

# William C. Waalkes

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(616) 516 9536 (mobile) ❖ William.Waalkes@Colorado.edu

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## EDUCATION

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- Current (PhD)      **University of Colorado**, Boulder, CO  
PhD Candidate, Astrophysics & Planetary Sciences Department
- 2013-16 (B.S.)    **University of Michigan**, Ann Arbor, MI  
BS, *Magna Cum Laude*, Astronomy & Astrophysics, Physics
- 2009-13          **Grand Valley State University**, Allendale, MI  
Biomedical Science, Physics

## RESEARCH PROFILE

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- 2017-            **Graduate Student Researcher**  
*Advisor: Zachory Berta-Thompson, University of Colorado Boulder*
  - As a graduate student at CU, I am studying rocky exoplanet atmospheres. Currently, I am analyzing Hubble STIS data of the ultraviolet transit of super-Earth GJ1132b in order to understand the hydrogen content of its atmosphere.
- 2014-2016      **Research Assistant, U of M Astronomy & Astrophysics Department**  
*Advisor: Dr. Edwin Bergin, University of Michigan*
  - Characterizing abundance and physical conditions of hydrogen cyanide in hot nebular cores of Orion South, Orion KL and NGC 6334.
- 2015            **REU Intern, Smithsonian Astrophysical Observatory**  
*Advisors: Dr. Viviana Guzmán & Dr. Karin Öberg, Harvard Smithsonian Center for Astrophysics*
  - Characterized spatial distribution of methanol and formaldehyde in prestellar and protostellar cores of the Taurus molecular cloud. Concluded the relative importance of molecular formation pathways for formaldehyde and methanol.
- 2014            **REU Intern, U of M Space Sciences Department**  
*Advisor: Dr. Orenthal Tucker, University of Michigan*
  - Modeled the movement of molecular populations through the atmosphere of Saturn's moon, Titan in order to characterize their anomalous spatial and temporal thermal properties.
- 2011-2013      **Research Assistant, GVSU Biomedical Sciences Department**  
*Advisor: Dr. Daniel Bergman, Grand Valley State University*
  - Studied toxicological effects of exposure of crayfish to nonylphenol, an industrial pollutant.

## TEACHING EXPERIENCE

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- 2018            **TA, Astronomy 3400: Research Methods**  
*University of Colorado Boulder Astrophysics and Planetary Sciences Department*

2016	<b>Lab Instructor, Astronomy 102: Introductory Astronomy</b> <i>University of Michigan Astronomy &amp; Astrophysics Department</i>
2016	<b>Lab Instructor, Astronomy 101: The Solar System</b> <i>University of Michigan Astronomy &amp; Astrophysics Department</i>
2012	<b>TA, BMS 291: Human Physiology Lab</b> <i>Grand Valley State University Biomedical Sciences Department</i>

## AWARDS & HONORS

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2018	NSF Graduate Research Fellow
2017	NSF GRFP Honorable Mention
2016	Chambliss Astronomy Achievement Student Award, Undergrad. Honorable Mention
2015	M-Pact Scholarship
2015	Michigan Competitive Scholarship
2015	University of Michigan LSA Alumni Scholarship

## MEMBERSHIPS & COMMITTEES

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2016	Sigma Pi Sigma Physics Honor Society
2015-2016	President, University of Michigan Student Astronomical Society
2015-Present	Affiliate, Harvard Banneker Institute
2015-Present	Member, American Astronomical Society

## PUBLICATIONS

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Crossfield, I., and 59 other authors including **William Waalkes**. “*A Super-Earth and Sub-Neptune Transiting the Late-type M Dwarf LP 791-18.*” (2020), *ApJ*.

**Waalkes, William** et al., “*Constraining neutral hydrogen outflow and stellar host Lyman-alpha reconstruction for transiting super-Earth GJ1132b.*” (2019), *Astronomical Journal*.

Vanderspek, R., and 46 other authors including **William Waalkes**. “*TESS Discovery of an Ultra-Short-Period Planet around the Nearby M Dwarf LHS 3844.*” (2019), *ApJ*.

Bean, J., and 101 other authors including **William Waalkes**. “*The Transiting Exoplanet Community Early Release Science Program for JWST.*” (2019), *PASP*.

Tucker, O., **Waalkes, W.C.**, Tenishev, V., Johnson, R., Bieler, A., Combi, M., Nagy, A. “*Examining the Exobase Approximation: DSMC Models of Titan’s Upper Atmosphere.*” (2016), *Icarus*.

## PRESENTATIONS

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2018	Cool Stars Conference, Boston, MA. “ <i>Lyman-alpha transit observations of the warm rocky exoplanet GJ1132b.</i> ” Poster.
2018	American Astronomical Society 232 <sup>nd</sup> Meeting, Denver, CO. “ <i>Lyman-alpha transit observations of the warm rocky exoplanet GJ1132b.</i> ” Poster.

- 2018 American Astronomical Society 231<sup>st</sup> Meeting, Washington, DC. “*Investigating Neutral Hydrogen Outflow from Rocky Exoplanet GJ1132b using Lyman- $\alpha$  Transit Observations.*” Poster.
- 2017 Boulder Astronomy & Space Society, Boulder, CO. “*Tenuous Habitability.*” Talk.
- 2016 Astronomy Undergraduate Poster Session, University of Michigan, Ann Arbor, MI. “*Spatial Distribution of Small Organics in Prestellar and Protostellar Cores.*” Poster.
- 2016 American Astronomical Society 227<sup>th</sup> Meeting, Kissimmee, FL. “*Spatial Distribution of Small Organics in Prestellar and Protostellar Cores.*” Poster. (Chambliss Honorable Mention Recipient)
- 2015 SAO Summer Intern Symposium at the Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. “*Spatial Distribution of Small Organics in Prestellar and Protostellar Cores.*” Talk.
- 2015 Astronomy 461 Student Symposium, Kitt Peak National Observatory, Tucson, AZ. “*Infrared and Spectral Analysis of Saturn’s Atmosphere.*” Talk & Poster.
- 2015 Astronomy Undergraduate Poster Session, University of Michigan, Ann Arbor, MI. “*A Survey of HCN Abundance in Hot Cores.*” Poster.
- 2014 REU Summer Symposium, University of Michigan, Ann Arbor, MI. “*Modeling Titan’s Exosphere Using the Direct Simulation Monte Carlo Method.*” Talk.

## OBSERVING EXPERIENCE

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- 2018-20 **Las Cumbres Observatory (LCOGT)**
- 2018 **Astronomy Research Consortium Small Aperture Telescope (ARCSAT)**  
*Apache Point Observatory, Sunspot, NM*
- 2018 **Astronomy Research Consortium 3.5m Telescope**  
*Apache Point Observatory, Sunspot, NM*
- 2018 **Las Cumbres Observatory (LCO) 1-m Sinistro Telescopes**  
*Las Cumbres Observatories, Worldwide*
- 2015 **Miniature Exoplanet Radial Velocity Array (MINERVA)**  
*Fred Lawrence Whipple Observatory, Amado, AZ*
- 2015 **MDM Observatory**  
*Kitt Peak National Observatory, Tucson, AZ*

## PUBLIC OUTREACH & COMMUNITY SERVICE

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- 2017-2019 Mentor for a local high school student on a science fair project
- 2018 Astronomy Day public outreach contributor at the Somers-Bausch Observatory
- 2014-2016 Student Astronomical Society Public Observing Nights & Planetarium Shows
- 2015 Invited Speaker for Forest Hills Northern High School’s *Diversity Days*
- 2013-2014 Cesar Chavez Academy pen pal program with the Society for Physics Students