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 simulation in Python
  - Presented work at Solarnet Conference in Belfast, Ireland
- **Space Mission Design - Class Project, CUB** (Fall 2015)

  Wrote a NASA proposal for a CubeSat mission to study atmospheric 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)

  Researched Ultrafast laser pulse measurement and characterization.
  - Constructed a novel device for the measurement of extremely complex ultrafast pulses, called a MUD TADPOLE.
  - 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
  - Attended semiweekly space science seminars
  - 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 proposal for a directed mission of opportunity to study the dynamics of lightning on titan

Skills and Experience

- **Computer Skills:**
  - python, C++, MATLAB, LATEX, IGOR, EAGLECAD, Mathematica, Microsoft Office Suite
- **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 about all of the fundamental components of an optical tabletop experiment and how to use and align them.
  - Ultrafast Optics Lab - Research
    - Learned the fundamentals of Ultrafast Physics, with an emphasis on ultrashort pulse measurement technology, e.g. the FROG Technique.
  - Advanced Lab Course
    - Recreated four Nobel Prize winning experiments to get a feel for real experimental practices and to gain report-writing experience.
- **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 (Fall 2015-Spring 2016)
  - Managed Grades for 120 students; Taught five 30-person lab sections.
  - Attended all lectures and held weekly office hours.
- **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.
- **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)
  - Explained the physics of roller coasters, presented physics demos.
- **Physics / Matlab Tutor,** Center for Academic Success (Summer 2015, Fall 2013)
- **Teacher's Assistant** for Modern Optics (Fall 2014)
- **PLUS Leader** for Physics II (Peer Led Undergraduate Study) (Fall 2013)
- **High School Leadership:**
  - FIRST Robotics Team Captain
  - Modern Language Club President
  - Varsity Choir Bass Section Leader

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

Professional Memberships

- Member, ΣΠΣ: Sigma Pi Sigma Honor Society
- Member, APS: American Physical Society
- Member, AGU: American Geophysical Union
- Member, OSA: The Optical Society
- Member, SPS: National Society of Physics Students

Conference Attendance

- 2014 American Physical Society April Meeting – Savannah, Georgia
- 2014 American Geophysical Union – San Francisco, California
- 2016 AAS Solar Physics Division – Boulder, Colorado
- 2016 SHINE Conference - Santa Fe, NM
- 2016 Solarnet Conference – Belfast, N. Ireland

Relevant Undergraduate Elective Courses

PHYS 2021 Solar System
PHYS 2022 Stars, Galaxies, Universe
PHYS 3021 Stellar Astrophysics
PHYS 4146 Relativity
PHYS 4247 Cosmology
PHYS 4347 Fundamentals of Astrophysics
EAS 4370 Physics of Planets
AE 1350 Intro Aerospace Engineering
MSE 2001 Principles of Engineering Materials
PHYS 3232 Optics
PHYS 6567 Ultrafast Optics
PHYS 3226 Modern Optics Lab
PHYS 3211 Electronics Lab
ECE 3710 Circuits and Electronics
PHYS 3266 Computational Physics
ECE 2030 Introduction to Computer Engineering
CS 1371 Matlab