Meredith L. Rawls, PhD

Stellar Astronomer & Software Developer

office
Department of Astronomy
University of Washington
Box 351580, U.W.
Seattle, WA 98195-1580
mrawls@uw.edu

home
1534 NW 60th St
Seattle, WA 98107
(509) 308-4799
meredith.rawls@gmail.com

internet
staff.washington.edu/mrawls
twitter.com/merrdiff
github.com/mrawls

education

2016 **Ph.D.** Astronomy — New Mexico State University, Las Cruces NM
Red Giants in Eclipsing Binaries as a Benchmark for Asteroseismology

2010 **M.S.** Astronomy — San Diego State University, San Diego CA
Refined Neutron Star Mass Determinations for Six Eclipsing X-Ray Pulsar Binaries

2008 **B.S.** Physics (Emphasis in Astrophysics) — Harvey Mudd College, Claremont CA
Music humanities concentration; Semester abroad in Moscow, Russia

employment

2016–Now **Vera C. Rubin Observatory LSST Researcher & DiRAC Fellow** — UW, Seattle, Washington
2019–Now *Research Scientist*
- Prompt processing Data Management with the Science Pipelines team
- Verification & Validation on data previews to prepare for Rubin operations
- Research in satellite constellation mitigation for ground-based astronomy

2016–2019 *Research Associate* - Built a prototype difference imaging pipeline

2010–2016 **NMSU Department of Astronomy** — Las Cruces, New Mexico
Research Associate
- Observed and modeled red giant binaries as a window to stellar physics
- Trained at Apache Point Observatory & awarded numerous observing runs

Teaching Assistant
- Prepared, taught, and graded intro astronomy laboratory exercises
- Piloted an online distance-learning lab (astronomy.nmsu.edu/geas)

2011 **Indian Institute of Astrophysics** — Bangalore, India
Research Assistant - Derived orbital solutions for eclipsing binaries in the LMC

2008–2010 **SDSU Department of Astronomy** — San Diego, California
Research Assistant - Neutron star masses from binary observations and models
Teaching Associate - Intro labs, field trips, planetarium shows, new lab manual

2007 **Carnegie Observatories** — Pasadena, California
Research Assistant - Giant star chemical tagging & two Las Campanas runs

achievements & awards

2021–2022 **Kickstarter Grants Program** — Las Cumbres Observatory & Heising-Simons Foundation
$20k for Trailblazer, an open data repository for satellite-streaked images

2021 **Chair, SATCON2 Observations Working Group (WG)** — AAS & NSF's NOIRLab
Recruited and led WG, developed SATCON1 implementations, workshop SOC

2019–Now **Science Pipelines, URSSI, Astro Data Science Workshops** e.g., URSSI & The Carpentries
Instructor and helper for advanced scientific software tutorials and workshops

2017–Now **Certified Software Carpentry Instructor** — The Carpentries
Instructor and helper for regular introductory scientific computing workshops

2016 **Postdoc Poster Award Winner** — Cool Stars 19 SOC

2015 **Chambliss Astronomy Achievement Student Award, Honorable Mention** — AAS 225

2012, 2013 **NM Space Grant Graduate Research Fellowship x2** — New Mexico Space Grant Consortium

2009 **Ruth and Clifford Smith Astronomy Fellowship** — San Diego State University

engagement

2022–Now **Curriculum Advisory Committee: Foundations of Astro Data Science** The Carpentries

2020–2021 **D&QS Mitigations & Observations Working Groups** UNOOSA, IAU, IAC, NSF's NOIRLab
Coauthored reports for the UN's COPUOS on satellite impacts and mitigations

2020–2021 **Panelist x3** NSF, NASA, LCO/LSST

2020 **SATCON1 Observations & Mitigations Working Groups** AAS & NSF's NOIRLab
Developed recommendations for mitigating satellite impacts on astronomy

2018–2020 **DiRAC Visitor's Committee** Dept of Astronomy, UW

2016–2017 **ComSciCon-PNW Chair** comscicon.com/comscicon-pnw2017, Seattle
Science communication conference organizing chair for 40 STEM grad students

2015 **Inclusive Astronomy Workshop** Vanderbilt University, Nashville

2013–2018 **Science Writer and Editor** Astrobites Collaboration, astrobites.com

2013 **Astronomy Ambassador Training** AAS & Astronomical Society of the Pacific

student advising

2020–Now **Project Lead & Undergrad Research Advisor** University of Washington
Leading the Trailblazer team to build a repository for satellite-streaked images

2018–2019 **Pre-Major in Astronomy Program (Pre-MAP) Mentor** University of Washington
Undergrad mentor for projects with LSST-precursor data from ZTF and DECam

2016–2017 **Student Advisor** SDSS FAST / New Mexico State University
Primary mentor and scientific resource for a post-baccalaureate astronomer

publications

Dark and Quiet Skies for Science and Society II: Working Group Reports
More than 100 coauthors in three Working Groups, including **M. Rawls**
2022, NSF's NOIRLab, see Part 3 Chapter 5 "Satellite Constellation Working Group: Observatories"

SATCON2: Observations Working Group Report. In *Report of the SATCON2 Workshop, 12–16 July 2021*
M. L. Rawls et al. 2021, Bulletin of the AAS

SATCON2: Executive Summary. In *Report of the SATCON2 Workshop, 12–16 July 2021*
C. Walker, J. Hall, C. Walker, **M. Rawls**, et al. 2021, Bulletin of the AAS

Dark and Quiet Skies for Science and Society: Report and recommendations
More than 85 coauthors in five Working Groups, including **M. Rawls**
2021, IAU Publications, see Chapter 6 "Satellite Constellation Report"

Satellite Constellation Internet Affordability and Need
M. L. Rawls et al. 2020, Res. Notes AAS, 4, 189

Impact of Satellite Constellations on Optical Astronomy and Recommendations Toward Mitigations
C. Walker, J. Hall, [7 lead authors & 19 alphabetized co-authors], **M. Rawls**, et al.
2020, SATCON1 Workshop Report (Member of Observations and Mitigations Working Groups)

Mitigation of LEO Satellite Brightness and Trail Effects on the Rubin Observatory LSST
J. A. Tyson, Ž. Ivezić, A. Bradshaw, **M. L. Rawls**, et al. 2020, The Astronomical Journal, 160, 226

APOGEE/*Kepler* Overlap Yields Orbital Solutions for a Variety of Eclipsing Binaries
J. M. Clark Cunningham, **M. L. Rawls**, et al. 2019, The Astronomical Journal, 158, 106

An Overview of the LSST Image Processing Pipelines
J. Bosch, [24 alphabetized co-authors], **M. L. Rawls**, et al. 2019, ADASS XXVIII, 523, 521

Testing the Asteroseismic Scaling Relations for Red Giants with Eclipsing Binaries Observed by Kepler
P. Gaulme, J. McKeever, J. Jackiewicz, **M. L. Rawls**, et al. 2016, The Astrophysical Journal, 832, 121

Red Giants in Eclipsing Binaries as a Benchmark for Asteroseismology
M. L. Rawls 2016, PhD Thesis, doi:10.5281/zenodo.50996
Committee: J. Jackiewicz (chair), L. Boucheron, P. Gaulme, T. Harrison, & R. Walterbos

KIC 9246715: The Double Red Giant Eclipsing Binary With Odd Oscillations
M. L. Rawls, P. Gaulme, J. McKeever, et al. 2016, The Astrophysical Journal, 818, 108

Red Giants in Eclipsing Binary and Multiple-Star Systems: Modeling and Asteroseismic Analysis of 70 Candidates from Kepler Data
P. Gaulme, J. McKeever, **M. L. Rawls**, et al. 2013, The Astrophysical Journal, 767, 82

Refined Neutron Star Mass Determinations for Six Eclipsing X-Ray Pulsar Binaries
M. L. Rawls, J. A. Orosz, J. E. McClintock, et al. 2011, The Astrophysical Journal, 730, 25

select presentations

(t) = talk (p) = poster

(t) Satellite constellations, astronomy, and the future of our sky
2021 November, U of A Steward + NOIRLab Joint Colloquium, *Invited Speaker*, doi:10.5281/zenodo.5646608
2021 October, USF Colloquium, *Invited Speaker*

(t) Preparing for Big Data from Vera C. Rubin Observatory
2021 April, IAA-CSIC SOMACHINE School, *Invited Speaker*

(t) Astronomy, Satellites, and You
2021 February, compileHer <interstell/Her> Keynote, *Invited Speaker*

(t) Vera C. Rubin Observatory: A Big Data Machine for the 21st Century
2021 January, IAA-CSIC Colloquium, *Invited Speaker*, doi:10.5281/zenodo.4477682

(p) Assessing Brightness Mitigations of Low-Earth Orbit Satellites
2021 January, 237th AAS Meeting, #324.08, iPoster

(t) Comparing SpaceX's DarkSat to brighter Starlink siblings in *g*-band with DECam
2020 June, SATCON1, *Invited Speaker*, doi:10.5281/zenodo.3937869

(t) The Software Behind LSST's Time Domain Science
2019 August, Vanderbilt Seminar, *Invited Speaker*

(p) Real Time Image Differencing with the LSST Alert Production Pipeline
2019 January, 233rd AAS Meeting, #363.25, doi:10.5281/zenodo.2543927

(t) Welcome and LSST Alert Production Overview
2018 May, DiRAC Inaugural Open House, *Invited Speaker*

(t) From Standalone Scripts to Software Development
2017 May, Python in Astronomy, Leiden, Netherlands

(t) A High Resolution Movie of the Night Sky with LSST
2017 February, University of British Columbia, *Invited Speaker*

(t) The Large Synoptic Survey Telescope: From Software to Science
2016 December, Herzberg Institute of Astrophysics, *Invited Speaker*

(t) The Odd Oscillatory Behavior of Red Giant Binaries
2016 November, Harvard CfA Stars & Planets Seminar, *Invited Speaker*

(p) Red Giant Eclipsing Binaries: Exploring Non-Oscillators and Testing Asteroseismic Scalings
2016 June, Cool Stars 19, Postdoc Poster Award Winner, doi:10.5281/zenodo.58046

(t) Red Giants in Eclipsing Binaries as a Benchmark for Asteroseismology
2016 April, NMSU Department of Astronomy Colloquium, PhD Thesis Defense