Chris "Gilly" Gilbert Curriculum Vitae

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EDUCATION

- **PhD Candidate in Astrophysical and Planetary Sciences:** University of Colorado, Boulder
  - Research Interests: Space Weather, Solar Wind, Solar Atmosphere, Coronal Heating
- **2018 MS in Astrophysical and Planetary Sciences** : University of Colorado, Boulder
- **2015 BS in Physics:** Georgia Institute of Technology
  - Astrophysics Concentration. Focus on Optics. Third in Class, Highest Honors, ΣΠΣ.

RESEARCH EXPERIENCE

- **Graduate Research Assistant for Dr. Steven Cranmer, CUB** (Summer 2016 - Present)
  Forward Modelling Coronal Spectral Lines to Understand Line of Sight Effects
  - Wrote semi-empirical model in Python from scratch
  - *Presented work at multiple conferences*
- **Undergraduate Research Assistant for Dr. Rick Trebino, GaTech** (Spring 2013-Sum 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 UV Spectrometer Data to determine Heliospheric hydrogen density
  - Performed data analysis and manipulation using C
  - *Presented Poster at AGU Fall 2014; 4th Author Paper*
- **Space Mission Design - Class Project, CUB** (Fall 2015)
  Wrote and defended a mock NASA proposal for a CubeSat mission to study electron precipitation at Earth.
  - Principle Investigator; Worked with a team to design both mission and hardware
  - Became familiar with the CubeSat standard and proposal requirements
- **Physics of Planets - Class Project, GaTech** (Fall 2014)
  Wrote and presented a 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. 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. *Interpreting Off-Limb Emission Lines from Polar Coronal Holes.* **Poster** presented at: **SHINE** Conference. 2019 Aug 8-11; Boulder, CO
- C. Gilbert, S. Cranmer. *Forward Models of Off-Limb Emission Lines in Solar Coronal Holes.* **Poster** presented at: **AAS** Conference. 2019 Jun 9-13; St. Louis, MO
- C. Gilbert, S. Cranmer. *Refinement of a Semi-Empirical Model to Understand Spectroscopic Indications of Alfven Waves in the Solar Corona.* **Poster** presented at: **AGU** Conference. 2018 Dec 10-14; Washington, D.C.
- C. Gilbert, S. Cranmer. *Modeling Spectroscopy to Understand Alfvén Waves and Turbulence in the Solar Corona.* **Poster** presented at: **SHINE** Conference. 2018 Jul 29- Aug 3; Cocoa Beach, FL
- C. Gilbert, S. Cranmer. *Relating Spectroscopic Measurements of the Solar Corona to Alfvén Waves and Turbulence.* **Poster** presented at: **SHINE** Conference. 2017 Jul 24-28; Saint-Sauveur, Quebec
- 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 5th **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

- 2019
  - AGU (San Francisco, CA)
  - SHINE (Boulder, CO)
  - AAS + SPD (St. Louis, MO)
- 2018
  - AGU (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 (San Francisco, CA)
  - REU, NSSTC (Huntsville, AL)
  - APS April Meeting (Savannah, GA)

PROFESSIONAL MEMBERSHIPS

- Lifetime, ΣΠΣ: Sigma Pi Sigma Honor Society
- 2017-9, AAS: American Astronomical Society
  - Solar Physics Division
- 2014-9, AGU: American Geophysical Union
- 2014-6, SPS: Society of Physics Students
- 2014-5, APS: American Physical Society
- 2015, OSA: The Optical Society

LEADERSHIP AND SERVICE

- **Community Engagement Facilitator** for the *SHINE conference* (2017-2019)
  - Coordinated social events, including procurement and invoicing, transportation, catering, and hosting.
- **Public Talk Facilitator** at *Fiske Planetarium* (2018, 2019)
  - Coordinated the "Science of Sci-Fi" Talk series
  - Vetted applications, assisted and introduced speakers
- **Graduate Admissions Committee Member** at *CU Boulder* (2018)
  - Vetted a competitive application pool with a strong rubric
- **Observatory Committee Chair** at *CU Boulder* (2017)
  - Oversaw weekly open house at the observatory
- **Secretary** of the *Georgia Tech Society of Physics Students* (2014)
  - 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.

TEACHING EXPERIENCE

- **Instructor** for *CU Boulder Junior Astronauts* – Elementary Afterschool Program (2018)
  - Led a team of graduate students to design and teach a curriculum for an 8-week, hands-on afterschool program that explored the planets in our solar system
- **Instructor of Record** for *ASTR 1000 The Solar System*, CU Boulder (Summer 2018)
  - Created and gave 95-minute lectures, 5 days a week for 5 weeks
  - Held office hours, managed grades, designed quizzes and homework
- **Instructor + Facilitator** for *ISEE Professional Development Program* (2017, 2018)
  - Over 200 hours of pedagogy workshops and curriculum development
  - Created and taught two 6-hour inquiry-based learning experiences
  - Attended two years, returning as a Design Team Leader
- **Teacher's Assistant** for *ASTR 2000 Ancient Astronomies*, CU Boulder (Sp2018)
- **Teacher's Assistant** for *Accel. Intro Astronomy I + II w/ Lab*, CU Boulder (Fa2015, Sp2016)
  - Managed Grades for 120 students; Taught five 20-person lab sections.
  - Received TA of the Year Award
- **Teacher's Assistant** for *Modern Optics*, GA Tech (Fa2014)
- **Lead Counselor** for *Physics Summer Camp*, 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), focusing on physics of Roller Coasters
- **Tutor** for *Physics + Programming,* Center for Academic Success, GA Tech (2013, 2015)

OUTREACH AND VOLUNTEER WORK

- **Public Talks**
  - Myths and Legends Convention (2019)
    - *Second Digital Age; The Future of Transportation; The Science of Sci-Fi*
  - Westercon (2018) - *Second Digital Age*
  - Fiske Planetarium (2018) - *Second Digital Age*
- **Public Observatory Open House Host**
  - Slewed telescopes, pointed at constellations, and toured the observatory
    - Sommers-Bausch Observatory at CU (2015-Present)
      - Graduate Committee Chair (2017-2018)
    - GA Tech Observatory (2013-2015)
- **Public Physics Demo. Author + Host** - *Spark, Spin, and Freeze*
  - Created a physics demo show appropriate for all audiences, explaining the basics of electricity, angular momentum, and heat (using liquid N_2).
  - Has been enjoyed by hundreds of elementary/middle school students, as well as parents and teachers, in several schools across Atlanta. (2013-2015)
  - Physics Field Day (2014)
  - Children's Library Workshop (2014)
- **Elementary School Teacher Training** (Summer 2015)
  - Instructed over 100 elementary school teachers in the science behind and operation of many common physics demonstrations, including solar telescopes.

CERTIFICATIONS/AWARDS:

- **(In Progress) Certificate in College Teaching** – University of Colorado
- **Completion of Professional Development Program** - ISEE (2017,2018)
- **Completion of Heliophysics Summer School** - UCAR (2017)
- **TA of the Year** – Astrophysics Department, University of Colorado (2016)
- **Letter of Commendation** – Physics Department, Georgia Tech (2015)
  - For the creation of the Spark Spin and Freeze Outreach Club

SKILLS

- **Computer Skills:**
  - python, MATLAB, LaTeX, C, Zemax, IGOR, EAGLECAD, Mathematica, MS Office
- **Production Skills:**
  - Over 15 years of theater experience.
  - Can play the Piano, Saxophone, Guitar, Bass, and Ukulele plus Vocals.
  - Experience designing and running stage sound and lights.
  - Eloquent and engaging presenter, orator, and entertainer.

RELEVANT ELECTIVE COURSES

- **UNDERGRADUATE**
  - Physics of Planets
  - Stellar Astrophysics
  - Intro Aerospace Engineering
  - Principles of Engineering Materials
  - Optics
  - Ultrafast Optics + Lab
  - Modern Optics Lab
  - Circuits and Electronics
  - Electronics Lab
  - Advanced Lab
  - 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