

# Rayna Rampalli

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**Research Interests:** Exoplanets, Stars, Galactic Archaeology

## EDUCATION

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- 2020-Present    **Dartmouth College**  
Ph.D. Physics & Astronomy  
Advisor: Elisabeth Newton
- 2014-2018    **Wellesley College**  
B.A. Astrophysics with Honors  
Senior Honors Thesis: *Planet Candidate Validation in Crowded Fields*  
Advisors: David Latham, Wesley Watters

## AWARDS

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- 2021    E.E. Just Graduate Fellow  
2021    New Hampshire Space Grant Recipient  
2018, 2020    Honorable Mention NSF Graduate Fellowship  
2019    Voted Best Talk Columbia's annual Bridge to the Ph.D. Program in STEM symposium  
2018    Sigma Xi  
2016, 2017, 2018    Wellesley College Science Center Travel Grant for AAS meetings  
2015, 2016    Massachusetts Space Grant Recipient for Maria Mitchell REU and Wellesley Observing  
2015    Honorable Mention Ethel L. Hersey Prize in American Studies

## PUBLICATIONS

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5. **Rampalli, R.**; Ness, M.; Wylie, S. "The Astrophysical Variance in Gaia-RVS spectra" accepted in ApJ. arXiv: 2108.02218.
4. **Rampalli, R.**; Agüeros, M.; Curtis, J.; Douglas, S.; Núñez, A.; et al. "Three K2 Campaigns Yield Rotation Periods for 1013 Stars in Praesepe" accepted in ApJ. arXiv: 2106.13250.
3. Watkins, J. et al., **including Rampalli, R.** "The H $\alpha$  Dots Survey. IV. A Fourth List of Faint Emission-line Objects" ApJS, 253, 39 (2021).
2. **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).
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).

## RESEARCH APPOINTMENTS

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- Present*    **Graduate Student Researcher**  
*Dartmouth College*  
Advisor: Elisabeth Newton  
Measuring rotation periods to then age-date TESS stars found in overdense regions of stellar action-space to place upper limit on timescale of the Milky Way's transient spiral arms.
- 2018-2020    **Bridge to Ph.D. in STEM Scholar**  
*Columbia University*  
Advisors: Marcel Agüeros, Melissa Ness  
Calculated rotation periods and studied light curve evolution of Praesepe cluster members using K2 photometric data as a means of testing reliability of rotation period recovery.

	Quantified dimensionality of ARGOS spectra and RAVE abundances as a proxy for upcoming Gaia-RVS spectra after removing variability effects from stellar labels using polynomial regression and principal component analysis.
2017-2018	<b>Research Intern</b> <i>Center for Astrophysics   Harvard &amp; Smithsonian</i> Advisors: David Latham, Andrew Vanderburg, Samuel Quinn, Allyson Bieryla Developed planet candidate validation methods for crowded fields in <i>K2</i> data using spectroscopic, photometric, and probabilistic follow-up to prepare for issues foreseen with TESS. Techniques tested are being used for TESS mission follow-up.
2016	<b>NSF REU Intern</b> <i>SETI Institute, NASA AMES</i> Advisors: Joseph Catanzarite, Natalie Batalha Calculated more accurate occurrence rate of hot Jupiters through incorporation of reliability and parent stellar metallicity. Discovered a 10% lower occurrence rate than indicated by previous literature with evidence of a pile-up effect in short orbital periods.
2015	<b>NSF REU Intern</b> <i>Maria Mitchell Observatory</i> Advisor: John Salzer Detected and characterized the set of H $\alpha$ Dots detected in 2.1m telescope images using scripts in IRAF and DS9.
2012-2013	<b>High School Research Intern</b> <i>Massachusetts Institute of Technology</i> Advisor: Kerri Cahoy Developed a MATLAB program using curve-fit multi-polynomial regression functions to analyze Kepler light curves and determine a quantifiable relationship between transit shape and planet radius.

## PRESENTATIONS

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2019, 2020	<b>“Examining Rotation and Light Curve Evolution For Low-Mass Stars in the Open Cluster Praesepe.”</b> Oral Presentations: Bridge to the PhD Program in STEM 2019 Symposium; THYME Collaboration Workshop (virtual). Poster Presentations: Kepler & K2 Science Conference V (Glendale, CA); 235th AAS Meeting (Honolulu, HI).
2018	<b>“Planet Candidate Validation in Crowded Fields.”</b> Oral Presentations: 2018 Wellesley College Ruhlman Conference; Wellesley College Physics Department Colloquium. Poster Presentation: 231st AAS Meeting (Washington D.C.).
2018	<b>“Perspectives on the Wellesley College Department: Where We’ve Been and Where We’re Going.”</b> Oral Presentation: Wellesley College Ruhlman Conference.
2016, 2017	<b>“The Occurrence Rate of Hot Jupiters.”</b> Oral Presentations: SETI Institute REU Colloquium; Keck Northeast Astronomy Consortium (KNAC): 2016 Symposium (Wesleyan University). Poster Presentation: 229th AAS Meeting (Grapevine, Texas).
2015, 2016	<b>“Exploring Extragalactic Emission: The H<math>\alpha</math> Dot Survey.”</b> Oral Presentation: Maria Mitchell Observatory Summer Colloquium. Poster Presentations: KNAC 2015 Symposium (Williams College); 227th AAS Meeting (Kissimmee, Florida).
2013	<b>“In Search of Other Worlds: Rapid Inference Model for Exoplanets.”</b> Poster Presentations: Sacramento Regional Science Fair; California State Science Fair (University of Southern California).

## OUTREACH

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Present	<b>E.E. Just Graduate Fellow (Dartmouth College)</b> Near-peer mentor for undergraduates and designer and facilitator of programming in Dartmouth’s <a href="#">E.E. Just Program</a> , established to support minoritized students pursuing STEM.
2020-Present	<b>Physics/Astronomy DEI Working Group member (Dartmouth College)</b> Working to improve equity and inclusion efforts within the department.
2014-Present	<b>Observatory Public Night Volunteer (Dartmouth College; Columbia University; Wellesley College; Maria Mitchell Observatory)</b>

- 2016-Present    Used telescopes, provided tours of the observatory, and explained astronomical concepts on public nights.  
**Retention & Student Success Advocate (Wellesley College)**  
 Co-organizer of Wellesley astronomy and physics departments' post-baccalaureate dialogues. Identified and invited speakers. Currently mentoring and organizing graduate school workshops for physics/astronomy students.  
 Initiated the project *Perspectives on the Wellesley College Physics Department* to formally document the history of physics at Wellesley College to advocate for curriculum change. Results were presented at the 2018 Wellesley College Ruhlman Conference, curriculum restructured Fall 2018.
- 2009-2016    **STEM Advocate (Sacramento, CA)**  
 Conducted forums on STEM education with focus on inclusion of marginalized groups in under-resourced high schools, the Museum of Science & Curiosity, and California State University Sacramento.  
 Congressional internships for Rep. Ami Bera and Rep. Doris Matsui including advocacy for STEM education.

## OBSERVING

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- 2018-2019    **Cerro Tololo Inter-American Observatory (Cerro Pachón, Chile remote from Chapel Hill, NC)**  
 Conducted remote spectroscopic observations of M-Dwarfs in the TESS Continuous Viewing Zone using SOAR 4.1m in collaboration with Andrew Mann.
- 2015-2017    **Whitin Observatory (Wellesley, MA)**  
 Conducted observations of KELT exoplanet candidates and Koronis family asteroids as paid observer.
- 2015    **Maria Mitchell Observatory (Nantucket, MA)**  
 Conducted observations of variable stars in open clusters for over 30 nights.
- 2011, 2012    **Kitt Peak National Observatory (Kitt Peak, AZ)**  
 Conducted observations of TrEs 4b and Cy Aqr using 20" Visitor's Center telescope and WIYN 0.9m under supervision of Don McCarthy, Vanessa Bailey, and Nathan Stock (Advanced Astronomy Camp).

## TEACHING

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- Fall 2021    **Teaching Assistant:** Astronomy 2/3  
 Spring, Summer 2021    **Teaching Assistant:** Astronomy 1  
 Winter 2021    **Teaching Assistant:** Physics 4