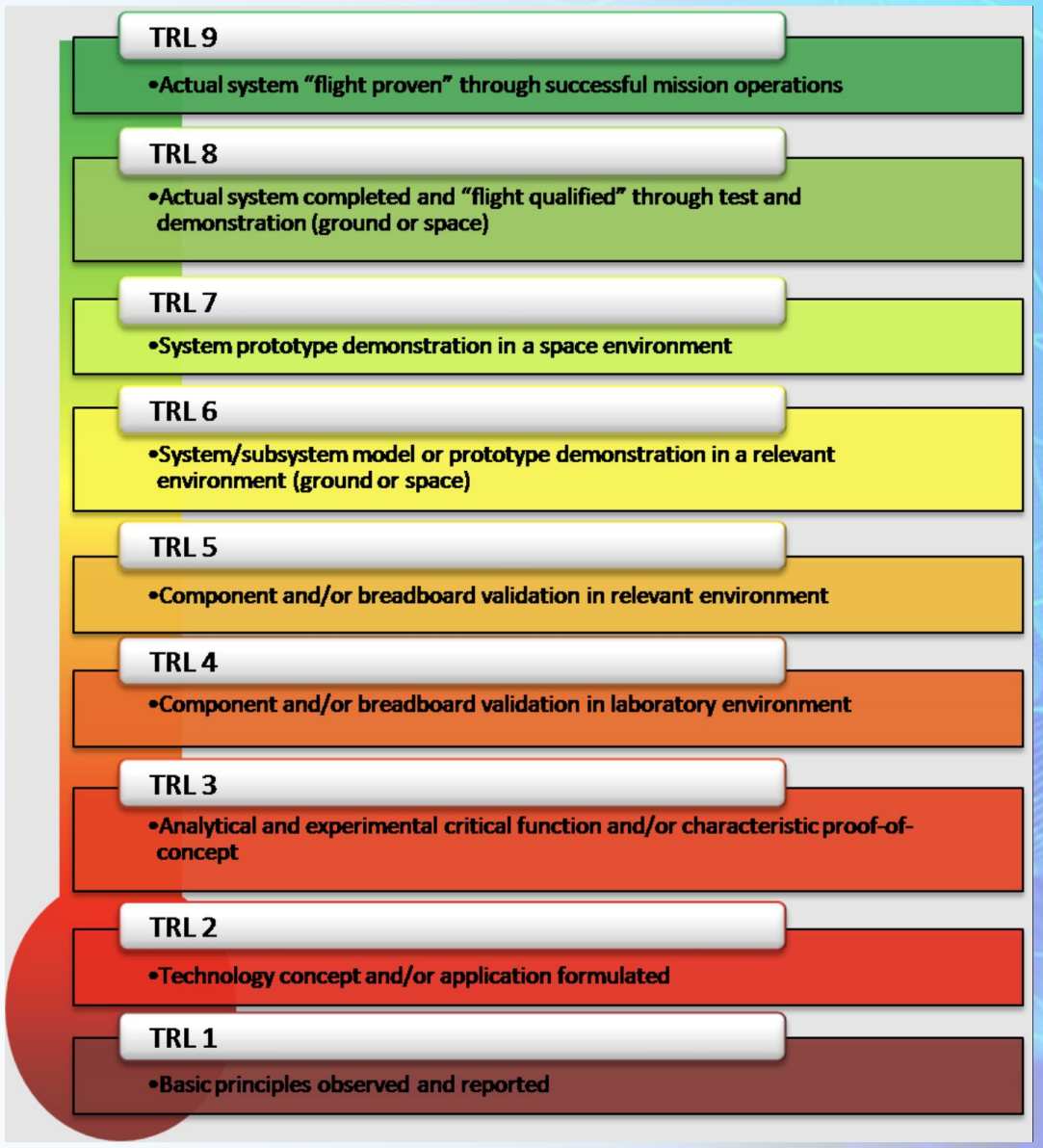
NASA as a place of research

https://www.nasa.gov/sites/default/files/atoms/files/intern_brochure_virtualevents_2022_0.pdf

- NASA OSTEM Internships
  - 10 weeks in summer
  - $9000 split in 3 payments (3600, 3600, 1800)

- NASA Pathways (apply thru USAjobs.com)
  - 640 hours of Pathways work experience
  - Have at least one academic year remaining in your degree program
  - Eligible for conversion into full time

Technological Readiness Level



Working Remote

- Discord
- Microsoft Outlook and Teams
- Jamboard
- Google Slides
- Overleaf

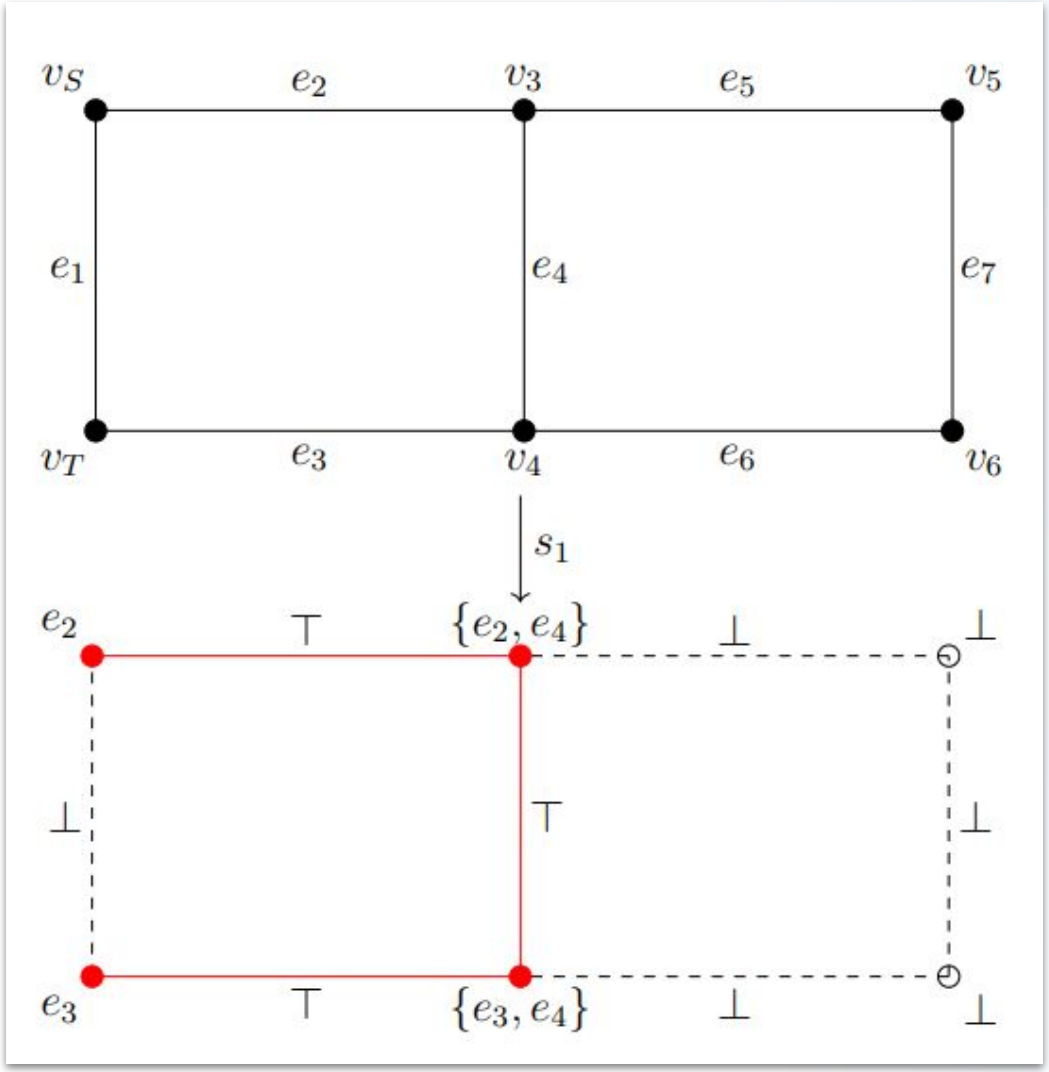
Responsibilities

- Read papers
- Research
- Presentations
- Meet internship-wide deadlines
- Write up results for publication

Events

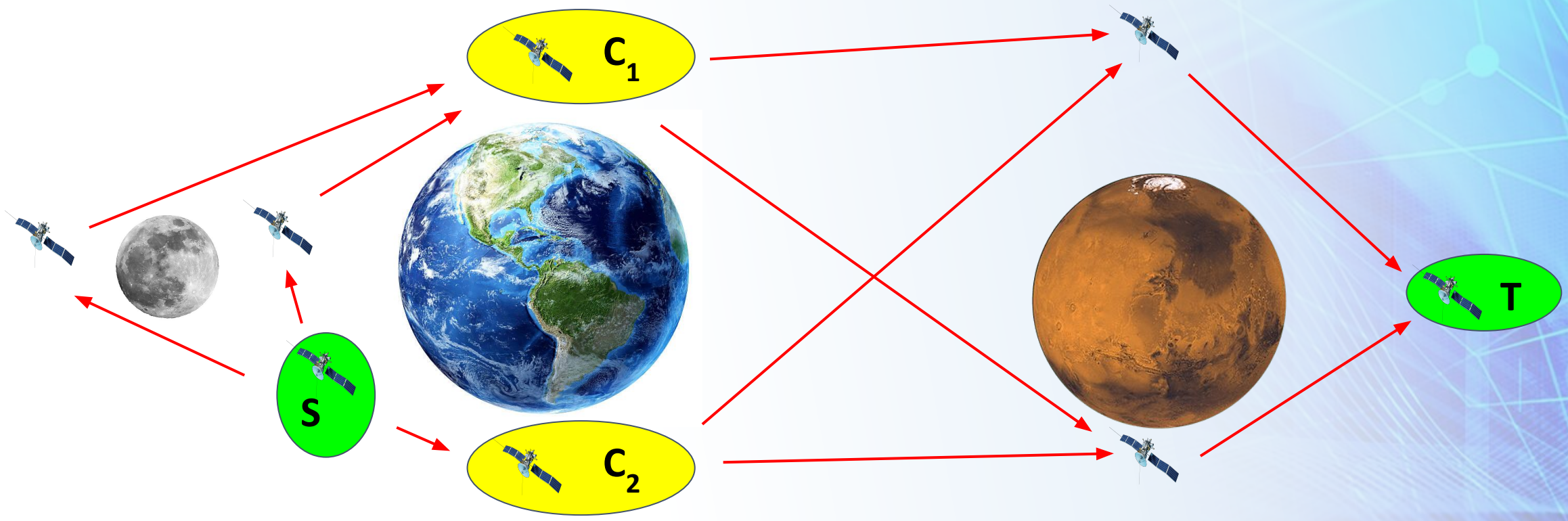
- Greater TDA community
  - Michael Robinson
  - David Spivak
- NASA meet-and-greets
- Talks from SCaN leaders
- Community building

The math!

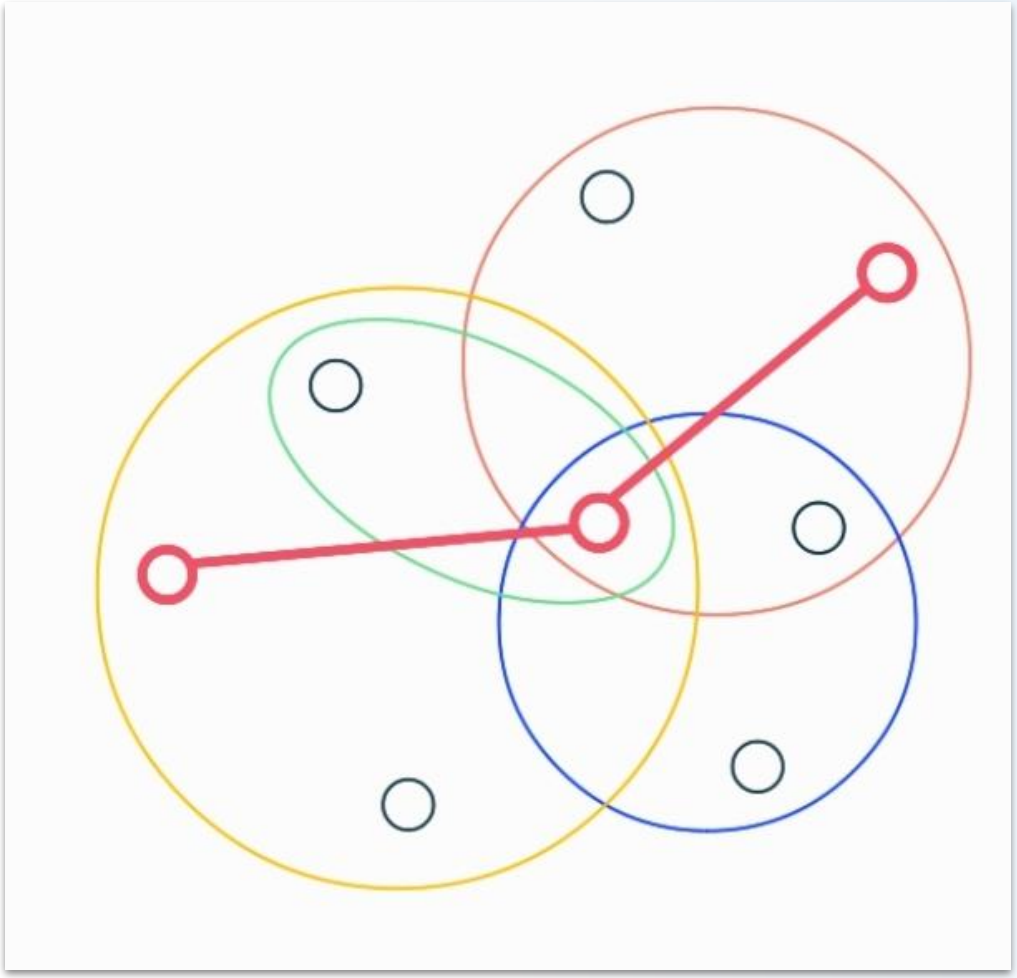


From *Path Optimization Sheaves* by Moy, Cardona, et al

What we did



What we did



NASA internship/work opportunities

Upcoming summer (https://stemgateway.nasa.gov/public/s/)

- Applications of Pure Mathematics
- The Mathematics of the Near Space Network
- Optical atomic clocks
- Data governance
- Aircraft design
- Sustainability & Energy program
- Deep Learning Classification of Kepler/TESS Transit Signals

Alan

My approach to research and internships

Alan

My approach to hiring

Alan

What students should be looking for in their PhD programs

Thanks!