

# ROMY RODRÍGUEZ MARTÍNEZ

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## RESEARCH INTERESTS

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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 to shed light on their compositional diversity. I am also generally interested in the formation and evolution of M-dwarf planetary systems and exoplanet demographics.

## EDUCATION

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<b>Ph.D., Astronomy</b> The Ohio State University, Columbus, OH, USA Advisor: B. Scott Gaudi	June 2023
<b>Master of Science, Astronomy</b> The Ohio State University, Columbus, OH, USA	May 2020
<b>Master of Science, Physics</b> University of Puerto Rico, Río Piedras Advisor: Sarah Ballard	June 2017
<b>Bachelor of Science, Physics</b> University of Puerto Rico, Río Piedras	August 2009 - May 2015

## APPOINTMENTS

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<b>Future Faculty Leaders Fellow</b> Harvard University Center for Astrophysics, Harvard & Smithsonian, MA, USA.	2023–Present
<b>Astronomy Graduate Student</b> The Ohio State University, OH, USA.	2017–2023
<b>Physics Master Student,</b> University of Puerto Rico, Río Piedras, PR, USA.	2015–2017

## PUBLICATIONS

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**Summary: 8 First Author, 9 Contributing Author**

### [First Author Publications](#)

- 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
- 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
- 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
- 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., Holoiien, 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

9. Armitage, T., Martin, D.V., **Rodríguez Martínez, R.**, “Identifying Flare Locations Through Exoplanet Transit Occultations”, *Under review, MNRAS*.
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.
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., Pinsonneault, 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

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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

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“Exploring the Properties and Compositional Diversity of Small Exoplanets” Wesleyan University, Middletown, CT, <b>Invited Colloquium Talk</b>	April 17, 2024
“Revelando la Diversidad Composicional y la Demografía de Exoplanetas ” Super-Tierras” Universidad de Puerto Rico, Rio Piedras, PR, <b>Invited Colloquium Talk</b>	March 20, 2024
“Exploring the Properties and Composition of Small Exoplanets” Harvard Origins of Life Initiative, Cambridge, MA, <b>Invited Talk</b>	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, <b>Invited Seminar Talk</b>	October 9, 2023
“On the Compositional Links Between Exoplanets and their Host Stars” NASA ExoPAG 28th Meeting, San Antonio, TX, <b>Invited Talk</b>	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, <b>Invited Talk</b>	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, <b>Invited Talk</b>	April 25, 2022
“Journey into the Centers of Super-Earths: Constraining the Interior Structure and Composition of Low-Mass Exoplanets” Carnegie Observatories, <b>Invited Colloquium Talk</b>	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, <b>Invited Talk</b>	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, <b>Invited Talk</b>	October 2019
“Strange New Worlds”, Arecibo Observatory, <b>Invited Seminar Talk</b>	April 2017

## TELESCOPE PROPOSALS

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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

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[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 Olivia 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**

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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**

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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

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**“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

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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)  
Astrobiology Science Conference (Chicago, IL)

October 2016  
June 2015