

William Waalkes — Postdoctoral Scholar at Dartmouth College — Curriculum Vitae

William.Waalkes@Dartmouth.edu

— Education —

Ph.D. | 2023 | Astrophysics and Planetary Sciences | University of Colorado, Boulder

B.S. | 2016 | Astronomy & Astrophysics | University of Michigan

— Research —

Postdoctoral Associate - Dartmouth College Physics and Astronomy

2024 | Supervisor: Elisabeth Newton

Stellar activity and contamination in exoplanet transmission spectra

Research Assistant - University of Colorado Boulder Astrophysics and Planetary Sciences

2017-2023 | Supervisor: Zach Berta-Thompson

Detection and characterization of M dwarf exoplanet systems and the impact of starspots

Undergraduate Researcher - University of Michigan Astronomy & Astrophysics Department

2014-17 | Supervisor: Edwin Bergin

Examining the chemistry of stellar nurseries with Herschel

Summer REU Intern - Smithsonian Astrophysical Observatory

2015 | Supervisors: Karin Öberg & Viviana Guzmán

Formation pathways of organic molecules in pre- and proto-stellar nebular cores

Summer REU Intern - University of Michigan Space Sciences Department

2014 | Supervisor: O.J. Tucker

Study of the density and composition of Titan's Exosphere using Cassini data

— Awards & Honors —

NSF Graduate Research Fellow | 2018-2023 | \$138,000

NSF GRFP Honorable Mention | 2017

Chambliss Astronomy Achievement Student Award, Undergrad. Honorable Mention | 2016

— Observing Proposals Awarded as PI —

TESS General Investigator Program no. 7185 | \$70k awarded

Filling In The Spots: Multi-Color Analysis of M Dwarf Photospheres

Las Cumbres Observatory 2023B-006 - 25 hours

Directly Measuring AU Mic's Starspots with Time-Series Flux-Calibrated Spectra

Las Cumbres Observatory 2020B-016 - 68 hours

Transits of the Cool TESS M Dwarf Planets

Las Cumbres Observatory 2020A-009 - 75 hours

Transits of the Cool TESS M Dwarf Planets

Las Cumbres Observatory 2019B-008 - 63 hours

Transits of the Cool TESS M Dwarf Planets

— Recent Talks & Posters —

Invited Talk | American Association of Variable Star Observers Seminar (April 2025)

Contributed Talk | MIT Stellar Contamination Meeting (September 2024)

Invited Talk | American Museum of Natural History (February 2024)
Contributed Talk | American Astronomical Society (January 2024)
Invited Talk | UW Madison Monday Science Seminar (Sept 2023)
Poster | Sagan Summer Workshop, Pasadena, CA (July 2023)
Contributed Talk | American Astronomical Society (June 2023)
Invited Talk | Center for Exoplanets and Habitable Worlds, State College, PA (Sept 2022)
Contributed Talk | Emerging Researchers in Exoplanet Science (ERES) IV (Aug 2022)
Poster | Cool Stars 21, Toulouse, France (July 2022)

— **Software** —

| Contributor to `chromatic` | zkbt.github.io/chromatic/
| Contributor to `fleck` | <https://fleck.readthedocs.io>

— **Teaching Experience** —

Instructor - Dartmouth College (March-August 2025)
| *Astronomy I: Exploration of the Solar System*
Instructor - Education Unlimited (August 2023)
| Solo-taught a 1-week summer intensive astrophysics course to students grade 9-12.
TA - University of Colorado (Fall 2018, Fall 2020, Spring & Fall 2021)
| *Astronomy 3710: Solar System Formation and Evolution*
| *Astronomy 1040: Accelerated Intro Astronomy 2*
| *Astronomy 3510: Astronomical Observations and Instrumentation*
| *Astronomy 3400: Research Methods*

— **Service & Outreach** —

| Interviewed for a CU Today article¹ about the press-release around LP 791-18d
My data contributions to this discovery paper were highlighted.
| CU Boulder APS Graduate Admissions Committee (2 cycles) (2020-22)
Led the implementation of the TEAM-UP report in the APS graduate admissions process.
| Guest Scientist, *Exolore* with Dr. Moiya McTier (Podcast)
Season 2 Episode 8, M Dwarf Exoplanet Environments
| Sommers-Bausch Observatory (2017-22)
Facilitated public observing nights and private events with the SBO telescopes.
| Invited Outreach Talks
Twin Peaks Rotary, Longmont, CO (Feb 2022)
Fairview High School National Honors Society Meeting (Feb 2020)
| Research Mentor for a Boulder high school student (2017-20)
Advised on a transit project using data applied for and collected with APO's ARCSAT.
| Skype a Scientist (2017-2019)

First-author Publications | ORCID 0000-0002-8961-0352

¹<https://www.colorado.edu/today/2023/05/17/newly-discovered-planet-size-earth-may-be-covered-volcanoes>

| **Waalkes, W.**, et al., “Quantifying the Transit Light Source Effect on AU Microscopii: Measurements of Spot Temperature and Coverage with High-Resolution Spectroscopy and Multi-Color Photometry” 2024, *ApJ*, 962, 97

| **Waalkes, W.**, et al., “TOI 122b and TOI 237b, Two Small Warm Exoplanets Orbiting Inactive M Dwarfs Found by TESS” 2021, *AJ*, 161, 13

| **Waalkes, W.**, et al., “Ly α in the GJ 1132 System: Stellar Emission and Planetary Atmospheric Evolution” 2019, *AJ*, 158, 50

Co-author

| Peterson, M., and 73 other authors incl. **W. Waalkes**, “A temperate Earth-sized planet with tidal heating transiting an M6 star” 2023, *Nature*, 617, 701

| Crossfield, I., **Waalkes, W.**, et al., “A Super-Earth and Sub-Neptune Transiting the Late-type M Dwarf LP 791-18” 2019, *ApJ*, 883, 16

| Tucker, O., **Waalkes, W.**, et al., “Examining the Exobase Approximation: DSMC Models of Titan’s Upper Atmosphere.” 2016, *Icarus*, 272, 290

Collaborator

| Christian, S., and 30 other authors incl. **W. Waalkes**, “Wide Binary Orbits are Preferentially Aligned with the Orbits of Small Planets, but Probably Not Hot Jupiters” 2024, *accepted to AJ*

| Hartman, J., and 35 other authors incl. **W. Waalkes**, “TOI 762 A b and TIC 46432937 b: Two Giant Planets Transiting M Dwarf Stars” 2024, *AJ*, 168, 202

| Hori, Y., and 102 other authors incl. **W. Waalkes**, “The Discovery and Follow-up of Four Transiting Short-period Sub-Neptunes Orbiting M Dwarfs” 2024, *AJ*, 167, 289

| Feinstein, A., and 88 other authors incl. **W. Waalkes**, “Early Release Science of the exoplanet WASP-39b with JWST NIRISS” 2023, *Nature*, 614, 670

| Rustamkulov, Z., and 93 other authors incl. **W. Waalkes**, “Early Release Science of the exoplanet WASP-39b with JWST NIRSpec PRISM” 2023, *Nature*, 614, 659

| Ahrer, E.-M., and 130 more authors incl. **W. Waalkes** “Identification of carbon dioxide in an exoplanet atmosphere” 2023, *Nature*, 614, 649

| Pozuelos, F., and 74 other authors incl. **W. Waalkes**, “A super-Earth and a mini-Neptune near the 2:1 MMR straddling the radius valley around the nearby mid-M dwarf TOI-2096” 2023, *A&A*, 672, 70

| Tofflemire, B., and 14 other authors incl. **W. Waalkes**, “A Low-Mass, Pre-Main Sequence Eclipsing Binary in the 40 Myr Columba Association -- Fundamental Stellar Parameters and Modeling the Effect of Star Spots” 2023, *AJ*, 165, 46

| Christian, S., and 113 other authors incl. **W. Waalkes**, “A Possible Alignment Between the Orbits of Planetary Systems and their Visual Binary Companions” 2022, *AJ*, 163, 270

| Jordán, A., and 37 other authors incl. **W. Waalkes**, “HATS-74Ab, HATS-75b, HATS-76b, and HATS-77b: Four Transiting Giant Planets Around K and M Dwarfs” 2022, *AJ*, 163, 125

| Grieves, N., and 55 other authors incl. **W. Waalkes**, “Populating the brown dwarf stellar boundary: Five stars with transiting companions near the hydrogen-burning mass limit” 2021, *A&A*, 652, 127

| Cointepas, M., and 61 other authors incl. **W. Waalkes**, “TOI-269 b: an eccentric sub-Neptune transiting a M2 dwarf revisited with ExTrA” 2021, *A&A*, 650, 145

| Giacalone, S., and 36 other authors incl. **W. Waalkes**, “Vetting of 384 TESS Objects of Interest with TRICERATOPS and Statistical Validation of 12 Planet Candidates” 2021, *AJ*, 161, 24

| Vanderspek, R., and 72 other authors including **W. Waalkes**. “TESS Discovery of an Ultra-short-period Planet around the Nearby M Dwarf LHS 3844” 2019, *ApJ*, 871, 24

| Bean, J., and 101 other authors including **W. Waalkes**. “The Transiting Exoplanet Community Early Release Science Program for JWST.” 2018, *PASP*, 130, 4402