Chris Gilbert Curriculum Vitae

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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 Alfven Waves Research for Dr. Steven Cranmer, CUB** (Summer 2016 - Present)

  Simulating off-limb spectral lines to determine properties of coronal Alfven 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 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

- 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, 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_2). 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