Dr. Marika McCarthy

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EDUCATION

PhD, Physics — July 2021
Montana State University, Bozeman, MT
Dissertation: *Examination of Coronal Loops Between Quiescent Active Regions*
Advisor: Dana Longcope

MS, Physics — December 2018
Montana State University, Bozeman, MT

BA, *Magna Cum Laude*, Physics — May 2016
Willamette University, Salem, OR
Senior thesis: *Analysis of Phagosome Trafficking Data to Examine the Role of Mysoin VI in Phagocytosis*
Advisor: David Altman

RESEARCH POSITIONS

Research Scientist — October 2021 - January 2022
Lockheed Martin Solar and Astrophysics Laboratory &
Bay Area Environmental Research Institute, Palo Alto, CA

Graduate Research Assistant — May 2017 - August 2021
Montana State University, Physics Department, Bozeman, MT

Undergraduate Researcher — March 2015 - May 2016
Willamette University, Physics Department, Salem, OR

Research Experience for Undergraduates (REU) Student — Summer 2015
Montana State University, Solar Physics Group, Bozeman, MT

REU Student — Summer 2014
The College of William & Mary, Physics Department, Williamsburg, VA

PEER-REVIEWED PUBLICATIONS

Multispacecraft observations of coronal loops to verify a force-free field reconstruction and infer loop cross sections, **M.I. McCarthy**, D.W. Longcope, and A.V. Malanushenko, 2021, ApJ, 913, 56

Localized reconnection heating inferred from the three-dimensional locations of bright active region coronal loops, D.W. Longcope, **M. McCarthy**, and A.V. Malanushenko, 2020, ApJ, 901, 147.

Measuring and modeling the rate of separator reconnection between an emerging and existing active region, **M.I. McCarthy**, D.W. Longcope, A.V. Malanushnko, and D.E. McKenzie, 2019, ApJ, 887,2.

Evidence for Downflows in the Narrow Plasma Sheet of 2017 September 10 and Their Significance for Flare Reconnection, D.W. Longcope, J.E. Unverferth, C. Klein, **M.**

McCarthy, and E.R. Priest, 2018, ApJ, 868, 148.

HONORS AND AWARDS

Scholarship Excellence Award (Montana State Graduate School)	2021
Studentship Award (AAS Solar Physics Division)	2019
Phi Beta Kappa Honor Society (Willamette University)	2016
William B. Webber Scholarship (WU)	2015
Academic Leader Award Scholarship (WU)	2012
Jason Lee Award Scholarship (WU)	2012

POSTERS AND PRESENTATIONS

Examination of Coronal Loops Between Quiescent Active Regions

- Colloquium (Invited), High Altitude Observatory, July 2021. Oral Presentation (Virtual).
- PhD Defense, July 2021.

Temperature evolution of coronal flux observed through multiple extreme ultraviolet wavelengths

- AAS 238/SPD 2021. June 2021. iPoster Plus, virtual meeting.

Multi-spacecraft observation of coronal loops to verify a force-free field reconstruction and infer loop cross-sections

- Journal Club at NASA MSFC (Invited). September 2021. Oral Presentation (Virtual).
- AAS 238/SPD 2021. June 2021. Oral Presentation (Virtual).
- Colloquium (Invited), Naval Research Laboratory, April 2021. Oral Presentation (Virtual).
- RelAstro Seminar, Montana State University. Spring 2021, Oral Presentation (Virtual).
- SPD51. August 2020. iPoster, virtual meeting.

Examination of Separator Reconnection Rates in a Series of Adjacent Emerging/Existing Active Region Pairs

- Fall AGU meeting, December 2019. Poster, San Francisco, CA.

Reconnected flux between solar active regions

- RelAstro Seminar, Montana State University. Fall 2019, Oral Presentation.

Measuring and modeling the rate of separator reconnection between an emerging and existing active region

- AAS 234/SPD 2019. Oral Presentation, St. Louis MO.

Coronal magnetic reconnection between an emerging and an existing active region

- RelAstro Seminar, Montana State University. Fall 2018, Oral Presentation.

Measuring separator reconnection between emerging and existing active regions using extreme ultraviolet imaging observations

- TESS 2018. Poster, Leesburg VA.

Measuring separator reconnection between emerging and existing active regions using extreme ultraviolet imaging observations

- RelAstro Seminar, Montana State University. Spring 2018, Oral Presentation.

Analysis of Phagosome Trafficking Data to Examine the Role of Mysoin VI in Phagocytosis

- Willamette University's *Student Scholarship Recognition Day*, April 2016, Oral Presentation, Salem OR
- Joint Linfield College-Willamette University Thesis Presentations, April 2016, Oral Presentation, McMinnville OR
- Thesis Proposal Presentation: PHYS-396W Advanced Techniques in Experimental Physics, May 2015, Oral Presentation

Measurements of Magnetic Reconnection to/from Emerging Active Regions

- Montana State University Solar Physics REU Final presentations, August 2015, Oral presentation.
- Montana State University Solar Physics REU Midterm presentations, July 2015, Oral presentation.

Track Reconstruction for Aluminum Scattering in the Qweak Experiment

- Conference Experience for Undergraduates at the 2014 Joint Meeting of the American Physics Society Division of Nuclear Physics and the Physical Society of Japan, October 2014, Poster
- College of William & Mary REU Poster Session, August 2014, Poster

TEACHING EXPERIENCE

Graduate Teaching Assistant August 2016 - May 2017
Montana State University, Physics Department, Bozeman, MT

William B. Webber Scholar August 2015 - May 2016
Highland Elementary School &
Willamette Science Outreach Program Salem, OR

- Science outreach and communication scholarship developing and presenting science lessons to a 4th grade class

Physics Departmental Tutor January 2014 - May 2016
Willamette University, Physics Department, Salem, OR

Intro Physics Tutor September 2013 - May 2014
Willamette University, Office of Academic Support, Salem, OR

MENTORING

Jada Walters Summer 2018
Montana State University Solar Physics REU Program, Bozeman, MT

- Now a PhD student at University of Arizona

WORKSHOPS AND SCHOOLS

An Introduction to Chromospheric Diagnostics July 2021
4th NCSP DKIST Data-Training Workshop (Virtual)

Milne-Eddington Spectro-polarimetric Inversions July 2020
3rd NCSP DKIST Data-Training Workshop (Virtual)

Image processing and Time Series January 2020
2nd NCSP DKIST Data Training Workshop
Cal State Northridge, Northridge, CA
Travel funding awarded

NCSP DKIST Level 2 Data Training Workshop: An introduction to ground-based data June 2019
NSO, Boulder, CO
Travel funding awarded

Heliophysics Summer School July 2018
UCAR, Boulder, CO
Travel funding awarded

LEADERSHIP AND SERVICE

Graduate Student Library Representative May 2019 - April 2021
Montana State University, Physics Department, Bozeman, MT

Webmaster August 2018 - January 2021
Heliophysics Journal Club, Montana State University, Bozeman, MT

Co-Graduate Student Representative May 2018 - May 2019
Montana State University, Physics Department, Bozeman, MT

Recruiting Committee October 2017 - May 2019
Montana State University, Physics Department, Bozeman, MT

Opening Days (Freshman Orientation) Leader August 2013, August 2014
Willamette University, Salem, OR