

Meredith L. Rawls, PhD

Research Scientist & Satellite Interference Mitigation


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education

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|------|---|--|
| 2016 | Ph.D. Astronomy | New Mexico State University, Las Cruces NM |
| | <i>Red Giants in Eclipsing Binaries as a Benchmark for Asteroseismology</i> | |
| 2010 | M.S. Astronomy | San Diego State University, San Diego CA |
| | <i>Refined Neutron Star Mass Determinations for Six Eclipsing X-Ray Pulsar Binaries</i> | |
| 2008 | B.S. Physics (Emphasis in Astrophysics) | Harvey Mudd College, Claremont CA |
| | Music humanities concentration; semester abroad in Moscow, Russia | |

employment

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|-----------|---|------------------------|
| 2016–Now | UW Department of Astronomy for Vera C. Rubin Observatory/LSST | Seattle, Washington |
| | 2019–Now <i>Research Scientist</i> | |
| | <ul style="list-style-type: none">• Prompt processing Data Management with the Science Pipelines team• Verification & Validation on precursor and commissioning data for Rubin• Research in satellite constellation mitigation for ground-based astronomy | |
| | 2016–2019 <i>Research Associate</i> — Built a prototype difference imaging pipeline | |
| 2010–2016 | NMSU Department of Astronomy | Las Cruces, New Mexico |
| | <i>Research Associate & Teaching Assistant</i> — Observed and modeled red giant binaries as a window to stellar physics; piloted an online distance-learning lab | |
| 2011 | Indian Institute of Astrophysics | Bangalore, India |
| | <i>Research Assistant</i> — Derived orbital solutions for eclipsing binaries in the LMC | |
| 2008–2010 | SDSU Department of Astronomy | San Diego, California |
| | <i>Research Assistant & Teaching Associate</i> — X-Ray binaries & lab instructor | |
| 2007 | Carnegie Observatories | Pasadena, California |
| | <i>Research Assistant</i> — Giant star chemical tagging & two Las Campanas runs | |

achievements & awards

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|------------|--|---|
| 2022–Now | International Astronomical Union Centre for the Protection of the Dark & Quiet Sky from Satellite Constellation Interference (IAU CPS) | SatHub Co-Lead |
| | Founded and leading SatHub, a volunteer-driven collaboration to quantify and share impacts of satellite constellations across the electromagnetic spectrum | |
| 2022 | Project Mentor, Distributed Research Experiences for Undergraduates | CRA-WP |
| | Led project “Satellite Constellation Avoidance with the Rubin Observatory LSST” | |
| 2022 | Project Lead, Data Science for Social Good Student Fellowship | UW eScience Institute |
| | Led project “Quantifying the Impact of Satellite Streaks in Astronomical Images” | |
| 2021–2022 | Kickstarter Grants Program | Las Cumbres Observatory & Heising-Simons Foundation |
| | \$20k for Trailblazer, an open data repository for satellite-streaked images | |
| 2017–Now | Invited member of DiRAC as a Research Fellow | Department of Astronomy, UW |
| 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	Committee for the Protection of Astronomy and the Space Environment	AAS
2022–Now	Curriculum Advisory Committee: Foundations of Astro Data Science	The Carpentries
2021	Chair, SATCON2 Observations Working Group (WG) Recruited and led WG, developed SATCON1 implementations, workshop SOC	AAS & NSF's NOIRLab
2020–2022	Project Lead & Undergrad Research Advisor Led the Trailblazer team and built a repository for satellite-streaked images	UW Department of Astronomy
2020–2021	D&QS Mitigations & Observations Working Groups Coauthored reports for the UN's COPUOS on satellite impacts and mitigations	UNOOSA, IAU, IAC, NSF's NOIRLab
2020	SATCON1 Observations & Mitigations Working Groups Developed recommendations for mitigating satellite impacts on astronomy	AAS & NSF's NOIRLab
2019–Now	Science Pipelines, URSSI, Astro Data Science Workshops Instructor and helper for advanced scientific software tutorials and workshops	e.g., URSSI & The Carpentries
2018–2020	DiRAC Visitor's Committee	UW Department of Astronomy
2018–2019	Pre-Major in Astronomy Program (Pre-MAP) Mentor Undergrad mentor for projects with LSST precursor data from ZTF and DECam	UW Department of Astronomy
2016–2017	Chair, ComSciCon-PNW Science communication conference organizing chair for 40 STEM grad students	comscicon.com/comscicon-pnw2017 , Seattle
2016–2017	Student Advisor Primary mentor and scientific resource for a post-baccalaureate astronomer	SDSS FAST / New Mexico State University
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

publications

- IAU CPS Tools to Address Satellite Constellation Interference
M. Dadighat, **M. L. Rawls**, et al. [2024, ADASS XXXIII, arXiv:2408.16026](#)
- Quantifying & Mitigating Satellite Constellation Interference with SatHub
M. L. Rawls et al. [2024, ADASS XXXIII, arXiv:2408.15223](#)
- Expected Impact of Glints from Space Debris in the LSST
J. A. Tyson, A. Snyder, D. Polin, **M. L. Rawls**, & Ž. Ivezić [2024, ApJL, 966, L38](#)
- SatHub Panel: Satellite Interference in Observatories Around the World
S. Eggl, [5 panelist co-authors], **M. L. Rawls**, & M. W. Peel [2023, IAU Symposium 385, arXiv:2408.15222](#)
- Summary of SatHub, and the current observational status of satellite constellations
M. W. Peel, S. Eggl, **M. L. Rawls**, et al. [2023, IAU Symposium 385, arXiv:2404.18742](#)
- The high optical brightness of the BlueWalker 3 satellite
S. Nandakumar, S. Eggl, J. Tregloan-Reed, [25 observer & project lead co-authors], **M. L. Rawls**, et al. [2023, Nature, 623, 938–941](#)
- Satellite Constellation Avoidance with the Rubin Observatory Legacy Survey of Space and Time
J. A. Hu, **M. L. Rawls**, P. Yoachim, & Ž. Ivezić [2022, ApJL, 941, L15](#)
- The Case for Space Environmentalism
A. Lawrence, **M. L. Rawls**, M. Jah, et al. [2022, Nature Astronomy, 6, 428–435](#)
- 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, RNAAS, 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, AJ, 160, 226

APOGEE/Kepler Overlap Yields Orbital Solutions for a Variety of Eclipsing Binaries
J. M. Clark Cunningham, **M. L. Rawls**, et al. 2019, AJ, 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, ApJ, 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. Waltherbos

KIC 9246715: The Double Red Giant Eclipsing Binary With Odd Oscillations
M. L. Rawls, P. Gaulme, J. McKeever, et al. 2016, ApJ, 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, ApJ, 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, ApJ, 730, 25

select presentations

(t) = talk (p) = poster

- (t) Satellite Constellations: Monitoring and Mitigation
2024 September, Astronomy and Astrophysics Advisory Committee (AAAC) Meeting, *Invited Speaker*
- (p) The Impact of Satellite Constellations on the Vera C. Rubin Observatory LSST
2024 August, XXXII IAU GA, lead author Ž. Ivezić
- (t) Impacts of Bright Satellites on Ground-Based Optical Astronomy and Our Sky
2024 April, The 4th Annual African Astronomical Society Conference, *Invited Speaker*
- (t) DECam Processing with the Alert Production Pipeline
2023 August, Rubin Project & Community Workshop, *Invited Speaker*
- (t) Environmental Issues in Space: Satellite Streaks and Dark Skies
2023 May, WA Attorney General Environmental Protection & Ecology Divisions "Earth Forums," *Invited Speaker*
- (t) Why Protect the Dark & Quiet Sky?
2022 September, The Private Space Industry Revolution (Smithsonian Associates), *Invited Speaker*
- (t) Overview of Satellite Streaks in Rubin and Beyond
2022 August, Rubin Project & Community Workshop, *Invited Speaker*

- (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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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*
- (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](https://doi.org/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