ROMY RODRÍGUEZ MARTÍNEZ

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RESEARCH INTERESTS

I am broadly interested in the detection and characterization of low-mass extrasolar planets. I use ground- and space-based observations of exoplanets and their host stars to determine their fundamental properties and constrain the interior structure of small planets. I am also interested in the formation and evolution of M-dwarf planetary systems and exoplanet demographics, and in the links between the composition of terrestrial planets and the chemical composition of their host stars.

EDUCATION

Ph.D., Astronomy June 2023
The Ohio State University, Columbus, OH, USA
Advisor: B. Scott Gaudi

Master of Science, Astronomy May 2020
The Ohio State University, Columbus, OH, USA

Master of Science, Physics June 2017
University of Puerto Rico, Río Piedras
Advisor: Sarah Ballard

Bachelor of Science, Physics August 2009 - May 2015
University of Puerto Rico, Río Piedras

APPOINTMENTS

Future Faculty Leaders Fellow
Harvard University
Center for Astrophysics, Harvard & Smithsonian, MA, USA. 2023–Present

Astronomy Graduate Student
The Ohio State University, OH, USA. 2017–2023

Physics Master Student
University of Puerto Rico, Río Piedras, PR, USA. 2015–2017

PUBLICATIONS

Summary: 8 First Author, 10 Contributing Author

First Author Publications

9. **Rodríguez Martínez, R.**, DiTomasso, V., Cargile, P.A., et al. "A Uniform Determination of the Bulk Metallicities and Alpha-Process Elemental Abundances of Confirmed Exoplanet Systems in the Northern Hemisphere", *Under Review*

8. **Rodríguez Martínez, R.**, Eastman, J.D., Collins, K.A., et al. "Discovery and Characterization of an Eccentric, Warm Saturn Transiting the Solar Analog TOI-4994", *The Astronomical Journal, 169, 72.* arXiv:2412.02769

7. **Rodríguez Martínez, R.**, Gaudi, B.S., Martin, D.V., et al. "A Comparison of the Composition of Planets in Single- and Multi- Planet Systems Orbiting M dwarfs", *The Astronomical Journal, 166, 137.* arXiv:2307.13034

6. **Rodríguez Martínez, R.**, Gaudi, B.S., Schulze, J., et al. "A Reanalysis of the Composition of K2-106b: an Ultra-short Period Super-Mercury Candidate", 2023, *The Astronomical Journal, 165, 97.* arXiv:2208.07883

5. **Rodríguez Martínez, R.**, Stevens, D.J., Gaudi, B.S., Panero, W., "Analytic Estimates of the Achievable Precision on the Physical Properties of Transiting Planets using Purely Empirical Measurements", 2021, *The Astrophysical Journal*, 911, 84. arXiv:2101.09289

4. **Rodríguez Martínez, R.**, Gaudi, B.S., Rodriguez, Joseph E., "KELT-25b and KELT-26b, a Hot Jupiter and a Substellar Companion Transiting Young A-stars observed by TESS", 2020, *The Astronomical Journal*, 160, 3. arXiv:1912.01017

3. **Rodríguez Martínez, R.**, Lopez, L., Shappee, B., Kochanek, C.S., Jayasinghe, T., Schmidt, S., "A Catalog of Flares on M dwarfs with ASAS-SN", 2020 *The Astrophysical Journal*, 892, 144. arXiv:1912.05549

2. **Rodríguez Martínez, R.**, Ballard, S., Mayo, A., Vanderburg, A., Montet, B., Christiansen, J. L., "Characterization of Low Mass K2 Planet Hosts Using Near-Infrared Spectroscopy", 2019, *The Astronomical Journal*, 158, 155. arXiv:1808.03652

1. **Rodríguez Martínez, R.**, Schmidt, S. J., Jayasinghe, T., Stanek, K. Z.,Prieto, J. L., Shappee, B., Kochanek, C.S., Thompson, T. A., Holoien, T. W.-S., Bersier, D., Brimacombe, J., "ASASSN-18di: Discovery of a Powerful Flare on a Mid-M Dwarf", 2018, *Research Notes of the American Astronomical Society*, 2, 2. arXiv:1804.04673

Contributing Author Publications

11. DiTomasso, V., Yee S.W., **Rodríguez Martínez, R.**, et al. "A Sample of Thick-Disk Stars Hosting Hot Jupiters", *in preparation*

10. Pass, E.K., Cargile, P.A., DiTomasso, V., **Rodríguez Martínez, R.**, "Metallicities from High-Resolution TRES Spectra with The Payne and uberMS: Performance Benchmarks and Literature Comparison", *Accepted to The Astrophysical Journal Supplement Series.* arXiv:2506.18961

9. Armitage, T., Martin, D.V., **Rodríguez Martínez, R.**, "Identifying Flare Locations Through Exoplanet Transit Occultations", *MNRAS, 538, 4.* arXiv:2501.04866

8. Boley, K.M., Panero, W.R., Unterborn, C.T., et al. (**incl. Rodríguez Martínez, R.**), "Fizzy Super-Earths: Impacts of Magma Composition on the Bulk Density of Lava Worlds", *The Astrophysical Journal*, 954, 202. arXiv:2307.13726

7. Griffith, E.J., Johnson, J.A., Weinberg, D.H., et al., (incl. **Rodríguez Martínez, R.**), "Untangling the Sources of Abundance Dispersion in Low-Metallicity Stars", *The Astrophysical Journal*, 944, 47. arXiv:2210.01821

6. Phillips, C., Wang, J., Edwards, B., **Rodríguez Martínez, R.**, et al. "Is LTT 1445 Ab a Hycean World or a cold Haber World? Exploring the Potential of *Twinkle* to Unveil Its Nature", *MNRAS*, 526, 2. arXiv:2209.12919

5. Duck, A., Martin, D.V., Gill, S., et al. (incl. **Rodríguez Martínez, R.**) "The EBLM project X. Benchmark masses, radii and temperatures for two fully convective M-dwarfs using K2", *MNRAS*, 521, 4. arXiv:2208.10534

4. Martin, D.V., Armitage, T., Duck, A., et al. (incl. **Rodríguez Martínez, R.**) "Revised Temperatures For Two Benchmark M-dwarfs – Outliers No More", *under review.* arXiv:2208.10510

3. Fitzmaurice, E., Martin, D. V., **Rodríguez Martínez, R.**, et al. "Spectroscopy of TOI-1259B - an unpolluted white dwarf companion to an inflated warm Saturn", *MNRAS.* arXiv:2206.01259

2. Godoy-Rivera, D., Tayar, J., Pinnsonneault, M., **Rodríguez Martínez, R.**, et al., "Testing the Limits of Precise Subgiant Characterization with APOGEE and Gaia: Opening a Window to Unprecedented Astrophysical Studies", *The Astrophysical Journal*, 915, 19. arXiv:2101.09289

1. Rodriguez, J. E., Eastman, J. D., Zhou, G., et al. (incl. **Rodríguez Martínez, R.**) "KELT-24b: A $5M_J$ Planet on a 5.6 day Well-Aligned Orbit around the Young V=8.3 F-star HD 93148", *The Astronomical Journal*, 158, 197. arXiv:1906.03276

AWARDS AND HONORS

The Allan Markowitz Graduate Award in Observational Astronomy
Department of Astronomy, Ohio State University — October 2022

ExoExplorers Program (ExoPAG Executive Committee/
NASA Exoplanet Exploration Program) January 2021

Presidential Fellowship, The Ohio State University December 2021

Two Sigma Diversity PhD Fellowship Grant ($2000) March 2021

Two Sigma Diversity PhD Fellowship Finalist March 2021

Honorable Mention for Ford Foundation Predoctoral Fellowship January 2019

Beth A. Brown Award for best graduate poster presentation
(National Society of Black Physicists Conference) November 2018

Ann S. Tuttle Scholarship (OSU) September 2017

TALKS PRESENTED

"Characterizing Exoplanets and their Host Stars: Insights from Individual Systems and Planetary Populations"
Louisiana State University, LA, **Invited Colloquium Talk** September 11, 2025

"Characterizing Exoplanets and their Host Stars: Insights from Individual Systems and Planetary Populations"
University of Florida, Gainesville, FL, **Invited Colloquium Talk** April 3rd, 2025

"Exploring the Properties and Compositional Diversity of Small Exoplanets"
Wesleyan University, Middletown, CT, **Invited Colloquium Talk** April 17, 2024

"Revelando la Diversidad Composicional y la Demográfica de Exoplanetas Super-Tierra"
Universidad de Puerto Rico, Rio Piedras, PR, **Invited Colloquium Talk** March 20, 2024

"Exploring the Properties and Composition of Small Exoplanets"
Harvard Origins of Life Initiative, Cambridge, MA, **Invited Talk** March 7, 2024

"A comparison of the composition of planets in single- and multi planet systems orbiting M-dwarfs"
Center for Astrophysics Seminar, Cambridge, MA. March 5, 2024

"Revealing the Composition and Demographics of Low-mass Exoplanets"
Penn State Exoplanet Seminar, State College, PA, **Invited Seminar Talk** October 9, 2023

"On the Compositional Links Between Exoplanets and their Host Stars"
NASA ExoPAG 28th Meeting, San Antonio, TX, **Invited Talk** October 1st, 2023

"A Comparison of the Composition of Planets in Single-planet and Multiplanet Systems Orbiting M dwarfs "
NASA Science Interest Group 2 (Demographics) Virtual Meeting, **Invited Talk** September 13, 2023

"Journey into the Centers of Super-Earths: Revealing the Compositional Diversity of Small Exoplanets", 241st Meeting of the American Astronomical Society January 9, 2023

"Revisiting the Composition of K2-106b: an Ultra-dense, Ultra-short Period Exoplanet"
NASA JPL Exoplanet Seminar, **Invited Talk** April 25, 2022

"Journey into the Centers of Super-Earths: Constraining the Interior Structure and Composition of Low-Mass Exoplanets"
Carnegie Observatories, **Invited Colloquium Talk** March 18, 2022

"Revisiting the Composition of K2-106b: an Ultra-dense, Ultra-short Period Exoplanet"
ExoExplorer Science Talks March 18, 2022

"Analytic Estimates of the Achievable Precision on the Physical Properties of Transiting Exoplanets" Habitable Worlds 2021 Conference February 2021

"Analytic estimates of the achievable precision of the properties of transiting exoplanets"
National Society of Black Physicists Conference — November 2020

"Finding Flares with ASAS-SN" Cool Stars Conference 2020, **Invited Talk** — Cancelled due to COVID-19

"KELT-25b & KELT-26b: A hot Jupiter and a substellar companion transiting young A-stars observed by TESS", Carnegie Observatories, Invited "Astronomy Tea" talk — July 2020

"Searching for Hot Planets Around Hot Stars with the KELT Survey",
Harvard-Smithsonian Center for Astrophysics, Stars & Planets Seminar, **Invited Talk** — October 2019

"Strange New Worlds",
Arecibo Observatory, **Invited Seminar Talk** — April 2017

TELESCOPE PROPOSALS

Large Binocular Telescope (LBT), "Characterizing the atmospheres of white dwarf companions to known exoplanets" (PI), 10 hours awarded, August 2022

Large Binocular Telescope (LBT) "Confirming the First Super Mercury? Exploring the Composition of K2-229b, an Ultra-Dense, Ultra-Short Period Exoplanet" (PI), 8 hours awarded, August 2020

TEACHING & ADVISING

The Ohio State University

Summer Undergraduate Research Program (SURP) at OSU
Tayt Armitage, astronomy undergraduate, Co-advisor: David V. Martin — May 2022 - present

Columbia High School Science Research Program
Advisor for Nicholas Pugliese, high school student in the Science Research Program
January 2021 - December 2021

SciAccess Zenith Mentorship Program
Informal mentor for Olvia Wilkerson, high school student in the Space Science Mentoring Program at OSU — August - December 2020

Polaris Mentorship Program
Kevin Hoy and Hannah Parsons; astronomy undergraduates, Co-advisor: Alison Duck — August 2019 - May 2020

University of Puerto Rico, Río Piedras

University of Puerto Rico, Río Piedras, Intermediate Physics Lab II
Graduate Teaching Assistant (TA) — January 2016

University of Puerto Rico, Río Piedras, Introduction to Physics Lab I
Graduate Teaching Assistant (TA) — August 2015

***A tiempo* Tutoring Center**
Math and Physics Tutor for Middle School students — August 2011

OUTREACH & SERVICE

Referee for *The Astronomical Journal (AJ), Astronomy & Astrophysics (A&A), and the Monthly Notices of the Royal Astronomical Society (MNRAS)* — 2023 - Present

Reviewer, NASA TESS Guest Investigator Program, Cycle 8 (2025) — June 2025

Speaker for the *Spanish Observatory Night*
at the Center for Astronphysics | Harvard & Smithsonian — June 2025

Panelist for *Women in Space*
Q&A webinar for elementary school and high school students — May 2022

Panelist for *Galaxy Quest* Monthly Movie Nights - Science Fiction vs Science Fact
Q&A webinar, Astronomy Department, OSU — August 2021

American Astronomical Society Journal Author Series
Discussion of the paper "Analytic Estimates of the Achievable Precision
on the Physical Properties of Transiting Planets Using Purely Empirical Measurements" — May 2021

Speaker for "Magnifying Voices in Physics" event though
Womxn in Physics and Astronomy (WiPA) at UC Irvine — May 2021

Invited speaker at the Columbus School for Girls — April 2021

Invited speaker for middle and high school students at Colegio
Congregacion Mita (Virtual) — March 2021

Panelist for Space4Women Show (Webinar) — February 2021

Invited Speaker for OSU's Astronomical Society — November 2020

Speaker for Friends of Ohio State Astronomy and Astrophysics (FOSAA) event
"The Search for Life in the Universe and the Exoplanet Revolution" — October 2020

Panelist for *Women in Space*
Q&A webinar for elementary school and high school students — September 2020

Panelist for *The Martian* Monthly Movie Nights - Science Fiction vs Science Fact
Q&A webinar, Astronomy Department, OSU — August 2020

Invited speaker for the Planetary Habitability Lab's "AstroChat" series event
University of Puerto Rico Arecibo campus — December 2019

Invited speaker at elementary school Myrna M. Fuentes
Caguas, Puerto Rico — December 2019

Creator and co-organizer of symposium: "The Hunt for Alien Habitable Worlds"
Speakers: Sarah Ballard, Noemí Pinilla-Alonso, Abel Méndez
University of Puerto Rico, Río Piedras — March, 2017

PRESS/MEDIA COVERAGE

Astrobites: Siblings or Only Child: M Dwarf Planets (Link)

Reaching for the Stars: Interview for ¿Qué Pasa, Ohio State? magazine (Link)

AAS Journal Author Series Interview (Link)

Space.com Article (Link)

Physics.org featured article on ASASS-SN-18di discovery (Link)

POSTER PRESENTATIONS

"A Uniform Determination of the Bulk Metallicities and Alpha-Process Elemental Abundances of Confirmed Exoplanet Systems in the Northern Hemisphere"
Know Thy Star 2 Conference — February 2025

"Discovery and Characterization of an Eccentric Warm Saturn Transiting the Solar Analog TOI-4994"
TESS Conference — August 2024

"A Comparison of the Composition of Planets in Single-planet and Multiplanet Systems Orbiting M dwarfs"
GMT Conference — September 2023

"Is K2-106b truly a Super-Mercury?", Emerging Researchers in Exoplanet Science Conference (ERES) — August 2022

"Is K2-106b truly a Super-Mercury?", Exoplanets IV Conference — May 2022

"Finding Flares with ASAS-SN", National Society of Black Physicists Meeting, won Beth Brown Award for Best Graduate Poster — November 2018

"Finding Flares with ASAS-SN" Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) Conference — October 2018

"Characterization of Low-mass K2 planet hosts using Near-Infrared Spectroscopy"
229th Meeting of the American Astronomical Society — January 2017

"Characterization of Low-mass K2 planet hosts using Near-Infrared Spectroscopy"
Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) Conference — October 2016

CONFERENCES ATTENDED

Know Thy Star 2 (Pasadena, CA)	February 2025
TESS Science Conference III (Cambridge, MA)	August 2024
Exoplanets V (Leiden, Netherlands)	June 2024
241st Meeting of the American Astronomical Society (Seattle, WA)	January 2023
Great Lakes Exoplanet Area Meeting (GLEAM) (Columbus, OH)	November 2022
Emerging Researchers in Exoplanet Science (Pennsylvania State, PA)	August 2022
Exoplanets IV (Las Vegas, NV)	May 2022
Habitable Worlds 2021 (Virtual)	February 2021
Exoplanet Demographics Conference (Virtual)	November 2020
National Society of Black Physicists (Virtual)	November 2020
233rd Meeting of the American Astronomical Society (Seattle, WA)	January 2019
National Society of Black Physicists (Columbus, OH)	November 2018
SACNAS - National Diversity in STEM Conference (San Antonio, TX)	October 2018
Planets around Hot Stars Meeting (Nashville, TN)	June 2018
2nd Earth-Like Worlds Workshop (Manati, PR)	February 2017
229th Meeting of the American Astronomical Society (Grapevine, TX)	January 2017
SACNAS - National Diversity in STEM Conference (Long Beach, CA)	October 2016
Astrobiology Science Conference (Chicago, Il)	June 2015