Rayna Rampalli

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Education

2020-Present **Dartmouth College**
Ph.D. Physics & Astronomy

2014-2018 **Wellesley College**
B.A. Astrophysics with Honors
Senior Honors Thesis: *Planet Candidate Validation in Crowded Fields*
Advisors: David Latham, Wesley Watters

Awards

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

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

Present **Graduate Student Researcher**
Dartmouth College
Advisor: Elisabeth Newton
Using gyrochronology to age-date stars in corrugations of stellar action-space to place age constraint on transient spiral duty cycles.

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.
Looked into the dimensionality of ARGOS spectra as a proxy for upcoming Gaia RVS spectra after removing variability effects from stellar labels using linear regression and principal component analysis.

2017-2018 **Research Intern**

Center for Astrophysics | Harvard & Smithsonian
Advisors: David Latham, Andrew Vanderburg, Samuel Quinn, Allyson Bieryla

Developed planet candidate validation methods for crowded fields in *K2* 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 **REU Intern**
SETI Institute, NASA AMES
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 **REU Intern**
Maria Mitchell Observatory
Advisor: John Salzer

Detected and characterized the set of Hα Dots detected in 2.1m telescope images using scripts in IRAF and DS9.

2012-2013 **Research Intern**
Massachusetts Insitute of Technology
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

2019, 2020 **"Examining Rotation and Light Curve Evolution For Low-Mass Stars in the Open Cluster Praesepe."** Oral Presentations: Bridge to the PhD Program in STEM 2019 Symposium; Poster Presentations: Kepler & K2 Science Conference V (Glendale, CA); 235th AAS Meeting (Honolulu, HI).

2018 **"Planet Candidate Validation in Crowded Fields."** Oral Presentations: Wellesley College Ruhlman Conference; Wellesley College Physics Department Colloquium. Poster Presentation: 231st AAS Meeting (Washington D.C.).

2018 **"Perspectives on the Wellesley College Department: Where We've Been and Where We're Going."** Oral Presentation: Wellesley College Ruhlman Conference.

2016, 2017 **"The Occurrence Rate of Hot Jupiters."** Oral Presentations: SETI Institute REU Colloquium; Keck Northeast Astronomy Consortium (KNAC): 2016 Symposium (Wesleyan University). Poster Presentation: 229th AAS Meeting (Grapevine, Texas).

2015, 2016 **"Exploring Extragalactic Emission: The Hα Dot Survey."** Oral Presentation: Maria Mitchell Observatory Summer Colloquium. Poster Presentations: KNAC 2015 Symposium (Williams College); 227th AAS Meeting (Kissimmee, Florida).

2013 **"In Search of Other Worlds: Rapid Inference Model for Exoplanets."** Poster Presentations: Sacramento Regional Science Fair; California State Science Fair (University of Southern California).

Outreach

Present **Member of EDI working group (Dartmouth College)**
Group of physics/astronomy graduate students working to improve equity, inclusion, and diversity efforts within the department.

2014-2019 **Observatory Public Night Volunteer (Columbia University; Wellesley College; Maria Mitchell Observatory)**
Used telescopes, provided tours of the observatory, and explained astronomical concepts on public nights.

2016-Present **Retention & Student Success Advocate (Wellesley College)**
Co-organizer of Wellesley astronomy and physics departments' post-baccalaureate dialogues. Activities included identifying and inviting speakers, managing department colloquia, and publicizing events. Currently organizing alum-student network for physics and astronomy departments.

Initiated the project *Perspectives on the Wellesley College Physics Department: Where We've Been and Where We're Going* to formally document the history of women in physics of Wellesley College to foster faculty-student conversations about curriculum. Results were presented at the annual Wellesley College Ruhlman Conference. Outcomes included faculty restructuring curriculum to better meet current students' needs.

2009-2016 **STEM Advocate (Sacramento, CA)**

Conducted forums on STEM education with a focus on inclusion of historically marginalized groups in under-resourced high schools, the Powerhouse Science Center, Breakthrough Sacramento, and California State University Sacramento.

Congressional intern for Rep. Ami Bera and Rep. Doris Matsui focusing on STEM education.

Observing

2018-2019 **Cerro Tololo Inter-American Observatory (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

Spring 2021 **Teaching Assistant:** Astronomy 1

Winter 2021 **Teaching Assistant:** Physics 4