Jason Wang

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Education

2013-Present University of California, Berkeley
- Doctoral Candidate in Astrophysics
- M.A. in Astrophysics (2016)

2009-2013 Cornell University
- B.A. in Physics (Magna Cum Laude) and Minor in Computer Science

Employment

Upcoming	51 Pegasi b Fellow
2013-Present	Graduate Student Researcher at UC Berkeley
2011-2013	Research Assistant at Cornell University
2012	Software Development Engineer Intern at Microsoft

Research Interests

- Directly imaging and characterizing exoplanets through their atmospheres and orbits
- Demographics of Jupiter-like exoplanets and connection to planet formation
- Constraining ages of young stellar moving groups through dynamical mass measurements
- Using signal processing, machine learning, and statistical techniques to find new exoplanets
- Optimizing large surveys using software (automation, high performance computing)
- Software development for astronomy

Awards, Honors, Distinctions

- Chambliss Astronomy Achievement Student Award (2016)
- Kievel Prize in Physics (2013)
- Merrill Presidential Scholar (2013)
- Microsoft DevDiv Intern Hack-A-Thon Winner (2012)

Proposals & Grants

- HST Program 15119 (2017, Cycle 25, PI, 3 orbits)
- SALT Program 2017-1-SCI-058 (Co-I, PI: Blaine Lomberg, 47 hours)
- Computing time at the San Diego Supercomputer Center (2016, 160,000 hours)
- HST Program 14621 (2016, Cycle 24, PI, 6 orbits)

Mentoring

2017-Present Meiji Nguyen (UC Berkeley Undergraduate), co-advised with Rob De Rosa
- Improving the astrometric calibration of the Gemini Planet Imager

2016-2017 Simon Ko (UC Berkeley Undergraduate)
- Improved the software testing infrastructure and integrated code coverage for pyKLIP

- Simon afterwards got a job as a software developer

2016-2016 Jeffrey Vargas (UC Berkeley Undergraduate), co-advised with Rob de Rosa
- Reevaluated the photometric calibration of the Gemini Planet Imager with a uniform analysis. This has led us to take new calibration data after figuring out the shortcomings in the previous datasets.

2015 Joe Zalesky (UC Berkeley Undergraduate), co-advised with James Graham
- Improved the computer vision algorithm to automatically locate calibration spots for the Gemini Planet Imager Data Reduction Pipeline

2014 Maïssa Salama (UC Berkeley Undergraduate), co-advised with James Graham
- Developed an automated method to generate 600+ observing sequences for the Gemini Planet Imager Exoplanet Survey

Teaching Experience

Fall 2016 Instructor, Astronomy Pedagogy (Ay375, UC Berkeley)
- Co-taught with three other graduate students
- Syllabus: http://badgrads.berkeley.edu/doku.php?id=astro300_f16

Fall 2014 Teaching Assistant, Introduction to Astrophysics (Ay7A, UC Berkeley)

Fall 2013 Teaching Assistant, Optical Astronomy Lab (Ay120, UC Berkeley)

Fall 2012 Teaching Assistant, Operating Systems and Operating Systems Practicum (CS 4410 & CS 4411, Cornell University)

Service

2016-Present Mentor Master (UC Berkeley)
- Organized the graduate student mentoring system and mentored two younger graduate students

Outreach & Volunteering

2017-Present Creating new outreach demonstrations for Berkeley Astronomy

2017 Led crowdfunding campaign to raise $7000 to develop virtual reality demonstrations for the Berkeley Astronomy department

2017 Created HR 8799 time-lapse that was viewed a million times online, featured on Astronomy Picture of the Day, and shown on a PBS children's TV show

2016-Present Organizer and volunteer of Astro Night, a monthly public seminar and stargazing event at UC Berkeley

2013-Present Volunteer at various astronomy outreach events

2012-2013 As treasurer of the Zambia Community Education Initiative (ZCEI), helped found, incorporate, and obtain 501(c)3 non-profit status for ZCEI to raise funds for education in rural Zambia

2009-2013 President (2010-2012) & treasurer (2012-2013) of the Cornell Computer Reuse Association (CCRA)
- Organized the donation of over 1000 refurbished computers
- Created an annual service trip to schools on Grand Bahama Island and obtained a $2500 donation to start up the program

Invited Talks

"The GPI Exoplanet Survey, Automated," IPAC Seminar, Pasadena, CA, May, 2017.

"*Orbital Characterization of Exoplanets with GPI,"* Planetary Science Seminar, Caltech, May 2017.

Contributed Talks

"Finding and Characterizing Exoplanets with the Gemini Planet Imager Exoplanet Survey," NASA Goddard Extrasolar Planet Seminar, Greenbelt, MD, January, 2018.

"The Automation and Exoplanet Orbit Characterization from the Gemini Planet Imager Exoplanet Survey," American Astronomical Society 231st Meeting, National Harbor, MD, January, 2018.

"The Cautionary Tale of HD 131399 Ab," Know Thy Star - Know Thy Planet, Pasadena, CA, October, 2017.

"How We Automated the GPI Exoplanet Survey," Bay Area Exoplanet Meeting, Mountain View, CA, September, 2017.

"The Orbit and Transit Prospects for β Pic b," Bay Area Exoplanet Meeting, Stanford, CA, December, 2016.

"The Ingress of the β Pic b Hill Sphere with HST," Rock, Rubble, and Rings, Leiden, Netherlands, September, 2016.

"The Gemini Planet Imager Exoplanet Survey I: Mid-course Campaign Update and Improved Analysis Techniques with Application to β Pic b," Exoplanets I, Davos, Switzerland, July, 2016.

"Astrometry and Orbit of β Pic b with the Gemini Planet Imager," Nexus for Exoplanet System Science Webinar, June, 2016.

"Locating Directly Imaged Exoplanets," Center for Integrative Planetary Science Seminar, UC Berkeley, April, 2016.

"Astrometry of Exoplanets with MCMC Forward Modelling and Application to β Pictoris b," Thursday Astronomy Lunch, UC Berkeley, March, 2016.

"Gemini Planet Imager Observations of the AU Microscopii Debris Disk: Asymmetries within One Arcsecond," Bay Area Exoplanet Meeting, Mountain View, CA, September, 2015.

"Probing the AU Microscopii Debris Disk at Close Separations with the Gemini Planet Imager," In the Spirit of Bernard Lyot, Montreal, QC, June, 2015.

"Probing the AU Microscopii Debris Disk at Close Separations with the Gemini Planet Imager," Thursday Astronomy Lunch, UC Berkeley, February, 2015.

"Airborne Observing with SOFIA," Astronomy Lunch, UC Berkeley, November, 2013.

Refereed Publications

Wang, J. J., Perrin, M. D., Savransky, D., et al. (2018) Automated data processing infrastructure for the Gemini Planet Imager Exoplanet Survey. JATIS, 4, 018002.

Mékarnia, D., Chappellier, E., Guillot, T., **et al.** (2017) The δ Scuti pulsations of β Pictoris as observed by ASTEP from Antarctica. A&A, 608, L6.

Nielsen, E. L., De Rosa, R. J., Rameau, J., **Wang, J. J.**, et al. (2017) Evidence that the Directly-Imaged Planet HD 131399 Ab is a Background Star. AJ, 154, 218.

Ruffio, J.-B., Macintosh, B., **Wang, J. J.**, et al. (2017) Improving and Assessing Planet Sensitivity of the GPI Exoplanet Survey with a Forward Model Matched Filter. ApJ, 842, 14.

Rajan, A., Rameau, J., De Rosa, R. J., **et al.** (2017) Characterizing 51 Eri b from 1-5 μm: a partly-cloudy exoplanet. AJ, 154, 10.

Follette, K. B., Rameau, J., Dong, R., **et al.** (2017) Complex Spiral Structure in the HD 100546 Transitional Disk as Revealed by GPI and MagAO. AJ, 153, 264.

Rameau, J., Follette, K. B., Pueyo L., **et al.** (2017) An Optical/Near-infrared Investigation of HD 100546 b with the Gemini Planet Imager and MagAO. AJ, 153, 244.

Johnson-Groh, M., Marois, C., De Rosa, R. J., **et al.** (2017) Integral Field Spectroscopy of the Low-mass Companion HD 984 B with the Gemini Planet Imager. AJ, 153, 190.

Chilcote, J., Pueyo, L., De Rosa, R. J., **et al.** (2017) 1-2.4 μm Near-IR Spectrum of the Giant Planet β Pictoris b Obtained with the Gemini Planet Imager. AJ, 153, 182.

Blunt, S., Nielsen, E. L., De Rosa, R. J., **et al.** (2017) Orbits for the Impatient: A Bayesian Rejection-sampling Method for Quickly Fitting the Orbits of Long-period Exoplanets. AJ, 153, 229.

Nielsen, E. L., De Rosa R. J., **Wang, J.**, et al. (2016) Dynamical Mass Measurement of the Young Spectroscopic Binary V343 Normae AaAb Resolved with the Gemini Planet Imager. AJ, 152, 175N.

Millar-Blanchaer, M. A., **Wang, J.**, Kalas, P., et al. (2016) Imaging an 80 AU Radius Dust Ring Around the F5V Star HD 157587. AJ, 152, 128M.

Konopacky, Q. M., Rameau J., Duchêne, G., **et al.** (2016) Discovery of a Substellar Companion to the Nearby Debris Disk Host HR 2562. ApJL, 829, 4.

Wang, J. J., Graham, J. R., Pueyo, L., et al. (2016) The Orbit and Transit Prospects for β Pictoris b constrained with One Milliarcsecond Astrometry. AJ, 152, 97W.

Esposito, T. M., Fitzgerald, M. P., Graham, J. R., **et al.** (2016) Bringing "The Moth" to Light: A Planet-Sculpting Scenario for the HD 61005 Debris Disk. AJ, 152, 85E.

Draper, Z. H., Duchêne, G., Millar-Blanchaer, M. A., **et al.** (2016) The Peculiar Debris Disk of HD 111520 as Resolved by the Gemini Planet Imager. ApJ, 826, 147D.

Rameau, J., Nielsen, E. L., De Rosa, R. J., **et al.** (2016) Constraints on the architecture of the HD 95086 planetary system with the Gemini Planet Imager. ApJL, 822, L29.

De Rosa, R. J., Rameau, J., Patience, J., **et al.** (2016) Spectroscopic characterization of HD 95086 b with the Gemini Planet Imager. ApJ, 824, 121.

Wolff, S. G., Perrin, M., Millar-Blanchaer, M. A., **et al.** (2016) The PDS 66 Circumstellar Disk as seen in Polarized Light with the Gemini Planet Imager. ApJL, 818, L15.

Poyneer, L. A., Palmer, D. W., Macintosh, B., **et al.** (2016) Performance of the Gemini Planet Imager's adaptive optics system. Applied Optics, 55, 323.

Hung, L., Duchêne, G., Arriaga, P., **et al.** (2015) First Scattered-light Image of the Debris Disk around HD 131835 with the Gemini Planet Imager. ApJL, 815, L14.

Kalas, P. G., Rajan, A., **Wang, J. J.**, et al. (2015) Direct Imaging of an Asymmetric Debris Disk in the HD 106906 Planetary System. ApJ, 814, 32.

De Rosa, R. J., Nielsen, E. L., Blunt, S. C., **et al.** (2015) Astrometric Confirmation and Preliminary Orbital Parameters of the Young Exoplanet 51 Eridani b with the Gemini Planet Imager. ApJL, 814, L3.

Wang, J. J., Graham, J. R., Pueyo, L., et al. (2015) Gemini Planet Imager Observations of the AU Microscopii Debris Disk: Asymmetries within One Arcsecond. ApJL, 811, L19.

Millar-Blanchaer, M. A., Graham, J. R., Pueyo, L., **et al.** (2015) β Pictoris' inner disk in polarized light and new orbital parameters for β Pictoris b. ApJ, 811, 18.

Macintosh, B., Graham, J. R., **et al.** (2015) Discovery and spectroscopy of the young Jovian planet 51 Eri b with the Gemini Planet Imager. Science, 350, 64.

Perrin, M. D., Duchêne G., Millar-Blanchaer, M., **et al.** (2015) Polarimetry with the Gemini Planet Imager: Methods, Performance at First Light, and the Circumstellar Ring around HR 4796A. ApJ, 799, 182.

Herter, T. L., Vacca, W., Adams, J.D., **et al.** (2013) Data Reduction and Early Science Calibration for FORCAST, A Mid-Infrared Camera for SOFIA. PASP, 125, 1393-1404.

Software and Conference Proceedings

Wang, J. J., Perrin, M. D., Savransky, D., et al. (2017) The automated data processing infrastructure for the GPI Exoplanet Survey. Proc. SPIE, 10400, 26.

Ruffio, J.-B., Macintosh, B., **Wang, J. J.**, et al. (2017) Improving the sensitivity of the GPI Exoplanet Survey with a forward model matched filter. Proc. SPIE, 10400, 27.

Perrin, M. D., Ingraham, P., Follette, K. B., **et al.** (2016) Gemini Planet Imager observational calibrations XI: pipeline improvements and enhanced calibrations after two years on sky. Proc. SPIE, 9908, 37.

Bailey, V. P., Poyneer, L. A., Macintosh, B. A., **et al.** (2016) Status and performance of the Gemini Planet Imager adaptive optics system. Proc. SPIE, 9909, 0V.

Millar-Blanchaer, M. A., Perrin M. D., Hung, L., **et al.** (2016) GPI observational calibrations XIV: polarimetric contrasts and new data reduction techniques. Proc. SPIE, 9908, 36.

Hung, L., Bruzzone, S., Millar-Blanchaer, M. A., **et al.** (2016) Gemini planet imager observational calibration XII: photometric calibration in the polarimetry mode. Proc. SPIE, 9908, 3A.

Wang, J. J., Ruffio, J.-B., De Rosa, R. J., et al. (2015) pyKLIP: PSF Subtraction for Exoplanets and Disks. ASCL, ascl:1506:001.

Wang, J. J., Rajan, A., Graham, J. R., et al. (2014) Gemini Planet Imager Observational Calibrations VIII: Characterization and Role of Satellite Spots. Proc. SPIE, 9147, 55.

Maire, J., Ingraham, P. J., De Rosa, R. J., **et al.** (2014) Gemini Planet Imager Observational Calibrations VI: Photometric and Spectroscopic Calibration for the Integral Field Spectrograph. Proc. SPIE, 9147.

Konopacky, Q. M., Thomas, S. J., Macintosh B. A., **et al.** (2014) Gemini Planet Imager Observational Calibrations V: Astrometry and Distortion. Proc. SPIE, 9147.

Perrin, M. D., Maire, J., Ingraham, P., **et al.** (2014) Gemini Planet Imager Observational Calibrations I: Overview of the GPI Data Reduction Pipeline. Proc. SPIE, 9147.

Macintosh, B. A., Chilcote, J. K., Dillon, D., **et al.** (2014) The Gemini Planet Imager: First Light and Commissioning. Proc. SPIE, 9148.

Adams, J. D., Herter, T. L., Gull, G. E., **et al.** (2012) The FORCAST Mid-Infrared Facility Instrument and In-Flight Performance on SOFIA. Proc. SPIE, 8446.