

# Samuel A. Beiler

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## Education

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University of Toledo, Toledo, OH – 2019 to Present  
Ph.D. , Physics with Astronomy Specialization (In Progress)  
Advisor: Michael Cushing  
GPA: 3.95/4.00

Grove City College, Grove City, PA – 2015 to 2019  
B.S., Applied Physics with a Computer Software Focus and an Astronomy Minor  
GPA: 3.83/4.00

## Research Interests

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- Direct observation of extrasolar planets and brown dwarfs
- Chemistry of cold atmospheres, including disequilibrium processes and isotopologues
- Fundamental parameters of brown dwarfs

## Refereed Publications

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1. "Protosolar D-to-H abundance and one part-per-billion PH<sub>3</sub> in the coldest brown dwarf." Rowland et al. (Beiler 7<sup>th</sup> author). 2024, *arXiv*, 2411.14541.
2. "A Tale of Two Molecules: The Underprediction of CO<sub>2</sub> and Overprediction of PH<sub>3</sub> in Late T and Y Dwarf Atmospheric Models." Beiler et al. 2024, *The Astrophysical Journal*, 973, 60.
3. "Precise Bolometric Luminosities and Effective Temperatures of 23 late-T and Y dwarfs Obtained with JWST." Beiler et al. 2024, *The Astrophysical Journal*, 973, 107.
4. "Probing the Heights and Depths of Y Dwarf Atmospheres: A Retrieval Analysis of the JWST Spectral Energy Distribution of WISE J035934.06–540154.6." Kothari et al. (Beiler 4<sup>th</sup> author). 2024, *The Astrophysical Journal*, 971, 121.
5. "The First JWST Spectral Energy Distribution of a Y Dwarf." Beiler et al. 2023, *The Astrophysical Journal Letters*, 951, 2.
6. "L-band spectroscopy of young brown dwarfs." Beiler et al. 2022, *Monthly Notices of the Royal Astronomical Society*, 518, 48.
7. "An L Band Spectrum of the Coldest Brown Dwarf." Morley et al. (Beiler 7<sup>th</sup> Author). 2018, *The Astrophysical Journal*, 858, 17.

## Conference, Colloquium, and Seminar Talks

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1. "Revealing the Nature of Brown Dwarfs With JWST"  
September 2024 Astronomy Seminar at University of Kansas
2. "Galaxies, Star Formation, and Brown Dwarfs Through the Lens of JWST: UToledo Research with NASA's Most Powerful Space Telescope"  
September 2024 Physics and Astronomy Colloquium at University of Toledo
3. "Precise Fundamental Properties of Ultracool Dwarfs in the Era of JWST"  
August 2024 SPLAT Colloquium at University of Hawaii IfA
4. "A Tale of Two Molecules: The Underprediction of CO<sub>2</sub> and Overprediction of PH<sub>3</sub> in Atmospheric Models"  
July 2024 at Bay Area Exoplanet Meeting (BAEM) #48
5. "Probing the Fundamental Properties of Ultracool Dwarfs in the Era of JWST"  
June 2024 at CoolStars 22 and The Other Worlds Laboratory Exoplanet Summer Program
6. "Exploring Fundamental Parameters of Ultracool Objects in the Era of JWST"  
July 2023 at Bay Area Exoplanet Meeting (BAEM) #44
7. "The First JWST Spectral Energy Distribution of a Y dwarf"  
July 2023 at The Other Worlds Laboratory Exoplanet Summer Program 2023
8. "Exploring Fundamental Parameters of Ultracool Objects in the Era of JWST"  
November 2022 at Great Lakes Exoplanet Area Meeting (GLEAM) 2022
9. "What Can We Learn About Exoplanet Atmospheres From L-Band Spectroscopy"  
November 2021 at Great Lakes Exoplanet Area Meeting (GLEAM) 2021

## Poster Presentations

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1. "A Tale of Two Molecules: The Underprediction of CO<sub>2</sub> and Overprediction of PH<sub>3</sub> in Atmospheric Models"  
July 2024 at the Sagan Summer Workshop: Advances in Direct Imaging
2. "Constraining Teff with the First JWST SED of a Y-Dwarf"  
September 2023 at The First Year of JWST Science Conference
3. "Clouds and Convection in the Atmospheres of Young Brown Dwarfs"  
August 2018 at Susquehanna Valley Undergraduate Symposium, and December 2018 at the Grove City College Symposium of Student Research and Scholarly Activity
4. "Testing Young Brown Dwarf Atmospheric Properties with L-Band Spectroscopy"  
October 2017 at The Brown Dwarf to Exoplanet Connection

## Fellowships and Awards

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Robert and Noreen Stollberg Award (2023)

Doreen and Lyman Spitzer Graduate Fellowship in Astrophysics (2020)

## Community Involvement

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Presented Outreach Talk "Countdown to the Eclipse: What to do when the Sun goes dark"  
March 2024 at the Oak Harbor Public Library and Liberty Center Public Library

Restarted and organized the Ritter Astrophysics Symposium, an intra-departmental  
conference, from 2022-2024 after a 5-year hiatus

Mentor for High School Student Researcher

APLU Student Experience Project Equity Champion (2022)

Prospective Student Host (2021-2024)

Creator and Moderator of UToledo Graduate Student Discord Server (2020-2024)

Graduate Student Task Organizer (2020-2022)

Served as Referee for *The Astrophysical Journal* and on the UToledo Internal Lowell  
Discovery Telescope TAC