

Curriculum Vitae

Contact Information

Stockholm University
AlbaNova University Center
Department of Astronomy
106 91 Stockholm, Sweden

+46 (0)85 537 85 46
rachael@astro.su.se

Education

University of Michigan , Ann Arbor, MI, USA	September 2011–April 2016
Ph.D. in Astronomy and Astrophysics	April 2016
M.S. in Astronomy and Astrophysics	December 2013
NASA/UNCF Harriet G. Jenkins Pre-doctoral Fellow	2011–2013
Lehigh University , Bethlehem, PA, USA	August 2008–May 2011
M.S. in Physics	January 2010
NASA/UNCF Harriet G. Jenkins Pre-doctoral 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, <i>cum laude</i>	May 2008

Professional Appointment

Stockholm University , Stockholm, Sweden	August 2016–present
Postdoctoral Research Fellow	

Refereed Articles, First Author

8. **Roettenbacher, R. M.** & Kane, S. R.
submitted to AAS Journals July 2017
“The Stellar Activity of TRAPPIST-1 and Consequences for the Planetary Atmospheres”
7. **Roettenbacher, R. M.**, Monnier, J. D., Korhonen, H., +7 coauthors
Accepted to ApJ September 2017, arXiv:1709.10109
“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. *o* 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 II Pegasi via Photometric Starspot Imaging”

Refereed Articles, Coauthor

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
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”

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”

In preparation: Korhonen, H., Järvinen, S. P., **Roettenbacher, R. M.**, +7 coauthors
“Long-term longitudinal behaviour of starspots on active stars”

Contributed Articles

7. **Roettenbacher, R. M.**, Monnier, J. D., Che, X., +8 coauthors 2015, Proceedings 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, Proceedings 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. 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, Proceedings IAU Symp., 272, 545
“Light curves of the Be stars of NGC 3766”
3. Grundstrom, E. D., Gies D. R., Aragona C., Boyajian, T. S., Garcia, V. E., Marsh, A. N., McSwain, M. V., **Roettenbacher, R. M.**, Williams, S. J., & Wingert D. W. 2011, Proceedings IAU Symp., 272, 290
“Spectroscopic H α and H γ survey of field Be stars: 2004-2009”
2. Grundstrom, E. D., McSwain, M. V., Aragona, C., Boyajian, T. S., Marsh, A. N., & **Roettenbacher, R. M.** 2011, Proceedings Liège Astrophysical Colloquium, 80, 371
“Observations of Be Disk Building: Optical Spectra of NW Serpentis (HD 168797) over 35 days”
1. **Roettenbacher, R. M.**, Amouzou, E. C., & McSwain, M. V. 2010, Proceedings 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 and Grants

- 2017 Olivier Chesneau Prize for the best PhD thesis in high-angular resolution astronomy, Observatoire de la Côte d’Azur/ESO
- NASA Harriet G. Jenkins Pre-Doctoral Fellowship, NASA/UNCF Special Programs
- Graduate Assistance for Areas of National Need (GAANN) Fellowship, U.S. Dept. of Edu.
- Sigma Xi Grants-in-Aid of Research (two), Sigma Xi National Research Society

- Rackham Graduate Student Research Grant (two), University of Michigan
- Travel Grant (two), International Astronomical Union
- Rackham Graduate Student Travel Grant (four), University of Michigan
- Travel Grant, American Astronomical Society
- Mihoko Yoshida-Dierolf Travel Award, Lehigh University
- Faculty Scholarship, Ohio Wesleyan University
- Dean's List (all semesters), Ohio Wesleyan University
- Outstanding Undergraduate Research Award, Society of Physics Students
- Finalist for Undergraduate Research Award, Vanderbilt University
- Rusk Prize for Excellence in Physics, Ohio Wesleyan University
- Superior rating in Undergraduate Research, Sigma Xi National Research Society
- Robert and Elizabeth Muller Award for Promise in Physics, Ohio Wesleyan University
- Florence Leas Prize in Mathematics, Ohio Wesleyan University

Selected Presentations

- University of Chicago, Chicago, USA, 2018 (invited seminar)
- Konkoly Observatory of the Hungarian Academy of Sciences, Budapest, Hungary, 2017 (invited seminar)
- Astronomdagarna, Kiruna, Sweden, 2017 (contributed talk)
- Exoclipse: Exploring New Worlds in the Shade, Boise, USA, 2017 (contributed talk)
- The Physics of Evolved Stars II: the role of binarity, Nice, France, 2017 (invited Chesneau Prize lecture)
- 14th Potsdam Thinkshop: Stellar Magnetism, Potsdam, Germany, 2017 (contributed talk)
- Onsala Space Observatory, Chalmers University of Technology, Onsala, Sweden, 2017 (invited seminar)
- IAU Symp. 328: Living Around Active Stars, Maresias, Brazil, 2016 (contributed talk)
- Uppsala University, Uppsala, Sweden, 2016 (invited seminar)
- Stockholm University, Stockholm, Sweden, 2016 (invited seminar)
- CHARA Collaboration Meeting, Nice, France, 2016 (contributed talk)
- Magnetic Intermediate Mass Stars, Bagnères-di-Bigorre, France, 2016 (contributed talk)
- AAS Meeting 227, Orlando, USA, 2016 (dissertation talk)
- Vanderbilt University, Nashville, TN, USA, 2015 (invited seminar)
- Focus Meeting 13: The Sun and Sunlike Stars, IAU General Assembly XXIX, Honolulu, USA, 2015 (contributed talk)
- Solar-Stellar Connections Workshop, Ann Arbor, USA, 2015 (invited talk)
- CHARA Collaboration Meeting, Atlanta, USA, 2015 (contributed talk)
- Tuorla Observatory, University of Turku, Turku, Finland, 2015 (invited seminar)
- Solarnet: Solar and Stellar Magnetic Activity, Palermo, Italy, 2015 (contributed talk)
- Radio & Geoastronomy Division, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA, 2015 (invited seminar)
- AAS Meeting 225, Seattle, USA, 2015 (poster presentation)
- Ohio Wesleyan University, Delaware, OH, USA, 2014 (invited seminar)
- Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun 18, Flagstaff, USA,

- 2014 (invited talk in Stellar Surfaces with High Spatial and Temporal Resolution splinter)
- CHARA Collaboration Meeting, Ann Arbor, USA, 2014 (contributed talk)
- XXV Canary Islands Winter School of Astrophysics: Cosmic Magnetic Fields, La Laguna, Tenerife, Canary Islands, Spain, 2013 (contributed talk)
- IAU Symp. 302: Magnetic Fields Throughout Stellar Evolution, Biarritz, France, 2013 (contributed talk)
- CHARA/NPOI Collaboration Meeting, Flagstaff, USA, 2013 (contributed talk)
- AAS Meeting 219, Austin, USA, 2012 (contributed talk)
- International Astronomical Union Working Group on Active B Stars, Rio de Janeiro, Brazil, 2009 (contributed talk)

Collaborative Visits

- Konkoly Observatory of the Hungarian Academy of Sciences, October 2017, host: Krisztián Vida
- San Francisco State University, Dept. of Physics and Astronomy, February 2017, host: Stephen R. Kane
- University of Michigan, Dept. of Astronomy, January 2017, host: John D. Monnier
- University of Copenhagen, Dark Cosmology Centre, February 2016, host: Heidi Korhonen
- University of Turku, Dept. of Physics and Astronomy, February 2015, host: Heidi Korhonen
- Harvard University, Dept. of Astronomy, January 2015, host: John A. Johnson
- San Francisco State University, Dept. of Physics and Astronomy, August 2014, host: Stephen R. Kane
- NASA Exoplanet Science Institute/Jet Propulsion Laboratory, June–August 2013, internship as NASA Jenkins Fellow, host: Stephen R. Kane
- NASA Ames Research Center, *Kepler* Guest Observer Office, May–August 2011 and May–July 2012, internship as NASA Jenkins Fellow, host: Martin Still

Selected Observing Proposals

- **Roettenbacher, R. M.**, Monnier, J. D., & Harmon, R. O., 19 visits on CTIO SMARTS 1.3-m, 2017B NOAO
“Photometric Imaging of the Spotted Star UX Ari”
- **Roettenbacher, R. M.**, Monnier, J. D., Korhonen, H., et al., 3 nights at CHARA, 2017B
“Imaging the Spotted, Active Giant of UX Ari with MIRC”
- **Roettenbacher, R. M.** & Monnier, J. D., 7 nights at CHARA, 2017A
“Imaging the Spotted RS CVn Variable TZ CrB”
- **Roettenbacher, R. M.**, Monnier, J. D., & Hummel, C., 13 nights at CHARA, 2016
“Imaging the Spotted Surfaces of UX Ari and TZ Tri with MIRC”
- **Roettenbacher, R. M.**, Monnier, J. D., & Mérand, A., 3 nights at CHARA, 2015-1
“Imaging Stellar Activity and Searching for Companions of 61 Cygni A and B”
- **Roettenbacher, R. M.**, Monnier, J. D., Baron, F., et al., 10 nights at CHARA, 2014
“Detecting the faint main-sequence companions of the spotted giants of RS CVn systems”
- Monnier, J. D., **Roettenbacher, R. M. (Science PI)**, & Harmon, R. O., targets, Cycle 5 *Kepler* Guest Observer Program (not observed due to reaction wheel failure)

- “Extreme Starspots II”
- **Roettenbacher, R. M.**, Monnier, J. D., Che, X., et al., 18 nights at CHARA, 2013
“Resolving the Spotted Surface of ζ And with simultaneous interferometric, Doppler, and Photometric Imaging”
- **Roettenbacher, R. M.**, Monnier, J. D., & Korhonen, H., 18 visits on CTIO SMARTS 1.3-m, 2013B NOAO
“Resolving the Spotted Surface of ζ And with Simultaneous Interferometric, Doppler, and Photometric Imaging”
- **Roettenbacher, R. M.**, Monnier, J. D., & Harmon, R. O., 1 night at KPNO 4-m, 2013A NOAO
“Breaking the Inclination Degeneracy: Accurate Spot Modeling of Young Solar Analogs”
- **Roettenbacher, R. M.**, Monnier, J. D., Che, X., et al., 9 nights at CHARA, 2012-2
“Resolving the Spotted Surface of σ Gem with Simultaneous Interferometric, Doppler, and Photometric Imaging”
- **Roettenbacher, R. M.**, Monnier, J. D., Harmon, R. O., & Korhonen, H., 20 visits on CTIO SMARTS 1.3-m, 2012B NOAO
“Photometric Observations of σ Gem with Simultaneous Interferometric and Doppler Imaging”
- **Roettenbacher, R. M.**, Monnier, J. D., Che, X., et al., 13 nights at CHARA, 2012-1
“Resolving the spotted surfaces of o Dra and ϵ UMa with simultaneous interferometric and Doppler imaging”
- Monnier, J. D., **Roettenbacher, R. M. (Science PI)**, Harmon, R. O., & Barclay, T., targets and funding, Cycle 4 *Kepler* Guest Observer Program Observing Proposal
“Extreme Starspots”
- **Roettenbacher, R. M.**, Monnier, J. D., & Barclay, T., CCDS spectrograph for 4 nights on 2.4-m and 6 nights on 1.3-m, UM 2012A MDM Observing Proposal
“Obtaining Measures of $v \sin i$ for Spotted *Kepler* Targets”

Observing Experience

- Mount Wilson Observatory, CHARA Interferometer with the Michigan Infrared Combiner (MIRC), 85 nights (2011–2017), and CLIMB, 3 nights (2014)
- Kitt Peak National Observatory, 4-m with Échelle spectrograph, 1 night (2013)
- MDM Observatory, 1.3-m with CCDS spectrograph and R4K imager, 19 nights (2012–2013)
- MDM Observatory, 2.4-m with CCDS spectrograph, 4 nights (2012)
- Cerro Tololo Inter-American Observatory, 0.9-m telescope, 28 nights (2009–2011)
- Kitt Peak National Observatory, 0.9-m Coudé Feed telescope, 7 nights (2008)

Professional Service

- Referee for ApJ, A&A, 2015–present
- Stars and Planets Group Meeting creator and leader, Stockholm University, 2017–present
- PhD candidate selection committee, Stockholm University, 2016
- Chambliss Award Judge for the AAS, 2016
- 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, 2014
- University of Michigan Internal SWIFT TAC, 2014A

Teaching Experience

- **PhD Student Research Co-Advisor, Stockholm University** (2017–)
Advising a PhD student in a project involving stellar activity and the solar-stellar connection.
- **Graduate Student Instructor Mentor, University of Michigan** (2014–2015)
Oversaw graduate student instructors for introductory astronomy classes.
- **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).