

Christopher Wolfe

GRADUATE STUDENT

927 W. Forest Meadows St. Apt. 341, Flagstaff, AZ 86001

☎ (804) 767-0560 | ✉ cw997@nau.edu | 🌐 cawolfe

Education

Northern Arizona University

PH.D. ASTRONOMY AND PLANETARY SCIENCE

- Thesis: TBD

Flagstaff, AZ

May 2023 (Expected)

Texas A&M University

M.S. ATMOSPHERIC SCIENCES

- Thesis: Using Engineering Cameras on Mars Rovers and Landers to Retrieve Atmospheric Dust Loading

College Station, TX

August 2016

James Madison University

B.S. PHYSICS

- Minors: Astronomy, Mathematics

Harrisonburg, VA

May 2012

Computer Skills

Languages: IDL, MATLAB, Fortran, UNIX Shell Scripting

Software: MS Office Suite, LaTeX, Mathematica, ArcGIS, Mars Science Interface (MSLICE) planning software, IRAF, AIP4WIN

Operating Systems: MS Windows, MacOS, Linux

Research and Work Experience

Northern Arizona University

GRADUATE TEACHING ASSISTANT (ADVISORS: CHRISTOPHER S. EDWARDS AND TYLER D. ROBINSON)

- TBD.

Flagstaff, AZ

August 2018 - Present

Texas A&M University

GRADUATE RESEARCH ASSISTANT (ADVISOR: MARK T. LEMMON)

- Worked on a project characterizing dust loading on Mars. Involved retrieval of optical depth from engineering cameras onboard the *Opportunity* rover to support the future *InSight* mission.
- Investigated a simulation-based imaging strategy that employed a robust scattering model, discrete-ordinate radiative transfer code, and non-solar sky images acquired by the Navcam instrument to derive optical depth.
- Radiometrically calibrated and geometrically reduced raw Navcam images using the Multi-mission Instrument Processing Laboratory (MIPL) facility and IDL.
- Expertise developing and coding radiative transfer algorithms to analyze and understand how light scatters and interacts with dust in the Martian atmosphere.
- Participated in and assisted advisor with MSL mission operations. Included operating rover cameras, planning meteorological observations/measurements, and carrying out a variety of other activities for Environmental Science Theme Group.

College Station, TX

August 2013 - August 2016

John C. Wells Planetarium (James Madison University)

PLANETARIUM INTERN (DIRECTOR: SHANIL N. VIRANI)

- Operated planetarium on a weekly basis, presenting a thirty minute “star-talk” about the night sky to the general public. Covered topics including constellations, finding particular objects, planets and their motion, and topics relevant to particular weeks.
- Interacted with members of the public through questions and discussion as well as delivered specialized lesson plans to school groups and other youth programs.
- Worked with other student interns to develop show content, schedule planetarium maintenance, and foster both an educational and interactive learning environment.
- Extensive knowledge both using and training others how to use the GOTO Chronos Planetarium instrumentation and Digistar 3 Planetarium software.

Harrisonburg, VA

August 2009 - June 2012

James Madison University

Harrisonburg, VA

UNDERGRADUATE RESEARCH ASSISTANT (ADVISOR: HAROLD M. BUTNER)

January 2010 - May 2012

- Worked with DEBRIS (Disk Emission via a Bias-free Reconnaissance in the Infrared and Submillimeter): An ESA Herschel Space Observatory Open Time Key Project
- Participated in a literature search of stellar ages and rotational velocities for nearly 450 target stars to help characterize and determine if stellar multiplicity was present in target debris disks.
- Assisted in a search of binaries among DEBRIS targets using the NIR adaptive optics camera on the Shane 3-meter reflector telescope at UCO/Lick Observatory in order to study the interplay between debris disks and stellar multiplicity.
- Reduced and analyzed images of stars using Image Reduction and Analysis Facility (IRAF) and Python to create an updated catalog of photometric observations.
- Submitted research to the SAO/NASA Astrophysics Data System.

James Madison University

Harrisonburg, VA

UNDERGRADUATE RESEARCH ASSISTANT (ADVISORS: WILLIAM R. ALEXANDER AND CARLOS W.

August 2009 - May 2010

SALGADO (NORFOLK STATE UNIVERSITY))

- Applied differential photometry to time-dependent stellar systems in order to observe nearby bright transiting exoplanets and pulsating variable stars.
- Collected images of target stars using 16-inch Schmidt-Cassegrain telescope and remotely operating the Rapid Response Robotic Telescope (RRRT) at the University of Virginia's Fan Mountain Observatory.
- Assisted in image reduction and data analysis to produce brightness profiles of observed variable stars and exoplanets, as well as derive various useful parameters about each star system.
- Presented findings at the James Madison University Physics Symposium in the spring of 2010.

Leadership Experience

Texas A&M University

College Station, TX

UNDERGRADUATE STUDENT MENTOR

May 2015 - August 2015

- Supervised and assisted REU student with research project investigating temporal variability of dust devils at Gusev Crater, Mars.
- Provided guidance and support involving programming in IDL, writing in an academic format, and poster visualization.

James Madison University

Harrisonburg, VA

PRESIDENT OF ASTRONOMY CLUB

August 2011 - May 2012

- Organized and planned events and activities, including hosting guest speakers, fundraisers, and monthly observation nights.

Honors & Awards

NASA Group Achievement Award, For exceptional technical innovations & execution of rover surface

July 2017 operations leading to numerous, profound new discoveries about the ancient climate and habitability of Mars. College Station, TX

2011-2012 **Dean's List**, For carrying a semester course load of 12 graded credit hours or more and earning a GPA greater than 3.5. Harrisonburg, VA

May 2012 **Sigma Pi Sigma**, Inducted into the National Physics Honor Society. Harrisonburg, VA

Publications and Presentations

Wolfe, C.A., M.T. Lemmon (2015). Retrieving Atmospheric Dust Loading on Mars Using Engineering Cameras and MSL's Mars Hand Lens Imager (MAHLI). Abstract presented at 2015 Fall Meeting, AGU, San Francisco, CA, Dec. 14-18. (Poster presentation)

Wolfe, C.A., M.T. Lemmon (2014). Using Engineering Cameras on Mars Rovers and Landers to Retrieve Atmospheric Dust Loading. Abstract presented at 2014 Fall Meeting, AGU, San Francisco, CA, Dec. 15-19. (Poster presentation)

Wolfe, C.A., M.T. Lemmon (2014). Using Engineering Cameras on Mars Rovers and Landers to Retrieve Atmospheric Dust Loading. Abstract presented at 2015 Spring Meeting, LPSC, The Woodlands, TX, Mar. 16-20. (Poster presentation)

Butner H.M., Saikin, A., Leisure, G. S., Wolfe, C. A., Tom, H., Duchene, G., Rodriguez, D., DEBRIS Team (2012). The Search for Possible Stellar Companions of DEBRIS Candidate Stars: An Update. Abstract presented at 219th AAS Meeting, AAS, Austin, TX, Jan. 8-12. (Poster presentation)