Chris Gilbert Curriculum Vitae

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EDUCATION

- **2015 – Present: University of Colorado in Boulder**

  Fourth 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

- **Graduate Research Assistant for Dr. Steven Cranmer, CUB** (Summer 2016 - Present)

  Simulating off-limb spectral lines from the Sun's Corona to help understand measurements of Coronal Alfvén Waves and Turbulence
  - Wrote forward 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.
  - 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)

  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. *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

- 2018
  - SHINE (Cocoa Beach, FL)
  - AAS Summer Meeting (Denver, CO)
  - ISEE PDP (Monterey, CA/ Houston, TX)
- 2017
  - UCAR Heliophysics Summer 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)
  - APS April Meeting (Savannah, GA)

PROFESSIONAL MEMBERSHIPS

- Lifetime, ΣΠΣ: Sigma Pi Sigma Honor Society
- 2017-8, AAS: American Astronomical Society
  - Solar Physics Division
- 2014-6, SPS: Society of Physics Students
- 2014-5, APS: American Physical Society
- 2014-5, AGU: American Geophysical Union
- 2015, OSA: The Optical Society

LEADERSHIP AND TEACHING

- **Instructor of Record** for ASTR 1000 – The Solar System, CUB (Summer 2018)
  - Created and gave 95-minute lectures, 5 days a week for 5 weeks
  - Held office hours, managed grades, designed quizzes and homework
- **Teacher's Assistant** for ASTR 2000 – Ancient Astronomies, CUB (Spring 2018)
- **Head TA** of ASTR 1030/1040 – Accel. Intro Astronomy Lab I + II, CUB (Fa2015-Sp2016)
  - Managed Grades for 120 students; Taught five 20-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, GA Tech (Summer 2015, Fall 2013)
- **Teacher's Assistant** for Modern Optics, GA Tech (Fall 2014)

OUTREACH AND VOLUNTEER WORK

- **Public Talk** – Welcome to the Second Digital Age (2018)
  - Gave a public talk about recent advances in consumer technology
  - Spoke once at Fiske Planetarium, again at Westercon 2018 (Denver)
- **Public Nights at Sommers Bausch Observatory** (2015-Present)
  - Observatory Committee Chair (2017-2018)
  - Told the stories of popular constellations, pointed out interesting objects
- **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_2). Has been enjoyed by hundreds of 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** (2013-2015)
  - Told the stories of popular constellations, pointed out interesting objects

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 AND EXPERIENCE

- **Computer Skills:**
    - python, MATLAB, LaTeX, C, Zemax, IGOR, EAGLECAD, Mathematica, Microsoft Office
- **Lab Skills:**
    - Electronics Lab Course
    - Modern Optics Lab Course
    - 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.

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 Technique