

# 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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**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

## PUBLICATIONS

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**Summary: 7 First Author, 8 Contributing Author**

### [First Author Publications](#)

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., Holoién, 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

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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“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, <a href="#">Invited Talk</a>	April 25, 2022
“Journey into the Centers of Super-Earths: Constraining the Interior Structure and Composition of Low-Mass Exoplanets” Carnegie Observatories, <a href="#">Invited Colloquium Talk</a>	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, <a href="#">Invited Talk</a>	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, <a href="#">Invited Talk</a>	October 2019
“Strange New Worlds”, Arecibo Observatory, <a href="#">Invited Seminar Talk</a>	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 <i>Women in Space</i> Q&A webinar for elementary school and high school students	May 2022
Panelist for <i>Galaxy Quest</i> 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 <i>Women in Space</i> Q&A webinar for elementary school and high school students	September 2020
Panelist for <i>The Martian</i> 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 COVERAGE

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¿Qué Pasa, Ohio State? magazine, “Reaching for the Starts: Interview with Romy Rodríguez Martínez”	
AAS Journal Author Series: Presentation of my Research on “Analytic Estimates of the Achievable Precision on the Physical Properties of Transiting Planets using Purely Empirical Measurements”	
Media appearance: “Puerto Rican scientists mourn loss of Arecibo Observatory’s iconic telescope” Article by Meghan Bartels for Space.com	
ASAS-SN-18di (Articles on this paper were published in phys.org, medium.com, renfrewshireastro.co.uk, and others.)	April 2018

## 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

<b>“Is K2-106b truly a Super-Mercury?”</b> , Exoplanets IV Conference	May 2022
<b>“Finding Flares with ASAS-SN”</b> , National Society of Black Physicists Meeting, won Beth Brown Award for Best Graduate Poster	November 2018
<b>“Finding Flares with ASAS-SN”</b> Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) Conference	October 2018
<b>“Characterization of Low-mass K2 planet hosts using Near-Infrared Spectroscopy”</b> 229th Meeting of the American Astronomical Society	January 2017
<b>“Characterization of Low-mass K2 planet hosts using Near-Infrared Spectroscopy”</b> Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) Conference	October 2016

## CONFERENCES ATTENDED

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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