

## Chris Lowder

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EDUCATION	<b>Montana State University</b> , Bozeman, Montana, United States  PhD Physics, June 2015 M.S. Physics, May 2011  <b>Georgia Institute of Technology</b> , Atlanta, Georgia, United States  B.S., Physics, December 2007	
PUBLICATIONS	Lowder, C., Lamb, D., & DeForest, C., <i>Fluxion Modeling of CMEs and the Steady Solar Wind</i> . (in preparation). Lowder, C., Yeates, A., <i>Magnetic Flux Rope Identification and Characterization from Observationally-Driven Solar Coronal Models</i> . ApJ, 846, 106 (2017). Lowder, C., Qiu, J., & Leamon, R. <i>Coronal Holes and Open Magnetic Flux over Cycles 23 and 24</i> . SoPh 292, 18 (2017). Lowder, C., Qiu, J., Leamon, R. & Liu, Y. <i>Measurements of EUV Coronal Holes and Open Magnetic Flux</i> . ApJ 783, 142 (2014). Lowder, C., Qiu, J., Leamon, R., & Longcope, D. <i>Connecting Coronal Holes and Open Magnetic Field</i> . (in preparation). Lowder, C., Qiu, J., & Leamon, R., <i>Transient Coronal Dimmings and connection to Heliospheric Open Flux</i> . (in preparation).	
SELECTED CONFERENCE PROCEEDINGS	<i>Fluxion Modeling of CMEs and the Steady Solar Wind</i> AAS / SPD (2019). <i>Open Magnetic Flux and Coronal Holes: Probing the Polar Regions</i> Polar Perspectives Workshop (2018). <i>Magnetic Flux Rope Identification and Characterization from Observationally-Driven Solar Coronal Models</i> UK National Astronomy Meeting (2016 / 2017). <i>Connecting Coronal Holes and Open Magnetic Field via Numerical Modeling and Observations</i> . Triennial Earth-Sun Summit / SPD (2015). <i>A Comparison of EUV Coronal Hole Measurements and Modeled Open Magnetic Field -or- How I learned to stop worrying and love the potential magnetic field</i> . GSU Colloquium Series (2014). <i>Full Surface Automated Coronal Hole Detection and Characterization to Constrain Global Magnetic Field Models</i> . AAS Meeting 220 (2012). <i>Transient coronal holes : A statistical study of coronal dimming regions</i> . The Origin, Evolution, and Diagnosis of Solar Flare Magnetic Fields and Plasmas (2010). <i>Coronal Mass Ejections : A Study of Structural Evolution and Classification</i> . AAS Meeting 210 (2007).	
COMPUTING	<i>Proficient</i> : Python (NumPy, SciPy, SunPy), Perl (PDL), MayaVi / VTK, Blender, IDL, SolarSoft, L <sup>A</sup> T <sub>E</sub> X, OpenMPI, Fortran, Git/GitHub <i>Familiar</i> : C, C++, Octave, MATLAB, OpenCL, VisIt, Glue, Pandas Experience in parallel high performance computing projects and large-scale datasets	

**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 Now-caster (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.
- Organized UKMHD 2017 meeting in Durham.

**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

**Montana State University  
Solar Physics Group**

Bozeman, Montana, United States

*NSF Summer REU Undergraduate Researcher*

**June 2007 to August 2007**

- Improved methods to resolve the 180-degree ambiguity in solar vector magnetograms
- Attempted to apply method to high resolution Hinode magnetograms

**University of Hawaii  
Institute for Astronomy**

Honolulu, Hawaii, United States

*NSF Summer REU Undergraduate Researcher*

**May 2006 to August 2006**

- Analysis of CMEs utilizing SOHO data for Dr. Shadia Habbal and Dr. Huw Morgan
- Observational experience and interaction with astronomers at Mauna Kea observatories on the IRTF, Caltech CSO, and the UH 88"

TEACHING EXPERIENCE	<b>Georgia Institute of Technology</b>	
	<b>School of Physics</b>	Atlanta, Georgia, United States
	<i>Physics I / II Graduate Teaching Assistant</i>	<b>August 2008 to May 2009</b>
	<ul style="list-style-type: none"> <li>Designed and marked problem sets covering mechanics and electromagnetism</li> <li>Engaged students in problem solving methods not directly addressed in lecture</li> </ul>	
	<b>Georgia Southern University</b>	
	<b>Department of Physics</b>	Statesboro, Georgia, United States
	<i>Physics I / II Lab Teaching Assistant</i>	<b>May 2008 to July 2008</b>
	<ul style="list-style-type: none"> <li>Maintained lab equipment and helped to integrate the lecture and lab experience</li> <li>Graded work assignments and assisted with in-class assignments</li> </ul>	
	<i>Astronomy Laboratory Instructor</i>	<b>January 2008 to May 2008</b>
	<ul style="list-style-type: none"> <li>Engaged students in aspects of theory and observations in astronomy</li> <li>Modernized course content and implemented new observational activities</li> </ul>	
	<i>Planetarium Lecturer</i>	<b>January 2008 to May 2008</b>
	<ul style="list-style-type: none"> <li>Provided free planetarium shows to grade school level groups</li> <li>Organized workshop sessions to train grade-school earth science teachers</li> </ul>	
	<b>Georgia Institute of Technology</b>	
	<b>School of Physics</b>	Atlanta, Georgia, United States
	<i>Physics II Laboratory Teaching Assistant</i>	<b>September 2007 to December 2007</b>
	<ul style="list-style-type: none"> <li>Setup and conducted a physics II lab session</li> <li>Instructed students and graded the resulting labwork</li> </ul>	
PROFESSIONAL MEMBERSHIPS	American Astronomical Society (AAS) Solar Physics Division (SPD)	
HONORS	Living with a Star Heliophysics Summer School (Summer 2015) Triennial Earth-Sun Summit Student Travel Grant (2015) Living with a Star Portland Meeting - Best Student Poster (2014) SPD Studentship Travel Award (2012) National Merit Scholar (2004) Georgia Governor's Scholar (2002) Georgia Institute of Technology <ul style="list-style-type: none"> <li>Faculty Honors (Fall 2004, Spring and Fall 2006)</li> <li>Dean's List (Spring and Fall 2005)</li> </ul>	
OUTREACH	Durham University School Science Festival - Organizing activity on solar magnetism Peaks and Potentials - Taught summer student workshop series on solar physics MSU Astronomy Day - Organized solar physics exhibit Montana Science Olympiad - Designed state astronomy event Georgia Southern Planetarium - Created and presented planetarium show content	