

Clarissa Rizzo Credidio Do Ó

Physics Ph.D. Candidate and NSF Fellow, UC San Diego

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 Clarissa Do O  /clarissardoo

Education

University of California, San Diego

Physics, Ph.D. (Expected)

September 2020 – Present

San Diego, CA

University of California, San Diego

Physics, M.S. - GPA 3.95

September 2020 – February 2023

San Diego, CA

University of California, Santa Barbara

Physics, B.S. (Honors) - Minor in Astronomy and Planetary Science

September 2016 – June 2020

Santa Barbara, CA

Research and Work Experience

University of California, San Diego

Graduate Research Fellow (Advisor: Prof. Quinn Konopacky)

September 2020 – Present

San Diego, CA

- » Analyzed high resolution spectroscopy data from the Keck Planet Image Characterizer (KPIC) in order to understand the atmosphere and orbit of the 1RXSO342+1216 binary star system.
- » Wrote a data reduction pipeline to reduce directly imaged exoplanet data from the NIRC2 camera on the W. M. Keck Observatory.
- » Analyzed the distribution of exoplanet eccentricities at a population level using observable-based priors and Bayesian statistics.
- » Tested and characterized the EMCCD camera for the Gemini Planet Imager 2.0's (GPI 2.0) new pyramid wavefront sensor.
- » Simulated the dynamics and stability of the HR-8799 exoplanet system using NIRC2 data from the Keck II Telescope.

Lockheed Martin

Test Engineer Intern

January 2020 – September 2020

Santa Barbara, CA

- » Wrote scripts to automate the testing process of infrared focal plane arrays (FPAs) and used these scripts to test parts.
- » Used Object-Oriented programming to automate scripts for analyzing telegraph noise on infrared focal plane arrays.

NASA Jet Propulsion Laboratory

Astrophysics Research Intern

June 2019 – September 2019

Pasadena, CA

- » Worked on PARVI (Palomar Radial Velocity Instrument) under the guidance of Drs. Gautam Vasisht and Christopher Matthews.
- » Wrote programs to predict the instrument's photon throughput, and performed photometry and spectrophotometry on data to compare my projections to the actual throughput.
- » Performed simulations to analyze how the single-mode fiber optics coupling efficiency changes as we introduce optical aberrations into the system.

University of California, Santa Barbara

Undergraduate Researcher (Advisor: Prof. Ben Mazin)

June 2018 – June 2020

Santa Barbara, CA

- » Designed and developed a database for the Mazin Lab, an astrophysics laboratory that uses Microwave Kinetic Inductance Technology to directly image extrasolar planets. The database is a website currently available on the laboratory's server.
- » Wrote a program that corrected cosmic ray incidents for the new device developed by the lab (MEC - MKID Exoplanet Camera).
- » Performed post-processing (angular differential imaging and spectral differential imaging) and made contrast curves on MEC data.

Awards, Grants and Honors

SPIE Astronomical Telescopes+Instrumentation Travel Grant

April 2024

Carol and George Lattimer Award for Graduate Excellence

February 2023

NASA ExoExplorers Award

January 2023

The School of Physical Sciences Cohort Program Mentorship Award at UCSD

September 2022

National Science Foundation Graduate Research Fellowship (NSF GRFP)

March 2020

San Diego Fellowship

March 2020

Caltech SURF (Summer Undergraduate Research Fellowship)

June 2019

Edison GRE Scholarship

May 2019

Edison Summer Research Program Scholarship

June 2018

Starting Lines Essay Publication Prize at UCSB

January 2018

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</> Programming Languages and Skills

Python Proficient

MATLAB Proficient

Linux Proficient

C/C++ Advanced Beginner

Teaching, Service and Outreach

Astrobites

Author

January 2022 – Present

Online Website

- » Wrote summaries of astro-ph papers from the arXiv and outreach articles for astrobites.org, funded by AAS
- » Translated posts to Astropontos, Astrobites' sister website in Portuguese.

Cosmic Tours

Organizer and Volunteer

May 2022 – Present

San Diego, CA

- » The UCSD Cosmic Tours are short planetarium shows given on a portable planetarium for K-12 schools and other outreach events.
- » Set up, run and operate a portable planetarium for outreach shows in the San Diego area.
- » Engage with the local school community in order to organize the planetarium schedule.

Cohort Mentoring Program at UCSD

Mentor

September 2022 – June 2023

San Diego, CA

- » Tutored underrepresented UCSD undergraduate students in their homework and school work.
- » Guided students on graduate school and internship applications.

Physics 164 (Observational Astrophysics Lab at UCSD)

Teaching Assistant

January 2022 – March 2022

San Diego, CA

- » Taught Students how to analyze astronomical data in Python.
- » Operated and observed with the Lick Observatory's Nickel Telescope

Presentations

Invited Talks:

1. "Constraining the Formation of Directly Imaged Exoplanets Using Instrumentation and Orbit Fitting Techniques" - **UCLA Lunch Seminar Series** (April 2024, Los Angeles, CA)
2. "Constraining the Formation of Directly Imaged Exoplanets Using Instrumentation and Orbit Fitting Techniques" - **NASA Jet Propulsion Laboratory Lunch Seminars** (April 2024, Pasadena, CA)
3. "Constraining the Formation of Directly Imaged Exoplanets Using Instrumentation and Orbit Fitting Techniques" - **Space Telescope Science Institute ESPF Seminar** (October 2023, Baltimore, MD)
4. "Constraining the Formation of Directly Imaged Exoplanets Using Instrumentation and Orbit Fitting Techniques" - **NASA Ames Research Center Seminar** (May 2023, Santa Clara, CA)
5. "At the Edge of Chaos: The Dynamics of Directly Imaged Exoplanet Systems" - **iTelescope Webinar** (May 2023, Online)

Contributed Talks:

1. "Constraining the Formation of Directly Imaged Exoplanets by Upgrading the Gemini Planet Imager (GPI)'s Wavefront Sensor" - **NASA ExoExplorers Talks** (April 2023, Online)
2. "Upgrading the Gemini Planet Imager 2.0's Wavefront Sensor" - **NYRIA Workshop** (November 2022, Sarcedo, Italy)
3. "The Palomar Radial Velocity Instrument's commissioning" - **NASA JPL Intern Talks** (July 2019, Pasadena, CA)

Posters:

1. "The Orbital Eccentricities of Directly Imaged Companions Using Observable-Based Priors: Implications for Population-level Distributions" - **Keck Science Meeting** (September 2023, Berkeley, CA)

2. "GPI 2.0: performance evaluation of the wavefront sensor's EMCCD" - **AO4ELT Conference** (June 2023, Avignon, France)
3. "The Orbital Eccentricities of Directly Imaged Companions Using Observable-Based Priors: Implications for Population-level Distributions" - **Keck Science Meeting** (September 2022, Pasadena, CA)
4. "GPI 2.0: performance evaluation of the wavefront sensor's EMCCD" - **SPIE Astronomical Telescopes & Instrumentation** (July 2022, Montreal, Canada)
5. "The Orbital Eccentricities of Directly Imaged Companions Using Observable-Based Priors: Implications for Population-level Distributions" - **Spirit of Lyot Conference** (June 2022, Leiden, Netherlands)
6. "A Database for the Stars Observed by the Mazin Lab using MKID Technology" - **APS' Conference for Undergraduate Women in Physics** (January 2019, Santa Barbara, CA)
7. "A Database for the Stars Observed by the Mazin Lab using MKID Technology" - **UCSB Undergraduate Research Colloquium** (August 2018, Santa Barbara, CA)

Publications

Peer Reviewed:

1. **Clarissa R. Do Ó**, Ben Sappey, Quinn M. Konopacky, et al. "Orbital and Atmospheric Characterization of the 1RXS J034231.8+121622 System Using High-Resolution Spectroscopy Confirms That The Companion is a Low-Mass Star", accepted to AJ
2. **Clarissa R. Do Ó**, Kelly K. O'Neil, Quinn M. Konopacky, et al. "The Orbital Eccentricities of Directly Imaged Companions Using Observable-Based Priors Implications for Population-level Distributions", The Astronomical Journal, Volume 166, Issue 2, id.48, 22 pp. (2023)
3. Ben Sappey, Quinn M. Konopacky, **Clarissa R. Do Ó**, et al. "HD 206893 B at High Spectral Resolution using KPIC/NIRSPEC", in prep
4. William Thompson, Christian Marois, **Clarissa R. Do Ó**, et al. "Deep orbital search for additional planets in the HR 8799 system", The Astronomical Journal, Volume 165, Issue 1, id.29, 20 pp. (2023)
5. Katelyn Horstman, Jean-Baptiste Ruffio, et al. (including **Clarissa R. Do Ó**). "RV measurements of directly imaged brown dwarf GQ Lup B to search for satellites", submitted to AJ
6. Jerry W. Xuan, Jason Wang, et al. (including **Clarissa R. Do Ó**). "Validation of Elemental and Isotopic Abundances in Late-M Spectral Types with the Benchmark HIP 55507 AB System", The Astrophysical Journal, Volume 962, Issue 1, id.10, 21 pp. (2024)
7. Katie A. Crotts, Brenda C. Matthews, et al. (including **Clarissa R. Do Ó**). "A Uniform Analysis of Debris Disks with the Gemini Planet Imager. I. An Empirical Search for Perturbations from Planetary Companions in Polarized Light Images", The Astrophysical Journal, Volume 961, Issue 2, id.245, 35 pp. (2024)
8. William Thompson, Jensen Lawrence, et al. (including **Clarissa R. Do Ó**). "Octofitter: Fast, Flexible, and Accurate Orbit Modeling to Detect Exoplanets", The Astronomical Journal, Volume 166, Issue 4, id.164, 20 pp. (2023)
9. Anne-Lise Marie, Laetitia Derez, et al. (including **Clarissa Do Ó**). "Workshop Summary: Exoplanet Orbits and Dynamics", Publications of the Astronomical Society of the Pacific, Volume 135, Issue 1052, id.106001, 17 pp. (2023)
10. Yinzi Xin, Jerry W. Xuan, et al. (including **Clarissa Do Ó**). "On-sky speckle nulling through a single-mode fiber with the Keck Planet Imager and Characterizer", July 2023, Journal of Astronomical Telescopes, Instruments, and Systems, Volume 9, id. 035001 (2023).

Conference Proceedings:

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1. **Clarissa R. Do Ó**, Saavindra Perera, Jérôme Maire, et al. "GPI 2.0: performance evaluation of the wavefront sensor's EMCCD", Adaptive Optics for Extremely Large Telescopes 7th Edition, ONERA, Jun 2023, Avignon, France. (10.13009/AO4ELT7-2023-045). (hal-04419969)
2. Saavindra Perera, Jeffrey Chilcote, Quinn M. Konopacky, et al. (including **Clarissa Do Ó**), et al. "Upgrading the Gemini planet imager to GPI 2.0", Proceedings of the SPIE 12680, Techniques and Instrumentation for Detection of Exoplanets XI, 1268001 (2023)
3. Saavindra Perera, Jérôme Maire, **Clarissa R. Do Ó**, et al. "GPI 2.0: Pyramid Wavefront Sensor Status", Proceedings of the SPIE, Volume 12185, id. 121854C 7 pp. (2022)
4. Eckhart Spalding, **Clarissa Do Ó**, Dillon Peng, et al. "GPI 2.0: Baseline testing of the Gemini Planet Imager before the upgrade", Proceedings of the SPIE, Volume 12184, id. 1218448 11 pp. (2022)
5. Dillon Peng, Maeve Curliss, et al. (including **Clarissa Do Ó**). "GPI 2.0: performance of upgrades to the Gemini Planet Imager CAL and IFS", Proceedings of the SPIE, Volume 12184, id. 1218443 9 pp. (2022)
6. Jeffrey Chilcote, Quinn M. Konopacky, et al. (including **Clarissa Do Ó**). "GPI 2.0: upgrade status of the Gemini Planet Imager", Proceedings of the SPIE, Volume 12184, id. 121841T 15 pp. (2022)

Languages

English *Fluent*

Portuguese *Fluent*

Spanish *Proficient*

German *Advanced Beginner*