

MICHAEL L. PALUMBO III

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📖 SciX ◊ [GitHub](#) ◊ [ORCID](#)

EDUCATION

Ph.D., Pennsylvania State University Astronomy & Astrophysics and Astrobiology <i>Thesis: Characterizing Variability in Stellar Convective Velocity Fields Toward Enabling 10 cm/s Radial-Velocity Precision</i>	August 2018 – August 2024
M.Sc., Pennsylvania State University Astronomy & Astrophysics	August 2018 – December 2020
University of North Carolina at Chapel Hill B.Sc. in Physics, Astrophysics Option B.A. in Classics, Latin Option	August 2014 – May 2018 <i>with Distinction and Highest Honors</i>

ACADEMIC APPOINTMENTS

Flatiron Research Fellowship Flatiron Institute – Center for Computational Astrophysics <i>Supervisor: Dr. Megan Bedell</i>	September 2024 – Present
Graduate Research Assistant and Fellow Pennsylvania State University <i>Supervisor: Prof. Eric Ford</i>	January 2019 – May 2024
Undergraduate Research Assistant University of North Carolina at Chapel Hill <i>Supervisor: Prof. Sheila Kannappan</i>	June 2016 – July 2018
Summer Research Student Center for Astrophysics Harvard & Smithsonian <i>Supervisors: Prof. Raphaëlle Haywood and Dr. Steve Saar</i>	June 2017 – August 2017

GRANTS, FUNDING, & FELLOWSHIPS

GRANTS

NASA Extreme Precision Radial Velocity Foundation Science New Strategies for Combining EPRV Observations from Multiple Instruments <i>Role: Graduate Student (PI: Prof. Eric Ford)</i>	October 2023
NASA Extreme Precision Radial Velocity Foundation Science Evaluating Stellar Variability Mitigation Strategies Using NEID Sun-as-a-Star Observations <i>Role: Collaborator (PI: Prof. Eric Ford)</i>	July 2021

FELLOWSHIPS

Astronomy & Astrophysics Postdoctoral Fellowship <i>National Science Foundation - \$330,000</i>	2024 Cycle (<i>Declined</i>)
Pennsylvania Space Grant Graduate Fellowship <i>Pennsylvania Space Grant Consortium</i>	August 2023 – May 2024
Academic Computing Fellowship <i>Pennsylvania State University & The Eberly College of Science</i>	August 2020 – July 2023
Paul M. Doty Distinguished Graduate Fellowship <i>Pennsylvania State University & The Eberly College of Science</i>	August 2018 – August 2019

OTHER FUNDING

Rodger Doxsey Travel Prize

January 2024

American Astronomical Society

North Carolina Space Grant Undergrad. Research Scholarship

August 2017 – May 2018

North Carolina Space Grant Consortium

TEACHING AND OUTREACH

INSTRUCTION

Upward Bound Math and Science

Summer 2020

Astronomy: The Search for Exoplanets and Life Beyond Earth

- Exoplanets and their Characteristics
- Gravitational Interactions and Orbital Resonances
- Stellar Spectroscopy
- The Outer Solar System

GUEST LECTURES

- PSU ASTRO 401, *Stellar Spectroscopy* for Prof. Chris Palma December 5, 2019
- PSU ASTRO 497, *Life in the Universe: SETI* for Prof. Suvrath Mahadevan March 17, 2020
- PSU ASTRO 497, *Saturn and its Rings* for Prof. Suvrath Mahadevan March 24, 2020
- PSU ASTRO 497, *The Moons of Saturn* for Prof. Suvrath Mahadevan March 31, 2020

PUBLIC PRESENTATIONS

- Astronomy on Tap - State College, *A Spooky Tour of NASA's Galaxy of Horrors* October 25, 2022

STUDENT MENTORSHIP

Elizabeth Gonzalez

Fall 2023 – Present

Ph.D. Student, Pennsylvania State University

As part of her Ph.D. thesis, Elizabeth is leading the augmentation of my GRASS code to analyze convective blueshift variations during eclipses of the Sun observed by NEID.

Savannah Ruginski

June 2025 – May 2026

REU Student, Center for Astrophysics | Harvard & Smithsonian

For her summer REU and her undergraduate honors thesis at Wheaton College, Savannah investigated the RV impact of active region moat flows using data from SDO.

Niamh O'Sullivan

January 2026 – May 2026

CCA Predoctoral Student

As a predoctoral intern at the CCA, Niamh used solar spectra models and data from HARPS-N to search for chromatic trends in supergranulation-driven variability.

SERVICE TO THE PROFESSION

CONFERENCE ORGANIZING COMMITTEES

- *ExoNYC3*, Center for Computational Astrophysics February 9, 2026
- *Emerging Researchers in Exoplanet Science (ERES) VII*, Penn State August 2022
- *Penn State SETI (PSETI) Symposium*, Penn State June 2022, June 2023

GROUP MEETING ORGANIZATION

- Exoplanets Group, Center for Computational Astrophysics Fall 2025 – Present
- Stellar Spectroscopy, Center for Computational Astrophysics Fall 2025 – Present

COMMITTEE MEMBERSHIP

- C&D Committee, PSU Astronomy & Astrophysics August 2019 – August 2023

- C&D Grad. Student Subcommittee, Eberly College of Science May 2020 – August 2022
- Grad. Student Recruitment Committee, PSU Astronomy & Astrophysics January 2021 – April 2023
- Grad. Student Representative, PSU Astronomy & Astrophysics August 2022 – August 2023

PEER REVIEW

- Astronomy & Astrophysics
- The Astrophysical Journal

COLLABORATIONS & MEMBERSHIPS

COLLABORATIONS

- PoET (*Paranal Solar ESPRESSO Telescope*) 2025 – Present
- Terra Hunting Experiment 2024 – Present
- NEID 2019 – Present

PROFESSIONAL SOCIETIES

- American Astronomical Society

AWARDS & HONORS

- Earl Nelson Mitchell Scholarship** August 2016 – May 2018
University of North Carolina Department of Physics and Astronomy
- Carolina Research Scholar** Conferred May 2018
University of North Carolina at Chapel Hill
- Honors Carolina Laureate** Conferred May 2018
University of North Carolina at Chapel Hill
- Phi Beta Kappa Society Member** Inducted February 2017
Alpha of North Carolina

SELECTED PRESENTATIONS

ORAL PRESENTATIONS

- **Measuring Granulation Jitter in 3D and Probing Depth-Dependent Variability**
GPRV Workshop 2026, All Souls College, Oxford, UK (*contributed*) September 24, 2026
- **Directly Inferring Center-to-Limb Effects from Stellar Spectra and Consequences for Transmission Spectroscopy**
HoRS3S, Granada, Spain (*contributed*) July 6, 2026
- **Inferring (Super)Granulation Flows Directly and Quickly from Stellar Spectra**
AAS 247 Winter Meeting, Phoenix, AZ (*contributed*) January 7, 2026
EPRV 6, Porto, Portugal (*contributed*) July 2, 2025
- **Resolving Granulation-Driven Line Distortions in Disk-Integrated Solar Spectra**
Know Thy Star 2, Pasadena, CA (*contributed*) February 3, 2025
- **Mitigating Granulation Noise with Lessons from Synthetic Spectra**
PoET Workshop #2, IA, Portugal (*contributed*) October 24, 2024
Extremely Precise Radial Velocities 5, Santa Barbara, CA (*contributed*) March 30, 2023
- **Charting the Path Toward Mitigating Granulation-Driven RV Noise with Synthetic Spectra**
AAS 243 Winter Meeting, New Orleans, LA (*dissertation talk*) January 10, 2024
- **Insights into Stellar Variability from Ground- and Space-Based Solar Observations**
The Ohio State University, OH (*invited*) September 29, 2023
Instituto de Astrofísica e Ciências do Espaço, Portugal (*invited*) March 1, 2023
University of Warwick, UK (*invited*) February 20, 2023
University of Birmingham, UK (*invited*) February 15, 2023

- **Understanding Granulation Noise with Synthetic Spectra from GRASS**
Sun-as-a-Star Workshop, Flatiron Institute, NYC (*contributed*) March 14, 2023
- **Mitigating Granulation Noise with GRASS and Prospects with PoET**
PoET Workshop, Porto, Portugal (*contributed*) February 24, 2023
- **Toward Mitigating Granulation RV Noise with GRASS**
Emerging Researchers in Exoplanet Science VII, State College, PA (*contributed*) August 2, 2022

POSTER PRESENTATIONS

- **Probing Near-Surface Convection in Cool Stars with a Novel Method of Atmospheric Retrieval**
Cool Stars 23, Tokyo Bay Area, Japan June 2026
- **Magnetism in Motion II: Inferring Line Asymmetries Effects from SDO Observations**
EPRV 6, Porto, Portugal July 2025
- **Physical Insights into Solar Center-to-Limb RV Variability with SDO**
Emerging Researchers in Exoplanet Science VIII, Yale, New Haven, CT June 2023
Extremely Precise Radial Velocities 5, Santa Barbara, CA March 2023
- **Modeling Granulation's Effect on Stellar Line Shapes and EPRV Surveys with GRASS**
Cool Stars 21, Toulouse, France July 2022
- **Toward Mitigating Granulation RV Noise with GRASS: The GRanulation and Spectrum Simulator**
Exoplanets IV, Las Vegas, NV May 2022
- **Comparing Low-Redshift Compact Dwarf Starbursts in the RESOLVE Survey with High-Redshift Blue Nuggets**
AAS 231 Winter Meeting, National Harbor, MD January 2018
- **Radial-Velocity Signatures of Magnetic Features on the Sun Observed as a Star**
AGU Fall Meeting, New Orleans, LA December 2017

PUBLICATIONS

The full list is curated on [SciX](#) and [ORCiD](#), and kept up to date in [this publication list](#).

FIRST-AUTHOR

- 2026 **Palumbo, M. L., III.** The Limits of Line Broadening: Modeling Stellar Spectra and Formation Temperatures at High Resolution. *ApJ*, 1006(1), 55.
- 2024 **Palumbo, M. L., III**, Saar, S. H., & Haywood, R. D. Characterizing Solar Center-to-limb Radial-velocity Variability with SDO. *ApJ*, 973(1), 11.
- 2024 **Palumbo, M. L., III**, Ford, E. B., Gonzalez, E. B., Wright, J. T., Al Moulla, K., & Schlichenmaier, R. GRASS. II. Simulations of Potential Granulation Noise Mitigation Methods. *AJ*, 168(1), 46.
- 2023[†] **Palumbo, M. L., III**, Wright, J. T., & Huston, M. J. Fortuitous Observations of Potential Stellar Relay Probe Positions with GBT. *RNAAS*, 7(10), 209.
- 2022 **Palumbo, M. L., III**, Ford, E. B., Wright, J. T., Mahadevan, S., Wise, A. W., & Löhner-Böttcher, J. GRASS: Distinguishing Planet-induced Doppler Signatures from Granulation with a Synthetic Spectra Generator. *AJ*, 163(1), 11.
- 2020 **Palumbo, M. L., III**, Kannappan, S. J., Frazer, E. M., Eckert, K. D., Norman, D. J., Fraga, L., . . . Carr, D. S. Linking Compact Dwarf Starburst Galaxies in the RESOLVE Survey to Downsized Blue Nuggets. *MNRAS*, 494(4), 4730-4750.

[†] Non-refereed.

Nth-AUTHOR

- 2026 Gupta, A. F., Logsdon, S. E., Luhn, J. K., Fitzmaurice, E., Mahadevan, S., Robertson, P., ... **Palumbo, M. L., III**, ... Wright, J. T. The NEID Earth Twin Survey. VI. Discovery of a Low-Mass Planet Orbiting HD 126053 and RV Signals Near the Rotation Periods of HD 168009 and HD 10780. *arXiv*, arXiv:2609.32097. (*submitted to AAS Journals*)
- 2026 Lubin, J., Petigura, E., Masuda, K., Halverson, S., Angelo, I., Huber, D., **Palumbo, M. L., III**, ... Wang, X.-Y. Predicting Macroturbulence in F/G/K Dwarfs to 100 m/s Precision. *arXiv*, arXiv:2609.17693. (*submitted to AJ*)
- 2026 Pandey, K., Ford, E. A., Salzer, J. M., Cisewski-Kehe, J., Zhao, L. L., Gupta, A. F., **Palumbo, M. L., III**, ... Paredes, L. A. Improving the Precision of Line-by-Line Radial Velocities: A Data-Driven Iterative Algorithm for Spectral Line Selection. *arXiv*, arXiv:2606.29552.
- 2026 Frame, G., Cegla, H. M., Lagae, C., Witzke, V., Watson, C., Shelyag, S., ... **Palumbo, M. L., III**, & Shapiro, A. Synthetic Disc-integrated Absorption Lines Isolating Stellar Granulation for High-precision RV Studies. *MNRAS*, 547(3), stag418.
- 2026[†] Wright, J. T., Gonzalez, E., Premnath, P., Robertson, P., Mahadevan, S., Gupta, A. F., ... **Palumbo, M. L., III**, ... Terrien, R. C. A Simple One-free-parameter Model of the Solar Chromosphere Explains Solar Chromospheric Line Variations Measured by NEID at WIYN during the 2023 October Solar Eclipse. *RNAAS*, 10(1), 14.
- 2025 Frame, G., Cegla, H. M., Witzke, V., Lagae, C., **Palumbo, M. L., III**, Shelyag, S., ... Shapiro, A. Towards Understanding Stellar Variability at the Sub m/s Level: Isolating Granulation Signals in Synthetic Spectral Lines. *MNRAS*, 539(3), 2248-2261.
- 2024 Ford, E. B., Bender, C. F., Blake, C. H., Gupta, A. F., Kanodia, S., Lin, A. S. J., ... **Palumbo, M. L., III**, ... Stefansson, G. Earths within Reach: Evaluation of Strategies for Mitigating Solar Variability using 3.5 years of NEID Sun-as-a-Star Observations. *arXiv*, arXiv:2408.13318. (*in revision for AAS Journals*)
- 2024 Carr, D. S., Kannappan, S. J., Norris, M. A., Sinha, M., **Palumbo, M. L., III**, Eckert, K. D., ... Stark, D. V. Identification and Quenching of Nugget Galaxies in the RESOLVE Survey at $z = 0$. *ApJ*, 968(1), 18.
- 2022 Tusay, N., Huston, M. J., Dedrick, C. M., Kerby, S., **Palumbo, M. L., III**, Croft, S., ... Break-through Listen. A Search for Radio Technosignatures at the Solar Gravitational Lens Targeting Alpha Centauri. *AJ*, 164(3), 116.
- 2022 Haywood, R. D., Milbourne, T. W., Saar, S. H., Mortier, A., Phillips, D., Charbonneau, D., ... **Palumbo, M. L., III**. Unsigned Magnetic Flux as a Proxy for Radial-velocity Variations in Sun-like Stars. *ApJ*, 935(1), 6.
- 2022 Zhao, L. L., Fischer, D. A., Ford, E. B., Wise, A., Cretignier, M., Aigrain, S., ... **Palumbo, M. L., III**, ... Szymkowiak, A. E. The EXPRES Stellar Signals Project II. State of the Field in Disentangling Photospheric Velocities. *AJ*, 163(4), 171.
- 2019 Milbourne, T. W., Haywood, R. D., Phillips, D. F., Saar, S. H., Cegla, H. M., Cameron, A. C., ... **Palumbo, M. L., III**, ... Walsworth, R. L. HARPS-N Solar RVs Are Dominated by Large, Bright Magnetic Regions. *ApJ*, 874(1), 107.
- 2018 Cegla, H. M., Watson, C. A., Shelyag, S., Chaplin, W. J., Davies, G. R., Mathioudakis, M., **Palumbo, M. L., III**, ... Haywood, R. D. Stellar Surface Magneto-convection as a Source of Astrophysical Noise. II. Center-to-limb Parameterization of Absorption Line Profiles and Comparison to Observations. *ApJ*, 866(1), 55.

AUTHORED SOFTWARE

- 2026 **Palumbo, M. L., III**. *FormationTemps.jl*. Zenodo.
- 2024 **Palumbo, M. L., III**, Saar, S. H., & Haywood, R. D. *sdo-clv-pipeline*. Zenodo.
- 2023 **Palumbo, M. L., III**, Wright, J. T., & Huston, M. J. *palumbom/seti-fortuitous-obs: v0.1.0*. Zenodo.

[†] Non-refereed.

- 2021 **Palumbo, M. L., III**, Ford, E. B., Wright, J. T., Mahadevan, S., Wise, A. W., & Löhner-Böttcher, J. *GRASS: GRanulation and Spectrum Simulator*. Astrophysics Source Code Library, record ascl:2110.011.
- 2021 Ford, E., Wise, A., & **Palumbo, M. L., III**. *RvSpectML/EchelleCCFs.jl: v0.1.11*. Zenodo.

THESES

- 2024[†] **Palumbo, M. L., III**. *Characterizing Variability in Stellar Convective Velocity Fields Toward Enabling 10 cm/s Radial-Velocity Precision* (Doctoral Dissertation, Pennsylvania State University).
- 2018[†] **Palumbo, M. L., III**. *Comparing Low-Redshift Compact Dwarf Starbursts in the RESOLVE Survey with High-Redshift Blue Nuggets* (Undergraduate Honors Thesis, University of North Carolina at Chapel Hill).

[†] Non-refereed.