

# Patrick Colin Tamburo

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## EDUCATION

MAY 2019–AUG 2023	Ph.D. in Astronomy <i>Boston University</i> Adviser: Philip Muirhead “A Search for Transiting Satellites around L and T Dwarfs”
SEP 2017–MAY 2019	M.A. in Astronomy <i>Boston University</i> Adviser: Philip Muirhead
SEP 2012–MAY 2016	B.S. in Astronomy and Physics <i>University of Maryland, College Park</i> Adviser: Drake Deming

## RESEARCH APPOINTMENTS

AUG 2023–PRESENT	<i>Tierras</i> Postdoctoral Fellow <i>Harvard University</i>
SEP 2018–AUG 2023	Research Fellow <i>Boston University</i>
SEP 2017–SEP 2018	Dean’s Fellow <i>Boston University</i>
JUL 2016–JUL 2017	Research Assistant <i>NASA Goddard Spaceflight Center</i>
JAN 2015–JUL 2016	Undergraduate Student Researcher <i>University of Maryland, College Park</i>
JUN 2015–AUG 2015	Undergraduate Research Intern <i>NASA Goddard Spaceflight Center</i>

## TEACHING APPOINTMENTS

Teaching Fellow <i>Boston University</i>	AS105: Alien Worlds, Spring 2021
Teaching Assistant <i>University of Maryland</i>	ASTR340: Origins of the Universe, Spring 2016 ASTR398b: Special Topics in Astro.–Black Holes, Fall 2015 ASTR330: The Solar System, Spring 2015 ASTR310: Observational Astronomy, Fall 2014

## HONORS AND AWARDS

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- SEP 2017–AUG 2018 | Dean’s Fellowship, *Boston University*
- MAY 2016 | High Honors in Astronomy, *University of Maryland*
- JUN 2015–AUG 2015 | Summer Scholars Research Grant, *University of Maryland*
- SEP 2014–MAY 2016 | Maryland Space Grant Consortium Scholarship, *Maryland Space Grant*
- SEP 2012–MAY 2014 | Dean’s Scholarship, *University of Maryland*

## PUBLICATIONS

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### As first author, refereed (6)

1. Tamburo, P., Muirhead, P. S., and Dressing, C. D. “Predicting the Yield of Small Transiting Exoplanets around Mid-M and Ultra-Cool Dwarfs in the Nancy Grace Roman Space Telescope Galactic Bulge Time Domain Survey”, 2023, *The Astronomical Journal*, 165, 251. <https://ui.adsabs.harvard.edu/abs/2023AJ....165..251T/abstract>
2. Tamburo, P., Withers, P., Dalba, P. A., Moore, L., and Koskinen, T. “Cassini Radio Occultation Observations of Saturn’s Ionosphere: Electron Density Profiles From 2005 to 2013”, 2023, *Journal of Geophysical Research (Space Physics)*, 128, e2023JA031310. <https://ui.adsabs.harvard.edu/abs/2023JGRA..12831310T>
3. Tamburo, P., Muirhead, P. S., McCarthy, A. M., Hart, M., Vos, J. M., Agol, E., Theissen, C., Gracia, D., Bardalez Gagliuffi, D. C., Faherty, J. “The Perkins INfrared Exosatellite Survey (PINES) II. Transit Candidates and Implications for Planet Occurrence around L and T Dwarfs”, 2022, *The Astronomical Journal*, 164, 252. <https://ui.adsabs.harvard.edu/abs/2022AJ....164..252T/abstract>
4. Tamburo, P., Muirhead, P. S., McCarthy, A. M., Hart, M., Gracia, D., Vos, J. M., Bardalez Gagliuffi, D. C., Faherty, J., Theissen, C., Agol, E., Skinner, J. N., and Seargey, S. “The Perkins INfrared Exosatellite Survey (PINES) I. Survey Overview, Reduction Pipeline, and Early Results”, 2022, *The Astronomical Journal*, 163, 253. <https://ui.adsabs.harvard.edu/abs/2022AJ....163..253T/abstract>
5. Tamburo, P. and Muirhead, P. S. “Design Considerations for a Ground-based Search for Transiting Planets around L and T Dwarfs”, 2019, *Publications of the Astronomical Society of the Pacific*, 131, 114401. <https://ui.adsabs.harvard.edu/abs/2019PASP..131k4401T>
6. Tamburo, P., Mandell, A., Deming, D., and Garhart, E. “Confirming Variability in the Secondary Eclipse Depth of the Super-Earth 55 Cancri e”, 2018, *The Astronomical Journal*, 155, 221. <https://ui.adsabs.harvard.edu/abs/2018AJ....155..221T>

### As coauthor, refereed (5)

1. Lincowski, A. P., Meadows, V. S., Zieba, S., Kreidberg, L., Morley, C., Gillon, M., Selsis, F., Agol, E., Bolmont, E., Ducrot, E., Hu, R., Koll, D. D. B., Lyu, X., Mandell, A., Suissa, G., and **Tamburo, P.** “Potential Atmospheric Compositions of TRAPPIST-1 c constrained by JWST/MIRI Observations at 15  $\mu\text{m}$ ”, 2023, *ApJL*, accepted. <https://ui.adsabs.harvard.edu/abs/2023arXiv230805899L>
2. Zieba, S., Kreidberg, L., Ducrot, E., Gillon, M., Morley, C., Schaefer, L., **Tamburo, P.**, Koll, D. D. B., Lyu, X., Acuña, L., Agol, E., Iyer, A. R., Hu, R., Lincowski, A. P., Meadows, V. S., Selsis, F., Bolmont, E., Mandell, A. M., and Suissa, G. “No thick

- carbon dioxide atmosphere on the rocky exoplanet TRAPPIST-1 c”, 2023, *Nature*. <https://ui.adsabs.harvard.edu/abs/2023arXiv230610150Z>
3. Colón, K. D., Kreidberg, L., Welbanks, L., Line, M. R., Madhusudhan, N., Beatty, T., **Tamburo, P.**, Stevenson, K. B., Mandell, A., Rodriguez, J. E., Barclay, T., Lopez, E. D., Stassun, K. G., Angerhausen, D., Fortney, J. J., James, D. J., Pepper, J., Ahlers, J. P., Plavchan, P., Awiphan, S., Kotnik, C., McLeod, K. K., Murawski, G., Chotani, H., LeBrun, D., Matzko, W., Rea, D., Vidasaurri, M., Webster, S., Williams, J. K., Cox, L. S., Tan, N., and Gilbert, E. A. “An Unusual Transmission Spectrum for the Sub-Saturn KELT-11b Suggestive of a Subsolar Water Abundance”, 2020, *The Astronomical Journal*, 160, 280. <https://ui.adsabs.harvard.edu/abs/2020AJ....160..280C>
  4. Dalba, P. A. and **Tamburo, P.** “Spitzer Detection of the Transiting Jupiter-analog Exoplanet Kepler-167e”, 2019, *The Astrophysical Journal*, 873, L17. <https://ui.adsabs.harvard.edu/abs/2019ApJ...873L..17D>
  5. Sheppard, K. B., Mandell, A. M., **Tamburo, P.**, Gandhi, S., Pinhas, A., Madhusudhan, N., and Deming, D. “Evidence for a Dayside Thermal Inversion and High Metallicity for the Hot Jupiter WASP-18b”, 2017, *The Astrophysical Journal*, 850, L32. <https://ui.adsabs.harvard.edu/abs/2017ApJ...850L..32S>

### Unrefereed papers, conference abstracts, and datasets (18)

1. McCarthy, A. M., Muirhead, P. S., **Tamburo, P.**, Vos, J. M., Hart, M., Gracia, D., Bardalez Gagliuffi, D. C., Faherty, J., Theissen, C., and Agol, E. “Modeling the Surface Features of SIMP 0136”, 2022, *Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun*, 102. <https://ui.adsabs.harvard.edu/abs/2022csss.confE.102M>
2. **Tamburo, P.**, Muirhead, P. S., McCarthy, A. M., Hart, M., Gracia, D., Vos, J. M., Bardalez Gagliuffi, D. C., Faherty, J., Theissen, C., Agol, E., Skinner, J. N., and Sagar, S. “The Perkins INfrared Exosatellite Survey (PINES): Investigating L and T Dwarf Planet Occurrence with Context from M Dwarfs”, 2022, *Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun*, 10. <https://ui.adsabs.harvard.edu/abs/2022csss.confE..10T>
3. **Tamburo, P.**, Muirhead, P. S., McCarthy, A. M., Hart, M., Gracia, D., Vos, J. M., Bardalez Gagliuffi, D. C., Faherty, J., Theissen, C., Agol, E., Skinner, J. N., and Sagar, S. “The Perkins INfrared Exosatellite Survey (PINES): Survey Overview and Early Results”, 2022, *Bulletin of the American Astronomical Society*, 54, 102.116. <https://ui.adsabs.harvard.edu/abs/2022BAAS...54e.116T>
4. **Tamburo, P.**, Muirhead, P. S., Agol, E., Hart, M., and Thakar, B. “Confirmation of a Dynamical Model for the TRAPPIST-1 Exoplanetary System”, 2021, *Research Notes of the American Astronomical Society*, 5, 219. <https://ui.adsabs.harvard.edu/abs/2021RNAAS...5..219T>
5. **Tamburo, P.**, Muirhead, P., McCarthy, A., Hart, M., Skinner, J., Vos, J., Bardalez Gagliuffi, D., Faherty, J., Agol, E., and Theissen, C. “The Perkins INfrared Exosatellite Survey (PINES): First Year Operations And Photometric Performance”, 2021, *American Astronomical Society Meeting Abstracts*, 53, 108.05. <https://ui.adsabs.harvard.edu/abs/2021AAS...23810805T>
6. **Tamburo, P.**, Muirhead, P. S., McCarthy, A., Hart, M., Skinner, J., Vos, J., Bardalez Gagliuffi, D., Faherty, J., Agol, E., and Theissen, C. “PINES: First Year Operations and Photometric Performance”, 2021, *Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun*, 171. <https://ui.adsabs.harvard.edu/abs/2021csss.confE.171T>
7. Colon, K., Kreidberg, L., Welbanks, L., Line, M., Madhusudhan, N., Beatty, T., **Tamburo, P.**, Stevenson, K., Mandell, A., Rodriguez, J., Barclay, T., and KELT-11 Team “Atmospheric Characterization of the Extremely Inflated Sub-Saturn KELT-11b with

- TESS, HST, and Spitzer”, 2021, American Astronomical Society Meeting Abstracts, 53, 302.06. <https://ui.adsabs.harvard.edu/abs/2021AAS...23730206C>
8. Dalba, P. A. and **Tamburo, P.** “A Transiting Outer Giant Exoplanet Poised for Comparative Planetology with Jupiter and Saturn”, 2020, Exoplanets in Our Backyard: Solar System and Exoplanet Synergies on Planetary Formation, Evolution, and Habitability, 2195, 3007. <https://ui.adsabs.harvard.edu/abs/2020LPICo2195.3007D>
  9. Dalba, P. A. and **Tamburo, P.** “Spitzer Detection of Kepler-167e, a cold Jovian exoplanet poised for atmospheric characterization”, 2020, American Astronomical Society Meeting Abstracts #235, 235, 349.01. <https://ui.adsabs.harvard.edu/abs/2020AAS...23534901D>
  10. **Tamburo, P.**, Withers, P., Moore, L., Dalba, P. A., and Koskinen, T. “Reanalysis of Cassini Radio Occultation Data and Electron Density Profiles for Saturn”, 2019, AGU Fall Meeting Abstracts, 2019, P13B-3509. <https://ui.adsabs.harvard.edu/abs/2019AGUFM.P13B3509T>
  11. Colon, K., Kreidberg, L., Line, M., Madhusudhan, N., Beatty, T., **Tamburo, P.**, Stevenson, K., Mandell, A., Welbanks, L., Rodriguez, J., Barclay, T., Angerhausen, D., Fortney, J., James, D., Lopez, E., and Stassun, K. “Atmospheric Characterization of Extremely Inflated Exoplanets: The Curious Case of KELT-11b”, 2019, AAS/Division for Extreme Solar Systems Abstracts, 51, 326.25. <https://ui.adsabs.harvard.edu/abs/2019ESS.....432625C>
  12. Dalba, P. A. and **Tamburo, P.** “Transit Timing Variation Refinement of the Long-period Exoplanet Kepler-167e”, 2019, AAS/Division for Extreme Solar Systems Abstracts, 51, 307.02. <https://ui.adsabs.harvard.edu/abs/2019ESS.....430702D>
  13. Muirhead, P., Skinner, J. N., Radigan, J., Triaud, A., Theissen, C., Bardalez Gagliuffi, D., **Tamburo, P.**, Burgasser, A., Faherty, J., and Stephens, D. “Searching for Exosatellites Orbiting L and T Dwarfs: Connecting Planet Formation to Moon Formation and Finding New Temperate Worlds”, 2019, Astro2020 White Paper, 51, 169. <https://ui.adsabs.harvard.edu/abs/2019BAAS...51c.169M>
  14. Colon, K., Kreidberg, L., Line, M. R., Madhusudhan, N., Beatty, T., **Tamburo, P.**, Stevenson, K., Mandell, A. M., Welbanks, L., Angerhausen, D., Fortney, J., James, D., Johnson, J., Lopez, E. D., Morris, B. M., Pepper, J., Rodriguez, J., and Stassun, K. G. “An Investigation of the Atmosphere of the Extremely Inflated Exoplanet KELT-11b with HST and Spitzer”, 2019, American Astronomical Society Meeting Abstracts #233, 233, 205.01. <https://ui.adsabs.harvard.edu/abs/2019AAS...23320501C>
  15. **Tamburo, P.** “Observational Evidence of Possible Volcanic Activity on an Extrasolar Planet”, 2018, AGU Fall Meeting Abstracts, 2018, P44A-07B. <https://ui.adsabs.harvard.edu/abs/2018AGUFM.P44A..07T>
  16. Dalba, P., Muirhead, P., and **Tamburo, P.** “Transit Recovery of Kepler-167e: Providing JWST with an Unprecedented Jupiter-analog Exoplanet Target”, 2018, Spitzer Proposal, 14047. <https://ui.adsabs.harvard.edu/abs/2018sptz.prop14047D>
  17. Sheppard, K., Mandell, A. M., **Tamburo, P.**, Gandhi, S., Pinhas, A., Madhusudhan, N., and Deming, D. “Evidence for a Dayside Thermal Inversion and High Metallicity for the Hot Jupiter WASP-18b”, 2018, American Astronomical Society Meeting Abstracts #231, 231, 211.03. <https://ui.adsabs.harvard.edu/abs/2018AAS...23121103S>
  18. **Tamburo, P.**, Mandell, A., Deming, D., and Garhart, E. “Confirming Variability in the Secondary Eclipse Depth of the Rocky Super-Earth 55 Cancri e”, 2017, American Astronomical Society Meeting Abstracts #229, 229, 219.04. <https://ui.adsabs.harvard.edu/abs/2017AAS...22921904T>

## CONTRIBUTED TALKS

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OCT 2022 L'université de Liège STAR Institute Department Seminar, Liège, Belgium  
SEP 2022 MPIA/APEX ExoCoffee, Heidelberg, Germany  
JUN 2021 AAS 238, virtual  
APR 2021 Remote Boston Area Exoplanet Science Meeting 8, virtual  
JAN 2019 Boston Area Exoplanet Science Meeting 5, Boston University, Boston, MA  
DEC 2018 AGU Fall Meeting, Washington, D.C.  
JAN 2017 AAS 229, Grapevine, TX

## POSTERS

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JUL 2022 Cool Stars 21, Toulouse, France  
MAY 2022 Exoplanets IV, Las Vegas, NV  
MAR 2021 Cool Stars 20.5, virtual  
DEC 2019 AGU Fall Meeting, San Francisco, CA  
JUL 2018 Cool Stars 20, Boston University, Boston, MA  
JUL 2018 Sagan Exoplanet Summer Workshop, California Institute of Technology,  
Pasadena, CA  
JUN 2018 Emerging Researchers in Exoplanet Science IV, Penn State University, State  
College, PA  
JUL 2017 Enabling Transiting Exoplanet Observations with *JWST*, Space Telescope  
Science Institute, Baltimore, MD

## OUTREACH ACTIVITY

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[BU Astronomy Public Open Night](#), Sep 2017–Feb 2020

## MEDIA COVERAGE

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[“Planets around Not-Quite-Planets”](#), *Astrobites*, Oct 2022

[“A step by step guide to finding planets around ultracool dwarfs”](#), *Astrobites*, Aug 2019

## PROFESSIONAL SERVICE

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Referee for The Astronomical Journal and Monthly Notices of the Royal Astronomical Society.  
Verified reviews are available on my Web of Science account with article titles and author names  
redacted: <https://www.webofscience.com/wos/author/record/CAJ-5816-2022>.

NOV 2019–JUN 2022 | Graduate Student Reviewer  
*Perkins Telescope Observatory Time Allocation Committee*

## ACADEMIC SERVICE

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SEP 2020–AUG 2021 | Graduate student representative to the faculty  
*Boston University Department of Astronomy*