Rayna Rampalli

Dartmouth College | Department of Physics & Astronomy
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Research Interests: exoplanet populations; stellar ages, kinematics, and abundances; Milky Way evolution

Education

Dartmouth College — Hanover, NH
Ph.D. Physics & Astronomy — 2020 - Present
Thesis: Tracing the Milky Way's Evolution with its Star-Planet Systems — Advisor: Elisabeth Newton

Columbia University — New York, NY
Bridge to the Ph.D. Program in STEM — 2018 - 2020
Project: Three K2 Campaigns Yield Rotation Periods for 1013 Stars in Praesepe — Advisor: Marcel Agüeros

Wellesley College — Wellesley, MA
B.A. Astrophysics with Honors — 2014 - 2018
Thesis: Planet Candidate Validation in K2 Crowded Fields — Advisors: Dave Latham, Andrew Vanderburg

Research Appointments

Present	Graduate Student Researcher, Dartmouth College (Hanover, NH)
2018 - 2020	Bridge to the Ph.D. Program in STEM Scholar, Columbia University (New York, NY)
2017 - 2018	Research Intern, Center for Astrophysics | Harvard & Smithsonian (Cambridge, MA)
Summer 2016	NSF REU Intern, SETI Institute, NASA Ames (Mountain View, CA)
Summer 2015	NSF REU Intern, Maria Mitchell Observatory (Nantucket, MA)

Awards & Honors

AAS Rodger Doxsey Dissertation Prize	2026
Dartmouth Physics & Astronomy Gordon F. Hull Fellow	2025 - 2026
Dartmouth College Neukom Outstanding Graduate Research Prize - Honorable Mention	2024
NSF Graduate Research Fellow	2022 - 2026
LSSTC Data Science Fellow	2022 - 2024
Paul & Daisy Soros Fellowship for New Americans - Finalist	2022
Dartmouth College E.E. Just Graduate Fellow	2021 - Present
Best Talk: Columbia University Bridge to the Ph.D. Program in STEM Symposium	2019
Sigma Xi	2018

Mentorship, Service & Outreach

Professional

2025 - Present	Astronomy Graduate Congress Representative for Dartmouth College
2024	NASA Review Panel Executive Secretary
2024 - 2027	AAS Committee for Status of Women in Astronomy (CSWA) Committee Member
2022 - Present	Research Advisor

Advising Evzen Selvon: "Constraining Ages of Stars in Galactic Wrinkles Using Lithium", Dartmouth College.

Advised Jack Duranceau for honors thesis: "The Discovery and Characterization of Exoplanetary System TOI 3353", Dartmouth College.

2022 - Present AAS Journals Referee

Institutional

2021 - Present E.E. Just Graduate Fellow (Dartmouth College)

Senior near-peer mentor for minoritized students; designer and facilitator for E.E. Just Program. Established set of workshop materials, recruited & interviewed new graduate fellows, and revitalized participation post-pandemic.

2014 - Present Public Observing Volunteer (Montshire Museum; Dartmouth College; Columbia University; Wellesley College; Maria Mitchell Observatory)

Departmental

2022 - 2024 Astronomy Journal Club Coordinator (Dartmouth College)

2020 - 2024 Physics/Astronomy DEI Working Group member (Dartmouth College)

Organized annual graduate school panel for undergraduates. Wrote up findings of graduate student initiated exit survey and suggested recommendations. Organized townhall to discuss improvements in physics and astronomy.

2016 - 2022 Retention & Student Success Advocate (Wellesley College)

Self-initiated. Co-organizer of Wellesley astronomy and physics departments' post-baccalaureate dialogues. Identified and invited speakers. Participated and informally advised on graduate school panels for physics/astronomy students. Documented the history of the physics department and successfully advocated for updated curricula in 2018 that met current student needs. Curriculum won "Improving Undergraduate Physics Education" APS award (2024).

Observing Proposals & Grants

1. SALT 2023 - II RSS Spectroscopy: The Ages of Stars in Galactic Wrinkles (27224 seconds, PI: Rampalli)
2. TESS Cycle 6 Tracing the Milky Way's Dynamical History with Gyrochronologic Ages ($70,000, PI: Rampalli)

Presentations (9 invited, 15 contributed)

Invited

- Carnegie Observatories Lunch Seminar. Pasadena, CA. October 2025.
- University of Hawai'i IfA Stars & Planets Lunch & Talk. Virtual. October 2025.
- UC San Diego Astronomy Journal Club. San Diego, CA, October 2025.
- Harvard CfA Exoplanet Pizza Lunch. Cambridge, MA. October 2025.
- Yale Galaxy Seminar. New Haven, CT. October 2024.
- MIT TESS Science Talk. Cambridge, MA. October 2024.
- UT Austin Stars & Planets Seminar. Austin, TX. September 2024.
- Penn State Exoplanet Seminar. State College, PA. February 2024.
- Wellesley College Physics Colloquium. Wellesley, MA. April 2018.

Contributed

- AAS 247th Meeting (Dissertation Talk). January 2026.
- The Solar System in Context. Tuscon, AZ. September 2025.
- ExoPAG 32. Virtual. August 2025.
- OWL Workshop. Santa Cruz, CA. July 2025.
- Boston Area Planetary Science Meeting. Cambridge, MA. May 2025.

- Know thy Star, Know thy Planet II. Pasadena, CA. February 2025.
- TESS Science Conference III. Cambridge, MA. July 2024.
- Cool Stars 24 Conference. San Diego, CA. June 2024.
- THYME Collaboration Workshop. Virtual. December 2020.
- Bridge to the PhD Program in STEM 2019 Symposium. New York, NY. June 2019.
- Wellesley College Ruhlman Conference (x2). Wellesley, MA. May 2018.
- Keck Northeast Astronomy Consortium (KNAC): 2016 Symposium. Middletown, CT. October 2016.
- SETI Institute REU Colloquium. Mountain View, CA. August 2016.
- Maria Mitchell Observatory Summer Colloquium. Nantucket, MA. August 2015.

Press / Media Coverage

Pasadena Now Magazine: Research Feature	2025
Meet Your CSWA: Rayna Rampalli (AAS Women Blog)	2025
Nature Astronomy Research Highlight: Rampalli et al. ApJ 965, 176 (2024)	2024
Dartmouth Solar Eclipse Outreach Event	2024
Capital Public Radio's *Insight* Interview with Rayna Rampalli	2016

Posters

- "Wrinkles in Time: Age-dating Young Stars in Kinematic Overdensities Using Gyrochronology". Sagan 22 Workshop. Pasadena, California. July 2022.
- "Wrinkles in Time: Age-dating Young Stars in Kinematic Overdensities Using Gyrochronology". Cool Stars 22 Conference. Toulouse, France. July 2022.
- "Examining Rotation and Light Curve Evolution For Low - Mass Stars in the Open Cluster Praesepe." 235th AAS Meeting. Honolulu, HI. January 2020.
- "Examining Rotation and Light Curve Evolution For Low - Mass Stars in the Open Cluster Praesepe." Kepler & K2 Science Conference V. Glendale, CA. March 2019.
- "Planet Candidate Validation in Crowded Fields." 231st AAS Meeting. National Harbor, MD. January 2018.
- "The Occurrence Rate of Hot Jupiters." 229th AAS Meeting. Grapevine, TX. January 2017.
- "Exploring Extragalactic Emission: The Hα Dot Survey." 227th AAS Meeting. Kissimmee, FL. January 2016.
- "Exploring Extragalactic Emission: The Hα Dot Survey." KNAC 2015 Symposium. Williamstown, MA. October 2015.

Observing

SOAR telescope (remote observing), Cerro Tololo Inter-American Observatory	3 nights (2018-2019)
Boller and Chivens 24", Wellesley College Whitin Observatory	> 10 nights (2015-2017)
17" Plane Wave Dall-Kirkham telescope, Maria Mitchell Vestal Street Observatory	> 30 nights (Summer 2015)
Visitor's Center 20" Telescope, Kitt Peak Observatory (Advanced Astronomy Camp)	1 night (Summer 2012)
WIYN 0.9-m Telescope, Kitt Peak Observatory (Advanced Astronomy Camp)	1 night (Summer 2011)

Teaching

Teaching Assistant* (Dartmouth College) 2021-Present

*Courses TAed: Astronomy 122: Astronomy Ethics, Astronomy 19: Habitable Planets, Astronomy 25: Galaxies & Cosmology, Astronomy 2/3: Exploring the Universe, Astronomy 1: Exploring the Solar System, Physics 4: Introductory Non-Major E&M

Publications (7 first author, 2 second/third author, 15 total)

First Author

7. Rampalli, R.; Johnson, J.; Ness, M., Edwards, G.; Newton, E.; Griffith, E.; Bedell, M.; Wang, K. "A Galactic Perspective on the (Unremarkable) Relative Refractory Depletion Observed in the Sun." Accepted in ApJ. arXiv:2509.03577.
6. Rampalli, R.; Ness, M.; Newton, E.; Vanderburg, A.; Buck, T.; Mills, J. "Disentangling Metallicity Effects on Hot Jupiter Occurrence Across Galactic Scale Parameters." AJ 170, 170 (2025).
5. Rampalli, R.; Ness, M..; Edwards, G.; Newton, E.; Bedell, M.; "The Sun Remains Relatively Refractory Depleted: Elemental Abundances for 17,412 Gaia RVS Solar Analogs and 50 Planet Hosts." ApJ 965, 176 (2024).
4. Rampalli, R.; Smock, A.; Newton, E.; Daniel, K.; Curtis, J.; "Wrinkles in Time I: Rapid Rotators Found in Eccentric Orbits." ApJ 958, 76 (2023).
3. Rampalli, R.; Agüeros, M.; Curtis, J.; Douglas, S.; Núñez, A.; et al. "Three K2 Campaigns Yield Rotation Periods for 1013 Stars in Praesepe" ApJ 921, 167 (2021).
2. Rampalli, R.; Ness, M.; Wylie, S. "The Astrophysical Variance in Gaia - RVS spectra" ApJ, 921, 78 (2021).
1. Rampalli, R.; Vanderburg, A.; Bieryla, A.; Latham, D.; Quinn, S.; et al. "A Hot Saturn Near (but Not Associated with) the Open Cluster NGC 1817" AJ, 158, 62 (2019).

Second/Third Author

2. Smock, A.; Daniel, K.; Rampalli, R.; et al. "Wrinkles in Time - - II: Analysis of Stellar Age Trends in Orbital Space Signatures from Simulations of Transient Spiral Structure." Submitted to ApJ (2025).
1. Newton, E.; Rampalli, R.; et al. "TESS Hunt for Young and Maturing Exoplanets (THYME) VII : Membership, rotation, and lithium in the young cluster Group X and a new young exoplanet" AJ 164, 115 (2022).

Co-Author

6. Heitzmann, A. et al., including Rampalli, R. "TOI - 4562b: A Highly Eccentric Cool Jupiter Analog Orbiting a Young Star." AJ 165, 121 (2023).
5. Núñez, A. et al., including Rampalli, R. "The Factory and the Beehive. IV. A Comprehensive Study of the Rotation–X - ray Activity Relation in Praesepe and the Hyades" ApJ 931, 45 (2022).
4. Dong, J. et al., including Rampalli, R. "NEID Rossiter - McLaughlin Measurement of TOI - 1268b: A Young Warm Saturn Aligned with Its Cool Host Star" ApJL 926, L7 (2022).
3. Anthony, F. et al., including Rampalli, R.. "Activity and Rotation of Nearby Field M Dwarfs in the TESS Southern Continuous Viewing Zone" AJ 163, 257 (2022).
2. Watkins, J. et al., including Rampalli, R. "The Hα Dots Survey. IV. A Fourth List of Faint Emission - line Objects" ApJS, 253, 39 (2021).
1. Newton, E. et al., including Rampalli, R. "TESS Hunt for Young and Maturing Exoplanets (THYME): A Planet in the 45 Myr Tucana-Horologium Association" ApJL, 880, L17 (2019).

Software

1. Rampalli, R. (2025). Protify: Automated Pipeline for Measuring Stellar Rotation Periods in TESS Light Curves. Zenodo DOI: 10.5281/zenodo.15701072