Naunet Leonhardes-Barboza

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EDUCATION

University of California, Santa Cruz — Santa Cruz, CA
Ph.D. in Astronomy & Astrophysics — *September 2024 –*

Wellesley College — Wellesley, MA
B.A. in Astrophysics (with Honors), Cum Laude, GPA: 3.67 — *August 2020 – May 2024*

Thesis: "The First Uniform, All-Sky Sample of Carbon Stars from Gaia DR3"

PUBLICATIONS

- Hu, Weida, et al. "CLASSY VII Lyα Profiles: The Structure and Kinematics of Neutral Gas and Implications for LyC Escape in Reionization-Era Analogs." The Astrophysical Journal, 956, 1, 2023, p. 39, doi: 10.3847/1538-4357/aceefd.

- Yee, S. W., Winn, J. N., Hartman, J. D., et al. 2023, "The TESS Grand Unified Hot Jupiter Survey. II. Twenty New Giant Planets." The Astrophysical Journal Supplement Series, 265, 1, 2022, doi: 10.3847/1538-4365/aca286.

RESEARCH EXPERIENCE

Carbon Star Identification Using Gaia BP/RP Spectra — Jan. 2023 – Present
Center for Astrophysics | Harvard & Smithsonian | Advisor: Dr. Paul Green — *Cambridge, MA*
- Compiled ∼1000 known carbon stars by crossmatching LAMOST DR9 and Gaia DR3 and visual inspection.
- Optimized an XGBoost model to identify ∼43,000 candidate carbon stars from 220 million BP/RP spectra.
- Obtained optical spectra from the Fred Lawrence Whipple Observatory of ∼1000 candidate stars to assess the purity of the catalog.

TESS Follow-Up of Exoplanet Candidates — Jan. 2022 – May 2023
Wellesley College | Advisor: Dr. Kim McLeod — *Wellesley, MA*
- Operated 0.7m Planewave telescope to obtain time-series light curves of TESS exoplanet candidates.
- Selected observation targets based on signal-to-noise, ephemerides, and priority status, and coordinated observations with the observing team.
- Calibrated and reduced data using AstroImageJ for analysis and submission to TFOP-SG1 PI.

Absorption Line Analysis of Metal-Poor Galaxies — June 2021 – Aug. 2021
UC Santa Barbara | Advisor: Dr. Crystal Martin — *Santa Barbara, CA*
- Analyzed HST/COS ultraviolet spectra of metal-poor, star-forming galaxies with Damped Lyman Alpha systems.
- Fitted H I and metal absorption lines using `VoigtFit` and quantified uncertainties for column densities.

AWARDS AND FELLOWSHIPS

- Eugene Cota-Robles Fellowship (UC Santa Cruz, September 2024)

- Cientifico Latino Graduate Student Engagement and Community Scholar (August 2024)

- Camellia Team Leadership Award (Wellesley College, May 2024)

- Sigma Xi Research Nomination (Wellesley College, May 2024)

- The Whiting Medal (Wellesley College, November 2023)

- Caltech Future Ignited Program Scholar (October 2023)

- The Samuel and Hilda Levitt Fellowship ($4000, Wellesley College, June 2023)

- Ronald E. McNair Post-Baccalaureate Achievement Program Scholar (Wellesley College, February 2023)

- Massachusetts Space Grant Fellowship ($8400, February 2022 – May 2023)

- Hispanic Scholarship Fund Scholar (August 2020)

Talks

- **Wellesley College Ruhlman Conference (April 2024)**: The First All-Sky Sample of Carbon Stars Using Gaia DR3

- **The Storm King School – Career Day (March 2024)**: My Undergraduate Journey Through Astronomy

- **Wellesley College Ruhlman Conference (April 2023)**: Another Look at the Black Hole Binary Candidate, BG Gem: Using Archival Surveys and New Photometric Observations

- **Whitin Observatory Public Night (March 2023)**: Women and Minorities in Astronomy

- **Keck Northeast Astronomy Consortium Proceedings (October 2022)**: The Hunt for Hot Jupiters: How We Help NASA Confirm Exoplanets

- **UC Santa Barbara Physics REU Symposium (August 2021)**: Spectral Analysis of Far-UV Galaxies from HST/COS Data

Poster Presentations

- **243rd American Astronomical Society Meeting (January 2024)**: Vetting a New All-Sky Sample of Carbon Stars Using Gaia BP/RP Spectra

- **241st American Astronomical Society Meeting (January 2023)**: The Hunt for Hot Jupiters: How We Help NASA Confirm Exoplanets

- **Wellesley College Science Center Summer Research Program (August 2022)**: The Hunt for Hot Jupiters: How We Help NASA Confirm Exoplanets.

Teaching Experience

ASTR 206/200 Telescope Operator Sep. 2022 – Dec. 2023
Wellesley College, Astronomy Department *Wellesley, MA*
- Taught students to use the 0.7m Planewave telescope for independent observing projects and exoplanet studies as part of intermediate astronomy courses.

PHYS 100 Learning Assistant Sep. 2022 – Dec. 2022
Wellesley College, Physics Department *Wellesley, MA*
- Assisted in teaching Special Relativity and Quantum Mechanics, and provided support during class, weekly office hours, and one-on-one tutoring.

ASTR 100/107 Night Assistant Sep. 2021 – May 2022
Wellesley College, Astronomy Department *Wellesley, MA*
- Led night labs for introductory astronomy courses which included operating historic refractors, 8-inch Meade, and 80mm Starblast telescopes for planetary and deep-sky observations. Conducted constellation tours and exams.

Student Mentoring

- Shreyanshi Garg (UCSC Undergrad) (2024-)

- Joseph Wang (UCSC Undergrad) (2024-)

- Mariabelen Orduno (Yale Undergrad) (2021-2022)

- Michelle Aude (Columbia Undergrad) (2020-2021)

Outreach

A.S.T.R.O. Club President | *Wellesley College* — Sept. 2023 – Present
- Led a team of 8 students to plan and organize community events (including trips to Charles Hayden Planetarium and Harvard Plate Stacks), weekly observing, Whitin Observatory Public nights, and private K-12 group tours.
- Coordinated with faculty, staff, and students to improve the Whitin Observatory Telescope Certification process.

A.S.T.R.O. Club Co-Treasurer | *Wellesley College* — Sept. 2022 – May 2023
- Wrote successful funding proposals to the Wellesley Student Organization Funding Committee, securing over $1800 for 2022-2023 and $2200 for 2023-2024 for the club.

SkyShot Online Executive Director | *Remote* — July 2020 – July 2021
- Reviewed astrophotography submissions and contributed to educational content for a high school and undergraduate student space magazine.

Additional Information

Memberships: American Astronomical Society (2022 – present), Society of Physics Students (2022 – present)
Computer Languages: Python, Bash, C/C++, SQL/ADQL
Software: Athena++, MESA, AstroImageJ, DS9, TOPCAT, PixInsight
Languages: English, Spanish (proficient)