

## Curriculum Vitae – Rachael M. Roettenbacher

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### Contact Information

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

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

### Education

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<b>University of Michigan</b> , 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
<b>Lehigh University</b> , 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
<b>Ohio Wesleyan University</b> , Delaware, OH, USA	August 2005–May 2008
B.A. in Astrophysics and Mathematics, <i>cum laude</i>	May 2008

### Professional Appointment

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<b>Yale University</b> , New Haven, CT, USA	September 2018–August 2021
YCAA Prize Postdoctoral Fellow	
<b>Stockholm University</b> , Stockholm, Sweden	August 2016–July 2018
Postdoctoral Research Fellow	

### Refereed Articles, First Author

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9. **Roettenbacher, R. M.** & Vida, K.  
Submitted to AAS Journals July 2018  
“The connection between starspots and flares on main-sequence *Kepler* stars”
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  $\sigma$  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  $\zeta$  Andromedae from starspot asymmetry”

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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.  $\sigma$  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

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15. De Rosa, G. +75 coauthors, **Roettenbacher, R. M.**, +25 coauthors  
Submitted to AAS Journals, January 2018; revised May 2018  
“Velocity-resolved reverberation mapping of five bright Seyfert 1 galaxies”
14. Hoard, D. W., Howell, S. B., **Roettenbacher, R. M.**, +3 coauthors  
Accepted to ApJ July 2018  
“Kepler, Spitzer, and Hubble observations of the variable white dwarf BOKS 53856: Non-uniform metal absorption in dark spots”
13. Vida, K. & **Roettenbacher, R. M.**  
Accepted to A&A May 2018  
“Finding flares in *Kepler* data using machine-learning tools”
12. Schaefer, G. H., Cassan, A., Gallenne, A., & **Roettenbacher, R. M.**  
Accepted to Experimental Astronomy April 2018  
“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  $\delta$  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”

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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  $\delta$  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:  $\theta$  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 $\alpha$  Emission Variability in the  $\gamma$ -ray Binary LS I +61 303”

## Contributed Articles

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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”

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3. Grundstrom, E. D., +6 coauthors, **Roettenbacher, R. M.**, +2 coauthors  
2011, Proc. IAU Symp., 272, 290  
“Spectroscopic H $\alpha$  and H $\gamma$  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

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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

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- Ralph B. Baldwin Prize in Astrophysics and Space Sciences, 2018
- Olivier Chesneau Prize for the best PhD thesis in high-angular resolution astronomy, Observatoire de la Côte d’Azur/ESO, 2017
- NASA Harriet G. Jenkins Pre-Doctoral Fellowship, NASA/UNCF Special Programs, 2010–2013
- Graduate Assistance for Areas of National Need (GAANN) Fellowship, U.S. Dept. of Edu., 2008–2010
- Faculty Scholarship, Ohio Wesleyan University, 2005–2008
- Dean’s List (all semesters), Ohio Wesleyan University, 2005–2008
- Outstanding Undergraduate Research Award, Society of Physics Students, 2008
- Finalist for Undergraduate Research Award, Vanderbilt University, 2008
- Rusk Prize for Excellence in Physics, Ohio Wesleyan University, 2008
- Research Experience for Undergraduates, Lehigh University, 2007
- Superior rating in Undergraduate Research, Sigma Xi National Research Society, 2006
- Summer Science Research Program, Ohio Wesleyan University, 2006
- Robert and Elizabeth Muller Award for Promise in Physics, Ohio Wesleyan University, 2006
- Florence Leas Prize in Mathematics, Ohio Wesleyan University, 2006

### Selected Grants

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- *Kepler* Guest Observer Cycle 4 funding, 2012
- Dahlmark Grant, Stockholm University, 2018
- Travel Grant, Exoclipse Conference, Boise State University, 2017
- Sigma Xi Grants-in-Aid of Research (two), Sigma Xi National Research Society, 2010 and 2014
- Rackham Graduate Student Travel Grant (four), University of Michigan, 2011–2015

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- Rackham Graduate Student Research Grant (two), University of Michigan, 2012 and 2013
- Travel Grant (two), International Astronomical Union, 2009 and 2013
- Travel Grant, American Astronomical Society, 2009
- Mihoko Yoshida-Dierolf Travel Award, Lehigh University, 2009

### Research Presentations

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#### *Invited Seminars and Colloquia*

- NASA Goddard Space Flight Center, October 2018
- University of Oslo, Oslo, Norway, 2018
- University of Michigan, Ann Arbor, MI, USA, 2018 (Baldwin Prize lecture)
- University of Exeter, Great Britain, 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*

- Observing techniques, instrumentation, and science for metre-class telescopes II, Tatranská Lomnica, Slovakia, September 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)
- 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)

#### *Contributed Conference Presentations*

- 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)
- Exoclipse: Exploring New Worlds in the Shade, Boise, ID, USA, 2017 (talk)
- 14<sup>th</sup> 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,

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- 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)
- AAS Meeting 217, Seattle, WA, USA, 2011 (poster)
- IAU Symp. 272: Active OB Stars: Structure, Evolution, Mass Loss, and Critical Limits, Paris, France, 2010 (poster)
- IAU Working Group on Active B Stars, IAU General Assembly XXVII, Rio de Janeiro, Brazil, 2009 (talk)
- IAU Symp. 266: Star Clusters, IAU General Assembly XXVII, Rio de Janeiro, Brazil, 2009 (poster)
- AAS Meeting 213, Long Beach, CA, USA, 2009 (poster)
- International Conference for Physics Students, Kraków, Poland, 2008 (talk)
- Meeting of the Ohio-Region Section of the APS, Oxford, OH, USA, 2007 (poster)
- AAS Meeting 209, Seattle, WA, USA, 2007 (poster)
- Meeting of the Ohio-Region Section of the APS, Orrville, OH, USA, 2006 (poster)
- Sigma Xi Annual Meeting and Student Research Conference, Detroit, MI, USA, 2006 (poster)

## Collaborative Visits

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- University of Michigan, Dept. of Astronomy, January 2018, host: John D. Monnier
- University of Chicago, Dept. of Astronomy, January 2018, host: Benjamin Montet
- 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

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and May–July 2012, internship as NASA Jenkins Fellow, host: Martin Still

### Selected Observing Proposals

- **Roettenbacher, R. M.**, Monnier, J. D., Korhonen, H., et al., 4 nights at CHARA, 2018B  
“MIRCX imaging of the spotted surface of  $\epsilon$  Eri, a planet-hosting, main-sequence star”
- **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  $\zeta$  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  $\zeta$  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  $\sigma$  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  $\sigma$  Gem with Simultaneous Interferometric and Doppler Imaging”
- **Roettenbacher, R. M.**, Monnier, J. D., Che, X., & Korhonen, H., 13 nights at CHARA, 2012-1  
“Resolving the spotted surfaces of  $o$  Dra and  $\epsilon$  UMa with simultaneous interferometric and Doppler imaging”

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- 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

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- Mount Wilson Observatory, CHARA Interferometer with the Michigan Infrared Combiner (MIRC/MIRC-X), 91 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)

### Service and Outreach

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- Referee for ApJ, A&A, 2015–present
- Co-organizer of Cool Stars 20 splinter session (Know Thy Starspot, Know Thy Star), 2018
- Science Organizing Committee, 9th VLTI Summer School, Lisbon, Portugal, 2018
- Stars and Planets Group Meeting creator and leader, Stockholm University, 2017–2018
- Participant for STEM Voices and Astronomisk Ungdom (Sweden) podcasts, 2017
- 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

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- **PhD Student Research Co-Advisor, Stockholm University**, 2017–2018  
Advising a PhD student in a project on stellar activity and the solar-stellar connection.
- **Undergraduate Student Research Co-Advisor, Stockholm University**, 2017–2018  
Advising an undergraduate student in a project on stellar activity in the *Kepler* field.
- **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).