

Dr. Meredith L. Rawls

Stellar Astronomer and Data Scientist

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education

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

2016–Now	UW Department of Astronomy	Seattle, Washington
	<i>LSST Data Management Postdoctoral Research Associate</i>	
	<ul style="list-style-type: none">• Research and development of astronomical methods, algorithms, and software to identify transients with the Large Synoptic Survey Telescope• Continuing research in stellar astronomy	
2010–2016	NMSU Department of Astronomy	Las Cruces, New Mexico
	<i>Research Associate</i>	
	<ul style="list-style-type: none">• Observed and modeled red giants in eclipsing binaries as a gateway to asteroseismology, stellar evolution, and the Milky Way• Trained and certified observer at Apache Point Observatory	
	<i>Teaching Assistant</i>	
	<ul style="list-style-type: none">• 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
	<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</i> - Neutron star masses from binary observations and models	
	<i>Teaching Associate</i> - Intro labs, field trips, planetarium, and lab manual revision	
2007	Carnegie Observatories	Pasadena, California
	<i>Research Assistant</i> - Giant star chemical tagging & two observing runs at LCO	

experience

2016–Now	Student Advisor	SDSS FAST / New Mexico State University
	Primary mentor and scientific resource for a post-baccalaureate astronomer	
2015–Now	Instructor	Ghost Ranch Education & Retreat Center, Abiquiu, NM
	Designing and leading astronomy-themed weekend retreats for all ages	
2013–Now	Science Writer and Editor	Astrobites Collaboration, astrobites.com
	Astrobites blog: daily summaries of recent research papers in astronomy	
	Spearheaded website redesign and launch (2015), Social Media Czar (2016+)	
2013	ComSciCon Graduate	Communicating Science Conference
	Implemented novel ways to effectively communicate to scientists and the public	
	One of 50 attendees selected from >700; piece published at astronomy.com	
2013	Astronomy Ambassador	American Astronomical Society & Astronomical Society of the Pacific
	Trained in effective techniques to teach scientific concepts to varied audiences	

awards

2016	Postdoc Poster Award Winner	Cool Stars 19 SOC
	Awarded a plenary talk for best poster at the Cool Stars 19 conference	
2015	Chambliss Astronomy Achievement Student Award	American Astronomical Society
	Honorable Mention at the 225th AAS Meeting	
2012, 2013	Graduate Fellowship	New Mexico Space Grant Consortium
	Two-time recipient of the NM Space Grant Graduate Research Fellowship	
2009	Graduate Fellowship	Department of Astronomy, San Diego State University
	Ruth and Clifford Smith Astronomy Fellowship	

engagement

2016–Now	ComSciCon-PNW Organizing Committee Chair	comscicon.org , Seattle, WA
	Planning a regional science communication conference for STEM grad students	
	Chair of organizing committee for two-day event to be held in 2017	
2016	General Education Astronomy Source (GEAS) Trainer	astronomy.nmsu.edu/geas , Remote
	Helped familiarize educators nationwide with distance learning astronomy labs	
2015, 2016	GeekGirlCon Panelist and DIY-Sci-Zone Agent	Seattle, WA
	Invited to speak on several science panels and lead hands-on experiments	
2015	Software Carpentry Workshop	NMSU, Las Cruces, NM
	Lead organizer for a department-wide workshop on scientific computing	
	Served as a “helper” for instructors and learners during the two-day event	
2015	Inclusive Astronomy Conference	Vanderbilt University, Nashville, TN
	Worked to break down barriers to access and create a community of inclusivity	
2015	AAS Media Intern	American Astronomical Society
	Press representative and Astrobites live-blogger for the 225th AAS Meeting	
2014	.Astronomy Conference	dotastronomy.com/six , Chicago, IL
	Contributor to a participant-driven astronomy-online event and hackathon	
2014	Session Chair	NRAO, Socorro, NM
	Session 2, The 30th Annual New Mexico Symposium	
2014	SciCoder Workshop	NYU, New York City, NY
	Gained proficiency with python, git, SQLite, and other computing tools	
2012–2015	Executive Council Committee on Science, Technology & Faith	The Episcopal Church
	Researched issues such as GMOs to create church policy recommendations	
2008–Now	Public Outreach	Various locations
	Star parties, eclipse viewing events, open houses, school visits, and field trips	

publications

Testing the Asteroseismic Scaling Relations for Red Giants with Eclipsing Binaries

Observed by Kepler

P. Gaulme, J. McKeever, J. Jackiewicz, **M. L. Rawls**, E. Corsaro, B. Mosser, J. Southworth, S. Mahadevan, C. Bender, & R. Deshpande

2016, The Astrophysical Journal, In Press

Red Giants in Eclipsing Binaries as a Benchmark for Asteroseismology

M. L. Rawls

2016, PhD Thesis, doi:[10.5281/zenodo.50996](https://doi.org/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, J. Jackiewicz, J. A. Orosz, E. Corsaro, P. G. Beck, B. Mosser, D. W. Latham, & C. A. Latham
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**, J. Jackiewicz, B. Mosser, & J. A. Guzik
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, M. A. P. Torres, C. D. Bailyn, & M. M. Buxton
2011, The Astrophysical Journal, 730, 25

presentations

(t) = talk (p) = poster

- (t) The Large Synoptic Survey Telescope: Status and Opportunities
2016 October, Northwest Astronomers Meeting, *Invited Speaker*
- (p) Red Giant Eclipsing Binaries: Exploring Non-Oscillators and Testing Asteroseismic Scalings
2016 June, The 19th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun
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
- (t) Celestial Stories Hidden in Starlight
2016 February, Sky Bowl of Stars Retreat, Ghost Ranch Conference Center
- (t) Using Eclipsing Binary Star Systems to Measure Starquakes
2016 January, Portland State University BIO Better Know a Lab Seminar Series
- (t) What Makes Red Giants Tick? Linking Tidal Forces, Activity, & Solar-Like Oscillations via Eclipsing Binaries
2016 January, 227th American Astronomical Society Meeting, #105.06D
- (t) Testing Asteroseismology with Red Giants in Eclipsing Binaries
2015 September, University of Washington Astro Lunch
- (t) Pluto's Close Encounter
2015 June, New Mexico State University Sigma Xi Science Cafe
- (t) The Life Story of Stars
2015 March, New Mexico State University "Three Minute Thesis" Competition
- (p) The Double Red Giant Binary With Odd Oscillations
2015 January, 225th American Astronomical Society Meeting, #345.16
Chambliss Astronomy Achievement Student Award Honorable Mention
- (t) Red Giants, Eclipsing Binaries, and Asteroseismology
2014 November, The 30th Annual New Mexico Symposium
- (t) A Very Cursory Introduction to Github and Friends
2014 August, NMSU Astronomy Graduate Student Organization
- (t) A Tale of Two Red Giants: Testing Asteroseismology with KIC 9246715
2014 April, New Mexico Space Grant Symposium
- (t) Red Giants in Eclipsing Binaries as a Benchmark for Asteroseismology
2014 April, New Mexico State University "Three Minute Thesis" Competition
- (t) A Tale of Two Red Giants: Testing Asteroseismology with KIC 9246715
2014 March, NMSU Graduate Research and Arts Symposium

- (t) Red Giants in Eclipsing Binaries as a Benchmark for Asteroseismology
2014 February, NMSU Department of Astronomy Colloquium, PhD Thesis Proposal
- (t) A Tale of Two Red Giants: Testing Asteroseismic Scaling Relations with KIC 9246715
2014 January, 223rd American Astronomical Society Meeting, #405.04
- (t) Red Giants in Eclipsing Binaries: Two for the price of one
2013 October, NMSU Undergraduate Society of Astronomy Students
- (t) Twitter and You: From Twit to Tweeter
2013 September, NMSU Astronomy Graduate Student Organization
- (t) Red Giants in Eclipsing Binaries: Kepler Light Curves, Radial Velocities, & Asteroseismology
2013 July, Giants of Eclipse, 40302
- (t) Red Giants in Eclipsing Binaries: Modeling of Candidates from Kepler Data
2013 April, New Mexico Space Grant Symposium
- (t) Effective Outreach: Astronomy Ambassadors
2013 January, NMSU Department of Astronomy Pizza Lunch (with Jillian Bornak)
- (p) Red Giants in Eclipsing Binaries: First Look at Kepler Light Curves
2013 January, 221st American Astronomical Society Meeting, #142.16
- (t) Hands-on Astronomy: Classroom Activities
2012 June, NMSU K-12 Teacher Training Workshop
- (p) Light Curve Solutions of Eclipsing Binaries in the Large Magellanic Cloud
2012 January, 219th American Astronomical Society Meeting, #153.41
- (t) My Indian Summer: The IRES Graduate Program in Bangalore, India
2011 September, NMSU Department of Astronomy Pizza Lunch
- (t) Light Curve Solutions for Eclipsing Binaries in the LMC
2011 August, Indian Institute of Astrophysics Colloquium, Bangalore
- (t) Refined Neutron Star Mass Determinations in Six Eclipsing X-Ray Pulsar Binaries
2011 June, Indian Institute of Astrophysics Colloquium, Bangalore
- (t) Refined Neutron Star Mass Determinations in Six Eclipsing X-Ray Pulsar Binaries
2010 September, NMSU Department of Astronomy Pizza Lunch
- (t) Refined Neutron Star Mass Determinations in Six Eclipsing X-Ray Pulsar Binaries
2010 April, SDSU Department of Astronomy Colloquium, Master's Thesis Defense
- (p) New Observations and Neutron Star Mass for the X-ray Binary 4U 1538-52
2010 January, 215th American Astronomical Society Meeting
- (p) Refining the Neutron Star Mass Determination in Six Eclipsing X-ray Pulsar Binaries
2009 January, 213th American Astronomical Society Meeting
- (t) Ups And Downs in the Life of a Cataclysmic Variable: The Long-Term Behavior of CM Phe
2008 May, Harvey Mudd College Presentation Days, Senior Thesis Presentation
- (p) Ups And Downs in the Life of a Cataclysmic Variable: The Long-Term Behavior of CM Phe
2008 January, 211th American Astronomical Society Meeting