

— Education —

Ph.D. | University of Colorado, Boulder, CO
| Astrophysics and Planetary Sciences
| Thesis: *Toward the detection and characterization of atmospheres on temperate sub-Neptune exoplanets orbiting M dwarf stars*
| Thesis Advisor: Zachory Berta-Thompson

B.S. | University of Michigan, Ann Arbor, MI
| *Magna Cum Laude* in Astronomy & Astrophysics and Interdisciplinary Physics
| Thesis Advisor: Edwin Bergin

— Research Experience —

University of Colorado Boulder Astrophysics and Planetary Sciences Department | 2017-2023
Detection and characterization of M dwarf exoplanet systems and the impact of starspots

University of Michigan Astronomy & Astrophysics Department | 2014-17 | with E. Bergin
Examining the chemistry of stellar nurseries with Herschel

Smithsonian Astrophysical Observatory | Summer 2015 | with K. Öberg & V. Guzmán
Studying formation pathways of organic molecules in pre- and proto-stellar nebular cores

University of Michigan Space Sciences Department | Summer 2014 | with 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 —

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 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/

— **Teaching Experience** —

Teacher - Education Unlimited (August 2023)

| Solo-taught a 1-week summer intensive astrophysics course to students grade 9-12.

Teaching Assistant - University of Colorado (Fall 2018, Fall 2020, Spring & Fall 2021)

| *Astronomy 3710: Solar System Formation and Evolution*

| TA under Professor Meredith MacGregor

| *Astronomy 1040: Accelerated Intro Astronomy 2*

| TA under Professor Erica Nelson

| *Astronomy 3510: Astronomical Observations and Instrumentation*

| TA and observing assistant under Professor John Bally

| *Astronomy 3400: Research Methods*

| TA and research mentor under Professor Zach Berta-Thompson

Lab Instructor - University of Michigan (Summer 2016)

| Astronomy 102: Introductory Astronomy

| Astronomy 101: The Solar System

— **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)

Boulder Astronomy and Space Society, Boulder, CO (June 2017)

| 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)

Remote discussions with elementary and middle school classrooms about astronomy.

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

Publications | 3 First-author, 18 total | ORCID 0000-0002-8961-0352

| **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” (*accepted to ApJ*)

| 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

| 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

| 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

| 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

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

| 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

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

| Vanderspek, R., and 46 other authors including **W. Waalkes**. "TESS Discovery of an Ultra-Short-Period Planet around the Nearby M Dwarf LHS 3844." 2019, *ApJ*, 158, 50

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

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