

Curriculum Vitae – Rachael M. Roettenbacher

Contact Information

Yale Center for Astronomy and Astrophysics
Department of Physics, Yale University
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Education

University of Michigan, Ann Arbor, MI, USA September 2011–April 2016
Ph.D. in Astronomy and Astrophysics April 2016
Advisor: John D. Monnier
Shifting the Starspot Paradigm through Imaging Magnetic Structures and Evolution
M.S. in Astronomy and Astrophysics December 2013
NASA/UNCF Harriet G. Jenkins Predoctoral Fellow 2011–2013
Lehigh University, Bethlehem, PA, USA August 2008–May 2011
M.S. in Physics January 2010
NASA/UNCF Harriet G. Jenkins Predoctoral Fellow 2010–2011
U.S. Dept. of Edu. Graduate Assistance in Areas of National Need Fellow 2008–2010
Ohio Wesleyan University, Delaware, OH, USA August 2005–May 2008
B.A. in Astrophysics and Mathematics, *cum laude* May 2008

Professional Appointments

Yale University, New Haven, CT, USA September 2018–present
Heising-Simons Foundation 51 Pegasi b Prize Postdoctoral Fellow 2021–2024
Yale Center for Astronomy and Astrophysics Prize Postdoctoral Fellow 2018–2021
Stockholm University, Stockholm, Sweden August 2016–July 2018
Postdoctoral Research Fellow

Refereed Articles, First and Second Author

15. **Roettenbacher, R. M.**, Cabot, S. H. C., Fischer, D. A., +28 coauthors
Submitted to AAS Journals, in revisions September 2021
“EXPRES. III. Stellar Activity Signatures of the Planet-Hosting ϵ Eridani”
14. Korhonen, H., **Roettenbacher, R. M.**, +8 coauthors
2021, A&A, 646, 6
“Observing the changing surface structures of σ Gem with SONG”
13. Cabot, S. H. C., **Roettenbacher, R. M.**, +4 coauthors
2021, AJ, 161, 26
“Searching for Planets around Active Stars: A Case Study of HD 101501”
12. Kane, S. R., **Roettenbacher, R. M.**, Unterborn, C. T., Foley, B. J., & Hill, M. L.
2020, PAJ, 1, 36
“Atmosphere Sustainability of LHS 3844b”
11. **Roettenbacher, R. M.** *Invited Review*
2019, Contr. of the Astr. Obs. Skalnaté Pleso, Slovakia, 49, 97
“Interferometry with Meter-Class Telescopes”
10. **Roettenbacher, R. M.** & Vida, K.
2018, ApJ, 868, 3
“The connection between starspots and flares on main-sequence *Kepler* stars”

9. Vida, K. & **Roettenbacher, R. M.**
2018, A&A, 616, 163
“Finding flares in *Kepler* data using machine-learning tools”
8. **Roettenbacher, R. M.** & Kane, S. R.
2017, ApJ, 851, 77
“The Stellar Activity of TRAPPIST-1 and Consequences for the Planetary Atmospheres”
7. **Roettenbacher, R. M.**, Monnier, J. D., Korhonen, H., +7 coauthors
2017, ApJ, 849, 120
“Contemporaneous imaging comparisons of the spotted giant σ Geminorum using interferometric, spectroscopic, and photometric data”
6. **Roettenbacher, R. M.**, Kane, S. R., Monnier, J. D., & Harmon, R. O.
2016, ApJ, 832, 207
“KOI-1003: A new spotted, eclipsing RS CVn binary in the *Kepler* field”
5. **Roettenbacher, R. M.**, Monnier, J. D., Korhonen, H. +12 coauthors
2016, *Nature*, 533, 217
“No Sun-like dynamo on the active star ζ Andromedae from starspot asymmetry”
4. **Roettenbacher, R. M.**, Monnier, J. D., Fekel, F. C., +14 coauthors
2015, ApJ, 809, 159
“Detecting the Companions and Ellipsoidal Variations of RS CVn Primaries: II. α Draconis, a Candidate for Low-Mass Companion Ingestion”
3. **Roettenbacher, R. M.**, Monnier, J. D., Henry, G. W., +17 coauthors
2015, ApJ, 807, 23
“Detecting the Companions and Ellipsoidal Variations of RS CVn Primaries: I. σ Geminorum”
2. **Roettenbacher, R. M.**, Monnier, J. D., Harmon, R. O., Barclay, T., & Still, M.
2013, ApJ, 767, 60
“Imaging Starspot Evolution on Kepler Target KIC 5110407 Using Light-Curve Inversion”
1. **Roettenbacher, R. M.**, Harmon, R. O., Vutisalchavakul, N., & Henry, G. W.
2011, AJ, 141, 138
“A Study of Differential Rotation on Π Pegasi via Photometric Starspot Imaging”

Refereed Articles, Coauthor

**indicates significant contribution*

19. Gardner, T., +8 coauthors, **Roettenbacher, R. M.**, 4 coauthors
Accepted to ApJ, July 2021
“Establishing α Oph as a Prototype Rotator: Precision Orbit with new Keck, CHARA, and RV Observations”
18. Norris, R. P., +18 coauthors, **Roettenbacher, R. M.**, +6 coauthors
Accepted to ApJ, June 2021
“Long Term Evolution of Surface Features on the Red Supergiant AZ Cyg”
17. Martinez, A. O., Baron, F., Monnier, J. D., **Roettenbacher, R. M.**, & Parks, J. R.
2021, ApJ, 916, 60
“Dynamical 3D Interferometric Imaging of λ Andromedae”
16. Gallenne, A. + 10 coauthors, **Roettenbacher, R. M.**, +1 coauthor
2019, A&A, 622, 164
“Multiplicity of Galactic Cepheids from long-baseline interferometry. IV. New detected companions from MIRC and PIONIER observations”

15. Gallenne, A. +13 coauthors, **Roettenbacher, R. M.**, +6 coauthors
2018, ApJ, 867, 121
“A geometrical 1% distance to the short-period binary Cepheid V1334 Cygni”
14. De Rosa, G. +75 coauthors, **Roettenbacher, R. M.**, +25 coauthors
2018, ApJ, 866, 133
“Velocity-resolved reverberation mapping of five bright Seyfert 1 galaxies”
- *13. Hoard, D. W., Howell, S. B., **Roettenbacher, R. M.**, +3 coauthors
2018, AJ, 156, 119
“Kepler, Spitzer, and Hubble observations of the variable white dwarf BOKS 53856: Non-uniform metal absorption in dark spots”
12. Schaefer, G. H., Cassan, A., Gallenne, A., & **Roettenbacher, R. M.**
2018, Exp. Astron., 46, 421
“Interferometry in the Era of Time-Domain Astronomy”
11. Gardner, T., +13 coauthors, **Roettenbacher, R. M.**, +5 coauthors
2018, ApJ, 855, 1
“Precision orbit of δ Delphini and prospects for astrometric detection of exoplanets”
- *10. Hummel, C. A., Monnier, J. D., **Roettenbacher, R. M.**, +12 coauthors
2017, ApJ, 844, 115
“Orbital elements and stellar parameters of the active binary UX Arietis”
9. Kochukhov, O., +10 coauthors, **Roettenbacher, R. M.**, +1 coauthor
2017, AN, 338, 428
“Surface magnetism of cool stars”
8. Gallenne, A., +4 coauthors, **Roettenbacher, R. M.**, +8 coauthors
2016, MNRAS, 461, 1451
“Multiplicity of Galactic Cepheids from long-baseline interferometry. III. Constraints on the new spectroscopic companion of δ Cephei”
7. Gallenne, A., +7 coauthors, **Roettenbacher, R. M.**, +9 coauthors
2015, A&A, 579, 68
“Robust high-contrast companion detection from interferometric observations. The CANDID algorithm and an application to six binary Cepheids”
6. Schaefer, G. H., +24 coauthors, **Roettenbacher, R. M.**, +11 coauthors
2014, **Nature**, 515, 234
“The expanding fireball of Nova Delphini 2013”
5. White, T. R., +9 coauthors, **Roettenbacher, R. M.**, +10 coauthors
2013, MNRAS, 433, 1262
“Interferometric radii of bright Kepler stars with the CHARA Array: θ Cygni and 16 Cygni A and B”
4. Barclay, T., Still, M., Jenkins, J. M., Howell, S. B., & **Roettenbacher, R. M.**
2012, MNRAS, 422, 1219
“Serendipitous Kepler observations of a background dwarf nova of SU UMa type”
3. Napoli, V. J., McSwain, M. V., Marsh Boyer, A. N., & **Roettenbacher, R. M.**
2011, PASP, 123, 1262
“The Distance of the Gamma-ray Binary 1FGL J1018.6-5856”
2. McSwain, M. V., +7 coauthors, **Roettenbacher, R. M.**
2010, AJ, 139, 857
“Multiwavelength Observations of the Runaway Binary HD 15137”

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1. Aragona, C., +3 coauthors, **Roettenbacher, R. M.**, +3 coauthors
2009, ApJ, 698, 514
“H α Emission Variability in the γ -ray Binary LS I +61 303”

Contributed Articles

11. **Roettenbacher, R. M.** *Invited Review*
2020, SPIE, 11446, 11446-8
“Imaging Stellar Surfaces”
10. Zhao, L., + 3 coauthors, **Roettenbacher, R. M.**, +1 coauthor
2020, RNAAS, 4, 9
“The EXPRES Stellar-signals Project. I. Description of Data”
9. Ridgway, S., +7 coauthors, **Roettenbacher, R. M.**, +1 coauthor
2019, BAAS, 51g, 157
Astro2020 Decadal Survey APC white paper
“Revitalizing the Optical/Infrared Interferometry Community in the U.S.”
8. **Roettenbacher, R. M.**, Norris, R. P., Baron, F., +9 coauthors
2019, BAAS, 51c, 181
Astro2020 Decadal Survey science white paper
“High Angular Resolution Astronomy: Resolving Stellar Surface Features”
7. **Roettenbacher, R. M.**, Monnier, J. D., Che, X., +8 coauthors
2015, Proc. of Cambridge Workshop on Cool Stars, Stellar Systems and the Sun, 18, 907
“Pushing the (Convective) Envelope: Imaging Spotted Stellar Surfaces with Optical Interferometry”
6. **Roettenbacher, R. M.**, Monnier, J. D., & Harmon, R. O.
2015, Proc. of Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, 18, 377
“Investigating the Flare Activity of the Spotted Kepler Star KIC 5110407”
5. **Roettenbacher, R. M.**, Monnier, J. D., Harmon, R. O., & Korhonen H.
2014, Proceedings IAU Symp., 302, 212
“The new age of spotted star research using Kepler and CHARA”
4. **Roettenbacher, R. M.** & McSwain, M. V.
2011, Proc. IAU Symp., 272, 545
“Light curves of the Be stars of NGC 3766”
3. Grundstrom, E. D., +6 coauthors, **Roettenbacher, R. M.**, +2 coauthors
2011, Proc. IAU Symp., 272, 290
“Spectroscopic H α and H γ survey of field Be stars: 2004-2009”
2. Grundstrom, E. D., +4 coauthors & **Roettenbacher, R. M.**
2011, Proc. Liège Astrophysical Colloquium, 80, 371
“Observations of Be Disk Building: Optical Spectra of NW Ser (HD 168797) over 35 days”
1. **Roettenbacher, R. M.**, Amouzou, E. C., & McSwain, M. V.
2010, Proc. IAU Symp., 266, 518
“Nonradial pulsations in the open cluster NGC 3766”

Other Articles

1. **Roettenbacher, R. M.**
2016, Aeon Magazine, ed. C. S. Powell
“How the face of a distant star reveals our place in the cosmos”

Selected Awards

- Heising-Simons Foundation 51 Pegasi b Prize Postdoctoral Fellowship, 2021–2024
- Yale Center for Astronomy and Astrophysics Prize Postdoctoral Fellowship, Yale Uni., 2018–2021
- Marie Skłodowska-Curie Individual Fellowship, European Research Council, 2018 (declined)
- Ralph B. Baldwin Prize in Astrophysics and Space Sciences, University of Michigan, 2018
- Olivier Chesneau Prize for the best PhD thesis in high-angular resolution astronomy, Observatoire de la Côte d’Azur/ESO, 2017
- ESO Postdoctoral Fellowship, 2016 (declined)
- NASA Harriet G. Jenkins Predoctoral Fellowship, NASA/UNCF Special Programs, 2010–2013
- Graduate Assistance for Areas of National Need (GAANN) Fellowship, U.S. Dept. of Edu., 2008–2010

Selected Grants

- NASA Extreme Precision Radial Velocity Foundation Science Program (PI of “Disentangling Stellar and Planetary Signatures with Interferometric Images and Extreme Precision Radial Velocities”), 2021–2023
- Heising-Simons Foundation 51 Pegasi b Prize Postdoctoral Fellowship, 2021–2024
- Yale Center for Astronomy and Astrophysics Postdoctoral Fellowship, 2018–2021
- Dahlmark Grant, Stockholm University, 2018
- Travel Grant, Exoclipse Conference, Boise State University, 2017
- Rackham Graduate Student Travel Grant (four), University of Michigan, 2011–2015
- Sigma Xi Grants-in-Aid of Research (two), Sigma Xi National Research Society, 2010 and 2014
- Rackham Graduate Student Research Grant (two), University of Michigan, 2012 and 2013
- Travel Grant (two), International Astronomical Union, 2009 and 2013
- *Kepler* Guest Observer Cycle 4 funding, 2012
- NASA/UNCF Special Programs Harriet G. Jenkins Predoctoral Fellowship, 2010–2013
- Travel Grant, American Astronomical Society, 2009
- Mihoko Yoshida-Dierolf Travel Award, Lehigh University, 2009

Leadership Activities

- Science Organizing Committee, 21st Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun 21, 2020 (postponed to 2022 due to COVID-19)
- Science Organizing Committee, The Sharpest Eyes on the Sky: A 2020 vision for high angular resolution astronomy, 2020 (postponed to 2022 due to COVID-19)
- Science Organizing Committee, 20.5th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun 21, virtual conference, 2021
- Science Program Committee, SPIE Astronomical Telescopes + Instrumentation, Optical and Infrared Interferometry and Imaging VII and VIII, 2020 and 2022
- Science Organizing Committee, TESS Ninja 2 Collaborative Workshop, 2019
- Co-organizer of Cool Stars 20 splinter session (Know Thy Starspot, Know Thy Star), Boston, MA, USA, 2018
- Science Organizing Committee, 9th VLTI Summer School, Lisbon, Portugal, 2018
- Co-founder and organizer, Visibility in Interferometry, promotion of underrepresented groups in interferometry, 2018–present
- Science Team and Working Group Member, Stellar Parameters and Images with a Cophased Array (SPICA), 6-beam visible combiner for the CHARA Array, 2018–present

Research Presentations

Seminars and Colloquia

- University of Wisconsin–Madison, Madison, WI, USA, 2021
- California Institute of Technology, Pasadena, CA, USA, 2021
- Center for Computational Astrophysics, Flatiron Institute, New York, NY, USA 2020
- Stars & Planets, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA, 2020
- Carnegie Institution of Washington, Washington, D.C., USA, 2020
- Center for Astrobiology, University of Arizona, Tucson, AZ, USA, 2020
- University of California–Riverside, Riverside, CA, USA, 2019
- Georgia State University, Atlanta, GA, USA, 2019
- Boston University, Boston, MA, USA, 2019
- Kavli Institute for Theoretical Physics, University of California–Santa Barbara, Santa Barbara, CA, USA, 2019
- American Museum of Natural History, New York City, NY, USA, 2019
- University of Delaware, Newark, DE, USA, 2019
- Konkoly Observatory of the Hungarian Academy of Sciences, Budapest, Hungary, 2019
- Yale University, New Haven, CT, USA, 2018
- Newcastle University, Newcastle upon Tyne, United Kingdom, 2018
- NASA Goddard Space Flight Center, Greenbelt, MD, USA, 2018
- University of Oslo, Oslo, Norway, 2018
- University of Michigan, Ann Arbor, MI, USA, 2018 (Baldwin Prize lecture)
- University of Exeter, United Kingdom, 2018
- University of Chicago, Chicago, IL, USA, 2018
- Konkoly Observatory of the Hungarian Academy of Sciences, Budapest, Hungary, 2017
- Onsala Space Observatory, Chalmers University of Technology, Onsala, Sweden, 2017
- Uppsala University, Uppsala, Sweden, 2016
- Stockholm University, Stockholm, Sweden, 2016
- Vanderbilt University, Nashville, TN, USA, 2015
- Tuorla Observatory, University of Turku, Turku, Finland, 2015
- Radio & Geoastronomy Division, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA, 2015
- Ohio Wesleyan University, Delaware, OH, USA, 2014

Invited Conference Presentations

- The Star-Planet Connection Workshop, ESO remote workshop, 2021
- CHARA Collaboration Meeting, virtual conference, 2021
- Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun 21, Toulouse, France, 2020 (in Modelling Stellar Atmospheres: Advances Brought by Solar Know-How splinter; cancelled due to COVID-19)
- SPIE Astronomical Telescopes + Instrumentation, Optical and Infrared Interferometry and Imaging, Virtual Meeting, 2020
- TASC5/KASC12 Workshop, Cambridge, MA, USA, 2019
- High Angular Resolution View of Stars splinter, AAS Meeting 233, Seattle, WA, USA, 2019
- Observing techniques, instrumentation, and science for metre-class telescopes II, Tatranská Lomnica, Slovakia, 2018
- ESO Workshop on Imaging of Stellar Surfaces, Garching, Germany, 2018
- The Physics of Evolved Stars II: the role of binarity, Nice, France, 2017 (Chesneau Prize lecture)

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- Solar-Stellar Connections Workshop, Ann Arbor, MI, USA, 2015
- Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun 18, Flagstaff, AZ, USA, 2014 (in Stellar Surfaces with High Spatial and Temporal Resolution splinter)

Selected Contributed Conference Presentations

- The Sharpest Eyes on the Sky: A 2020 vision for high angular resolution astronomy, Exeter, UK, 2020 (postponed due to COVID-19)
- AAS Meeting 235, Honolulu, HI, USA, 2020 (poster)
- 16th Potsdam Thinkshop: The Rotation Periods of Cool Stars, Potsdam, Germany, 2019 (talk)
- CHARA/NPOI Collaboration Meeting, Flagstaff, AZ, USA, 2019 (talk)
- AAS Meeting 233, Seattle, WA, USA, 2019 (poster)
- Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun 20, Boston, MA, USA, 2018 (plenary talk)
- CHARA Collaboration Meeting, Paris, France, 2018 (talk)
- Astronomdagarna, Kiruna, Sweden, 2017 (talk)
- Exocclipse: Exploring New Worlds in the Shade, Boise, ID, USA, 2017 (talk)
- 14th Potsdam Thinkshop: Stellar Magnetism, Potsdam, Germany, 2017 (talk)
- IAU Symp. 328: Living Around Active Stars, Maresias, Brazil, 2016 (talk)
- CHARA Collaboration Meeting, Nice, France, 2016 (talk)
- Magnetic Intermediate Mass Stars, Bagnères-di-Bigorre, France, 2016 (talk)
- AAS Meeting 227, Orlando, FL, USA, 2016 (dissertation talk)
- Focus Meeting 13: The Sun and Sunlike Stars, IAU General Assembly XXIX, Honolulu, HI, USA, 2015 (talk)
- CHARA Collaboration Meeting, Atlanta, GA, USA, 2015 (talk)
- Solarnet: Solar and Stellar Magnetic Activity, Palermo, Italy, 2015 (talk)
- AAS Meeting 225, Seattle, WA, USA, 2015 (poster)
- Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun 18, Flagstaff, AZ, USA, 2014 (poster)
- CHARA Collaboration Meeting, Ann Arbor, MI, USA, 2014 (talk)
- XXV Canary Islands Winter School of Astrophysics: Cosmic Magnetic Fields, La Laguna, Tenerife, Canary Islands, Spain, 2013 (talk)
- IAU Symp. 302: Magnetic Fields Throughout Stellar Evolution, Biarritz, Paris, 2013 (talk)
- CHARA/NPOI Collaboration Meeting, Flagstaff, AZ, USA, 2013 (talk)
- AAS Meeting 219, Austin, TX, USA, 2012 (talk)

Observing Experience

- 12 proposals (109 total nights), CHARA Array
- 3 proposals (44 hours, across 57 nights), CTIO SMARTS 1.3m
- 1 proposal (24 hours), VLT
- 1 proposal (1 night), KPNO 4m
- 1 proposal (10 nights), MDM 2.4m and 1.3m

Teaching Experience

- **Undergraduate Student Research Advisor**, Yale University, 2021–present
Advising an undergraduate student on a project investigating asteroseismology with EXPRES
- **Center for Integration of Research, Teaching, and Learning (CIRTL) Network, Massive Open Online Course (MOOC)**, 2018
An Introduction to Evidence-Based Undergraduate STEM Teaching Completion certificate with distinction
- **Undergraduate Student Research Co-Advisor**, 2017–2019
Advising an undergraduate student on a project on stellar activity in the *Kepler* field.
Co-advising with B. T. Montet, University of Chicago
- **PhD Student Research Co-Advisor, Stockholm University**, 2017–2018
Advising a PhD student on a project on stellar activity and the solar-stellar connection.
- **Graduate Student Instructor Mentor, University of Michigan**, 2014–2015
Oversaw graduate student instructors for introductory astronomy classes.
Provided graduate student instructors with teaching guidance.
- **Graduate Student Instructor, University of Michigan**, Winter 2011
Taught introductory astrophysics laboratories (ASTRO 201).
- **Teaching Assistant, Lehigh University**, Fall 2009
Taught introductory physics recitation (PHY 11).
- **Teaching Assistant, Lehigh University**, Fall 2008
Taught introductory astronomy laboratories (PHY 8 & ASTR 8).

Service and Outreach Activities

- Referee for AAS Journals, A&A, PASP, and others, 2015–present
- Reviewer for NSF and NASA proposals, 2020–present
- Yale University Internal Palomar/Keck Observatory TAC, 2020A–2022A
- Presenter for Astronomy on Tap New Haven, 2020
- Co-organizer, Yale Astronomy & Astrophysics Colloquium Series, 2019–2020
- Mentor, AstroSibs, Mentoring of Yale undergraduates majoring in astronomy, 2018–2020
- Attendee, Early Career Focus Session for the Decadal Survey for Astronomy & Astrophysics, 2018
- Stars and Planets Group Meeting creator and leader, Stockholm University, 2017–2018
- Participant for STEM Voices and Astronomisk Ungdom (Sweden) podcasts, 2017, 2019
- PhD candidate selection committee, Stockholm University, 2016
- Chambliss Award Judge for the AAS, 2016, 2019
- Astrocoffee Organizer, morning astro-ph discussion, 2013–2015
- University of Michigan Internal Magellan/MDM Observatory TAC, 2015A
- Local Organizing Committee, CHARA Collaboration Meeting, Ann Arbor, MI, USA, 2014
- University of Michigan Internal SWIFT TAC, 2014A