

## EDUCATION

- **PhD Candidate in Astrophysical and Planetary Sciences:** University of Colorado, Boulder.
- **2018 MS in Astrophysical and Planetary Sciences :** University of Colorado, Boulder.
- **2015 BS in Physics, Astrophysics Concentration:** Georgia Institute of Technology, ΣΠΣ.

## SCIENTIFIC INTEREST

- **Science:** The Middle Corona. Solar wind acceleration and heating. Space Weather Prediction. Non-equilibrium ionization in the Corona. Polar plumes.
- **Techniques:** Imaging and spectroscopy in optically thin media. Understanding systemic measurement errors. Working on mission teams to analyze fresh data. Radial Graded Filters. Fourier Analysis.

## RESEARCH EXPERIENCE

- **PUNCH Mission Associate Investigator** with *Dr. Sarah Gibson, HAO* (2021-Present)
  - Wrote forward model in IDL to simulate and process image data. Employed by LASP.
- **Graduate Research Assistant** for *Dr. Steven Cranmer, LASP, CU Boulder* (2016-Present)
  - Wrote forward model in python to examine Line-of-Sight Effects in the Corona.
- **Undergraduate Research Assistant** for *Dr. Rick Trebino, Georgia Tech* (2013-2015)
  - Measured and characterized Titanium-Sapphire ultrafast femtosecond laser pulses.
- **Researcher at Heliophysics REU** at *University of Alabama in Huntsville* (2014)
  - Reduced Voyager UV Spectrometer Data in C.

## PUBLICATIONS

- West et al. (2022). "Defining the Middle Corona." ArXiv Preprint, <https://doi.org/10.48550/arXiv.2208.04485>
- Gilly, C. R., & Cranmer, S. R. (2020). "The Effect of Solar Wind Expansion and Nonequilibrium Ionization on the Broadening of Coronal Emission Lines." The Astrophysical Journal, 901(2), 150. <https://doi.org/10.3847/1538-4357/abb1ad>
- Fayock, B., Zank, G. P., Heerikhuisen, J., Gilbert, C. R., & Scherer, K. (2015). "Lyman-alpha Radiation Pressure in the Heliosphere: Results from a 3D Monte Carlo Radiative Transfer Simulation." Journal of Physics: Conference Series, 642(1), 012007. <https://doi.org/10.1088/1742-6596/642/1/012007>

## WHITE PAPERS

- Seaton **et al.** (2022). “*A Strategy to Close Key Questions about the Nature of the Middle Solar Corona During this Decade.*” In Prep.
- Reardon **et al.** (2022). “*Spectroscopic inversions: Our key to unlocking the solar atmosphere.*” In Prep.
- Rivera **et al.** (2022). “*Deciphering the Birth Region, Formation, and Evolution of Ambient and Transient Solar Wind Using Heavy Ion Observations*” In Prep.
- Gilly **et al.** (2022). “*The importance of image processing algorithms in solar physics.*” In Prep.

## PROPOSAL SUBMISSIONS

- **DKIST 2<sup>nd</sup> Round Proposals** – Off-limb spectral width measurements (NSO, 2022)
- **George Ellery Hale Graduate Fellowship** (CU Boulder, 2017)
- PI for Mock Proposal for **Space Mission Design** Class Project (CU Boulder, 2015)
- PI for Mock Proposal for **Physics of Planets** Class Project (GA Tech, 2014)

## LEADERSHIP AND SERVICE

- **Student Representative** for the *AGU Fall Meeting* (2020-2022), SPA Section
- **Student Representative** for the *SHINE Conference* (2020-2022)
- **Graduate Event Planner + Coordinator** for the *SHINE Conference* (2017-2022)
- **Graduate Admissions Committee Member** at *CU Boulder* (AY2018)
- **Comprehensive Exam Committee Member** at *CU Boulder* (AY2017)
- **Observatory Committee Chair** at *CU Boulder* (AY2016)
- **Secretary + Event Planner** of the *Society of Physics Students* at *GA Tech* (AY2014)
- **FIRST® Robotics Team Captain** at *Lumpkin County High* (2006-2009)

## OUTREACH AND VOLUNTEER WORK

- **Production Manager and Public Talk Facilitator** at *Fiske Planetarium* (2018-2022)
- **Public Speaker** (2018-2022)
  - *Fiske Planetarium*; Boulder, CO (2018-2022)
  - *WesterCon / Myths and Legends Convention*; Denver, CO (2018-2019)
- **Public Observatory Host** (2013-2022)
  - *Sommers-Bausch Observatory*; Univ. of Colorado (2015-2022)
  - *GT Observatory*; Georgia Tech (2013-2015)
- **Public Outreach Author, Host, Trainer** (2013-2022)
  - *Elementary/ Middle School Invited Lectures* (2021)
  - *Boulder Jr Astronauts* (2018-2019)
  - *Spark, Spin, and Freeze*; Georgia Tech (2013-2015)

## TEACHING EXPERIENCE

- **Instructor of Record** - *ASTR 1000 The Solar System*, CU Boulder (Summer 2018)
- **Instructor & Facilitator** - *ISEE Professional Develop. Program* (2017, 2018)
- **Instructor** - *CU Boulder Junior Astronauts: Elementary Afterschool Program* (2018)
- **Teaching Assistant** - *ASTR 2000 Ancient Astronomies*, CU Boulder (Sp2018)
- **Teaching Assistant** - *Accel. Intro Astronomy I + II w/ Lab*, CU Boulder (Fa2015, Sp2016)
- **Teaching Assistant** - *Modern Optics*, GA Tech (Fa2014)
- **Lead Camp Counselor** - *Roller Coaster Physics Summer Camp*, GT Physics (Summer 2015)
- **Tutor** - *Physics + Matlab*, Center for Academic Success, GA Tech (2013, 2015)

## CERTIFICATIONS AND AWARDS

- **Nominated for Graduate Student Leader of the Year Award** – U. Colorado (2021)
- **Certificate in College Teaching** – University of Colorado (In Progress)
- **Completion of Professional Development Program** – ISEE (2017,2018)
- **Completion of Heliophysics Summer School** – UCAR (2017)
- **TA of the Year Award** – Astrophysics Department, University of Colorado (2016)
- **Letter of Commendation for SSF Outreach** – Physics Department, Georgia Tech (2015)

## CONFERENCE ATTENDANCE

### ➤ 2022

- PUNCH Meeting 3 (Bellevue, WA)
- SHINE (Honolulu, HI)
- DKIST Proposal Webinar (Virtual)
- PDP Sunset Conference (Maui, HI)
- Solar and Space Physics Decadal Survey White Papers Workshop 2 (Virtual)
- DKIST Training Workshop 5 (Virtual)

### ➤ 2021

- AGU Fall Meeting (Virtual)
- PUNCH Meeting 2 (Virtual)
- SHINE (Virtual)
- AAS SPD (Virtual)
- Heliophysics 2050 (Virtual)
- Space Weather Workshop (Virtual)
- SDO Science Workshop (Virtual)

### ➤ 2020

- AGU Fall Meeting (Virtual)
- AAS SPD (Virtual)
- NSRC Suborbital (Broomfield, CO)
- Michael Knoelker Symp. (Boulder, CO)
- DKIST Workshop (Los Angeles, CA)

### ➤ 2019

- AGU Fall Meeting (San Francisco, CA)
- SHINE (Boulder, CO)
- AAS + SPD (St. Louis, MO)

### ➤ 2018

- AGU Fall Meeting (Washington, DC)
- Polar Perspectives (Boulder, CO)
- SHINE (Cocoa Beach, FL)
- AAS (Denver, CO)
- ISEE PDP (Monterey, CA/ Houston, TX)

### ➤ 2017

- UCAR Helio. Sum. School (Boulder, CO)
- SHINE (Saint-Sauveur, Quebec)
- ISEE PDP (Monterey, CA/ Maui, HI)

### ➤ 2016

- Solarnet 5 (Belfast, N. Ireland)
- SHINE (Santa Fe, NM)
- AAS SPD (Boulder, CO)

### ➤ 2014

- AGU Fall Meeting (San Francisco, CA)
- Solar REU, NSSTC (Huntsville, AL)
- APS April Meeting (Savannah, GA)

## CONFERENCE ACTIVITIES

### ➤ Invited Talks

- “Forward Modelling as a Tool for Analyzing PUNCH Data.”  
**PUNCH 2 Meeting. 2021** Aug 9-11<sup>th</sup>. Virtual. (C. Gilly, S. Cranmer, S. Gibson)
- “Introduction to the GHOSTS Research.”  
**Middle Corona Monthly. 2021** July 30<sup>th</sup>. Virtual. (C. Gilly)

### ➤ Invited Panels

- “Community in Heliophysics.”  
**Helio2050 Conference. 2021** May 7<sup>th</sup>. Virtual.
- “Diversity, Equity, and Inclusion in NASA Helio Early Career Scientists.”  
**NASA EC Roundtable** w/ Nicky Fox. **2021**, May 20<sup>th</sup> & June 1<sup>st</sup>. Virtual.

### ➤ Sessions Organized / Convened

- “SH025. Solar and Heliospheric Physics: General Contributions”  
**APS Fall Meeting. 2022**, Chicago, IL, Virtually attended. (C. Gilly & C. Lee)
- “SPA General Submissions II.”  
**APS Fall Meeting. 2021**, Virtual. (C. Gilly & C. Lee)

- “Student Day and Grad Student Hospitality Suite.”  
**SHINE Conference. 2021 + 2022**, Virtual & Honolulu, HI.

## CONFERENCE ACTIVITIES (CONTINUED)

### ➤ Submitted Talks

- "Space Weather Education at the University of Colorado Boulder"  
**NSRC Conference. 2020** March 2-4; Broomfield, CO. (**Gilly**, Cranmer, Berger, Knipp, Thayer)
- "Line of Sight Effects of Non-Equilibrium Ionization on Coronal Spectral Lines"  
**SHINE Conference. 2019** August 11; Boulder, CO. (**C. Gilbert**, S. Cranmer)
- "Quantifying Line-of-sight Effects ... for Spectroscopy ... in the Solar Corona"  
**SOLARNET 5. 2016** Aug 23-31; Belfast, Northern Ireland. (**C. Gilbert**, S. Cranmer)

### ➤ Poster Presentations

- "The Middle Corona."  
**Helio2050. 2021** May 3-7; Virtual. (D.B. Seaton **et. al.**)
- "*The PUNCH Associate Investigator (AI) Program.*"  
**Helio2050. 2021** May 3-7; Virtual. (R. Attie **et. al.**)
- "*Solar Wind and Line of Sight Effects Broaden Coronal Spectral Lines.*"  
**AAS SPD 51. 2020** Aug 20; Virtual. (**C. Gilly**, S. Cranmer)
- "*The Effect of Non-Equilibrium Ionization, Resonant Scattering, and the Solar Wind on the Broadening of Coronal Emission Lines.*"  
**AGU Fall Meeting. 2019** Dec 8-13; Washington, D.C. (**C. Gilbert**, S. Cranmer)
- "*Interpreting Off-Limb Emission Lines from Polar Coronal Holes.*"  
**SHINE Conference. 2019** Aug 8-11; Boulder, CO. (**C. Gilbert**, S. Cranmer)
- "*Forward Models of Off-Limb Emission Lines in Solar Coronal Holes.*"  
**AAS Conference. 2019** Jun 9-13; St. Louis, MO. (**C. Gilbert**, S. Cranmer)
- "*Refinement of a ... Model to Understand Spectroscopic ... Alfvén Waves in the ... Corona.*"  
**AGU Fall Meeting. 2018** Dec 10-14; Washington, D.C. (**C. Gilbert**, S. Cranmer)
- "*Modeling Spectroscopy to Understand Alfvén Waves and Turbulence in the Solar Corona.*"  
**SHINE Conference. 2018** Jul 29- Aug 3; Cocoa Beach, FL. (**C. Gilbert**, S. Cranmer)
- "*Relating Spectroscopic Measurements of the Solar Corona to Alfvén Waves & Turbulence.*"  
**SHINE Conference. 2017** Jul 24-28; Saint-Sauveur, Quebec. (**C. Gilbert**, S. Cranmer)
- "*The reduction of Lyman alpha data from Voyager.*" (REU Project)  
**AGU Fall Meeting. 2014** Dec 15-19; San Francisco, CA. (Fayock, Heerikhuisen, **Gilbert**)

## OTHER SKILLS

### ➤ Computer Experience:

- Languages: python, LaTeX, IDL, MATLAB, C
- Solar Data: imaging, spectroscopy, polarimetry
- Research: spectral forward models, inversions, data reduction pipelines
- Software: SolarSoft, Sunpy, Zemax, IGOR, EAGLECAD, Mathematica
- Productivity: Google Docs/Calendar/Keep, TMetric, Trello, MS Office
- Social Media Management:
  - Facebook Business, Instagram, Twitter, Buffer
- Website & Community Management:
  - Gather.Town, Mailchimp, Wordpress, Higher Logic

### ➤ Extracurricular Skills and Experience:

- Theatrical Experience (15+ years)
  - Performed in 27 plays, half of them musicals.
  - Designed and ran stage sound and lights.
- Music Production Experience (10+ years)
  - Fluent in Ableton, FL Studio, and Audacity.
  - Piano, Alto Sax, Harmonica, Guitar, Bass, and Ukulele, plus Vocals.
- **Event Planning and Coordinating**
  - Organized SHINE Student Day and midweek excursions multiple times.
  - Facilitated several multi-day out-of-state excursions for the SPS at GA Tech.
  - Served on executive committees of AGU and SHINE for two years as student rep.
- **Languages**
  - English (First)
  - Spanish (Conversational)
  - German (New Student)

## PROFESSIONAL MEMBERSHIPS

- 2017-22, AAS: American Astronomical Society
- 2014-22, AGU: American Geophysical Union
- 2014-16, SPS: Society of Physics Students
- 2014-15, APS: American Physical Society
- 2015 , OSA: The Optical Society
- Lifetime, ΣΠΣ: Sigma Pi Sigma Honor Society