

## EDUCATION

### ➤ **2015 – Present: University of Colorado in Boulder**

**Second Year Graduate Student** in Astrophysical and Planetary Sciences Department

Research Interests: Coronal Heating, Space Weather, Sun-Earth Connection, Solar Wind, Solar Atmosphere, Plasma Waves and Instabilities, Solar Active Regions

### ➤ **2009-2015: Georgia Institute of Technology**

**BS Physics** (Astrophysics Concentration). Focus on Optics. Third in Class, Highest Honors, ΣΠΣ.

Phys/Math GPA: 3.78 || physGRE : 800(71%) || GRE: {V: 166(98%), Q: 164(88%), A: 5.0}

## RESEARCH EXPERIENCE

### ➤ **Solar Coronal Alfvén Waves Research for Dr. Steven Cranmer, CUB** (Summer 2016 - Present)

Simulating off-limb spectral lines to determine properties of coronal Alfvén Waves

- Wrote forward model in Python from scratch
- *Presented work at Solarnet Conference in Belfast, Ireland (Fall 2016)*

### ➤ **Space Mission Design - Class Project, CUB** (Fall 2015)

Wrote and defended a mock NASA proposal for a CubeSat mission to study electron precipitation.

- Principle Investigator
- Worked with a team to design both mission and hardware
- Became familiar with the CubeSat standard and proposal requirements

### ➤ **Undergraduate Research Assistant for Dr. Rick Trebino, GaTech** (Spring 2013-Summer 2015)

Studied Ultrafast laser pulse measurement and characterization.

- Constructed a novel device for the measurement of complex ultrafast pulses.
- Wrote drivers and a user-friendly software package in Matlab

### ➤ **Heliophysics REU at University of Alabama in Huntsville** (Summer 2014)

Reduced Voyager UVS Data to determine Heliospheric neutral hydrogen density.

- Performed data analysis and manipulation using C
- *Presented Poster at AGU Fall 2014*

### ➤ **Physics of Planets - Class Project, GaTech** (Fall 2014)

Designed a mission to detect lightning on Titan.

- Wrote and presented a 12 page mock proposal for a directed mission of opportunity to study the dynamics of lightning on Titan

## PUBLICATIONS

- B. Fayock, G.P. Zank, J. Heerikhuisen, C. R. Gilbert, K Scherer. 2015. *Lyman-alpha radiation pressure in the Heliosphere: Results from a 3D Monte Carlo radiative transfer simulation*. Journal of Physics: Conference Series, Volume 642, Conference 1

## CONFERENCE PRESENTATIONS

- C. Gilbert, S. Cranmer. *Quantifying line-of-sight effects for spectroscopic measurements of Alfvén waves and turbulence in the solar corona*. Talk given at: The 5<sup>th</sup> SOLARNET summer school and workshop. 2016 Aug 23-31; Belfast, Northern Ireland
- C. Gilbert, B. Fayock, J Heerikhuisen. *The reduction of Lyman alpha data from Voyager*. Poster presented at: AGU Fall Meeting. 2014 Dec 15-19; San Francisco, CA.

## CONFERENCE ATTENDANCE

- 2017 ISEE Professional Development Program – Monterey, CA/ Maui, HI
- 2016 Solarnet 5 – Belfast, N. Ireland
- 2016 SHINE - Santa Fe, NM
- 2016 AAS SPD – Boulder, CO
- 2014 AGU – San Francisco, CA
- 2014 APS April Meeting – Savannah, GA

## PROFESSIONAL MEMBERSHIPS

- Lifetime, ΣΠΣ: Sigma Pi Sigma Honor Society
- 2014-6, SPS: Society of Physics Students
- 2014-5, APS: American Physical Society
- 2014-5, AGU: American Geophysical Union
- 2015, OSA: The Optical Society

## SKILLS AND EXPERIENCE

- **Computer Skills:**
  - python, C, MATLAB, LaTeX, Zemax, IGOR, EAGLECAD, Mathematica, Microsoft Office
- **Lab Skills:**
  - Electronics Lab Course
    - Learned to design and build both passive and active circuits, and to effectively use an oscilloscope to examine electronics.
  - Modern Optics Lab Course
    - Learned all of the fundamental components of an optical tabletop experiment and how to use and align them.
  - Ultrafast Optics Lab - Research
  - Advanced Lab Course
- **Communication:**
  - Eloquent and engaging presenter, orator, and entertainer.
  - Uniquely able to effectively communicate difficult subject matter.
  - Over 15 years of theatrical experience.

## LEADERSHIP AND TEACHING

- **Head TA** of ASTR 1030/1040 – Accelerated Intro Astronomy Lab I + II (Fa2015-Sp2016)
  - Managed Grades for 120 students; Taught five 30-person lab sections.
  - Received *TA of the Year* Award
- **Secretary** of the Georgia Tech Society of Physics Students (Fall 2014 - Spring 2015)
  - Managed weekly meetings and planned all events. Maintained the organizational structure of the club. Invited professors to give talks.
  - Planned two multi-day trips to Oak Ridge National Lab and LIGO, LA.
- **Head Roller Coaster Camp Counselor**, GT School of Physics (Summer 2015)
  - Helped design and implement the curriculums for two, week-long summer camps (one Middle School and one High School)
- **Physics / Matlab Tutor**, Center for Academic Success (Summer 2015, Fall 2013)
- **Teacher's Assistant** for Modern Optics (Fall 2014)

## OUTREACH AND VOLUNTEER WORK

- **Spark, Spin, and Freeze** (2013-2015)
  - Created a physics demo show appropriate for all audiences, explaining the basics of electricity, angular momentum, and heat (using liquid N<sub>2</sub>). Has been enjoyed by over 300 elementary/middle school students, as well as parents and teachers.
- **Elementary School Teacher Demos** (Summer 2015)
  - Instructed over 100 elementary school teachers in the science behind and operation of many common physics demonstrations, including solar telescopes.
- **Physics Field Day** (2014)
  - Performed physics demonstrations for a group of 40 high school students.
- **Workshop at Children's Library** (2014)
  - Explained the basics of light and magnetism to elementary-age children with hands-on activities.
- **Public Nights at GT Observatory** (2013-2014)
  - Told the stories of popular constellations, pointed out interesting objects

## RELEVANT ELECTIVE COURSES

### UNDERGRADUATE

Physics of Planets  
Stellar Astrophysics  
Intro Aerospace Engineering  
Principles of Engineering Materials  
Optics  
Ultrafast Optics  
Circuits and Electronics  
Computational Physics  
Introduction to Computer Engineering

### GRADUATE

Fluids I+II  
Magnetospheres  
Stellar Structure and Evolution  
Astrophysical Instrumentation  
Space Mission Design  
Hale Collage – Solar Flares  
Hale Collage – Solar Observation Techniques

