Chris Lowder

Education

Montana State University, Bozeman, Montana, United States

PhD Physics, June 2015

M.S. Physics, May 2011

Georgia Institute of Technology, Atlanta, Georgia, United States

B.S., Physics, December 2007

Selected Publications

Lowder, C., *The Coronal Hole Observer and Regional Tracker for Long-term Examination.* (in preparation).

Lowder, C., Lamb, D., & DeForest, C., *Fluxon Modeling of the Steady Solar Wind.* (in preparation).

Lowder, C., Yeates, A., *Magnetic Flux Rope Identification and Characterization from Observationally-Driven Solar Coronal Models.* ApJ, 846, 106 (2017).

Lowder, C., Qiu, J., & Leamon, R. *Coronal Holes and Open Magnetic Flux over Cycles 23 and 24.* SoPh 292, 18 (2017).

Lowder, C., Qiu, J., Leamon, R. & Liu, Y. *Measurements of EUV Coronal Holes and Open Magnetic Flux.* ApJ 783, 142 (2014).

Computing

Proficient : Python (NumPy, SciPy, SunPy), Perl (PDL), MayaVi / VTK, Blender, IDL, SolarSoft, LaTeX, OpenMPI, Fortran, Git/GitHub

Familiar : C, C++, Octave, MATLAB, OpenCL, VisIt, Glue, Pandas

Experience in parallel high performance computing projects and large-scale datasets

Research Experience

Southwest Research Institute
Planetary Science Directorate
Department of Space Studies Boulder, Colorado, United States

Research Scientist **December 2017 to Present**

- Working with Craig DeForest and Derek Lamb on Fluxon MHD modeling of the solar corona.
- Assisting with integration of codes through the Fluxon Rapid Assimilative Nowcaster (FRAN).

Durham University
Department of Mathematical Sciences Durham, United Kingdom

Postdoctoral Research Associate **August 2015 to September 2017**

- Working with Anthony Yeates on modeling solar flux rope eruption.
- Developed the Flux Rope Detection and Observation (FRoDO) code for automated tracking of magnetic flux ropes.
- Utilized global non-potential models of the solar magnetic field, to identify and characterize magnetic flux ropes throughout the span of the solar activity cycle.
- Developed software routines for managing and visualizing large datasets.

Montana State University
School of Physics Bozeman, Montana, United States

Graduate Research Assistant **August 2009 to August 2015**

- Worked with Dr. Jiong Qiu and Dr. Robert Leamon in analyzing coronal dimming
- Designed automated code to detect and characterize coronal holes from SDO and STEREO EUV data to constrain global models of open magnetic field
- Developed flux transport model to study evolution of far-side open magnetic field
- Designed and supervised two projects for undergraduate research students as a part of the MSU solar REU program

Teaching Experience

University of Colorado Boulder
Astrophysical and Planetary Sciences — Boulder, Colorado, United States

Instructor — **January 2020 to May 2020**

- Designed and taught Introduction to the Solar System course
- Integrated planetarium and observatory sessions into the course
- Utilized a Learning Assistant to assist in classroom activities, and to provide an undergraduate student with an active teaching experience

Georgia Institute of Technology
School of Physics — Atlanta, Georgia, United States

Physics I / II Graduate Teaching Assistant — **August 2008 to May 2009**

- Designed and marked problem sets covering mechanics and electromagnetism
- Engaged students in problem solving methods not directly addressed in lecture

Georgia Southern University
Department of Physics — Statesboro, Georgia, United States

Physics I / II Lab Teaching Assistant — **May 2008 to July 2008**

- Maintained lab equipment and helped to integrate the lecture and lab experience
- Graded work assignments and assisted with in-class assignments

Astronomy Laboratory Instructor — **January 2008 to May 2008**

- Engaged students in aspects of theory and observations in astronomy
- Modernized course content and implemented new observational activities

Planetarium Lecturer — **January 2008 to May 2008**

- Provided free planetarium shows to grade school level groups
- Organized workshop sessions to train grade-school earth science teachers

Georgia Institute of Technology
School of Physics — Atlanta, Georgia, United States

Physics II Laboratory Teaching Assistant — **September 2007 to December 2007**

- Setup and conducted a physics II lab session
- Instructed students and graded the resulting labwork