

MELANIE ROWLAND

The University of Texas at Austin, Department of Astronomy, Austin, TX 78712
(847) 769-8419 ◊ mrowland@utexas.edu

EDUCATION

- The University of Texas at Austin, Austin, TX** *2019 - Present*
Ph.D. in Astronomy (in progress)
M.A. in Astronomy, 2022
Atmospheric modeling of brown dwarfs and directly imaged exoplanets
Adviser: Caroline Morley
- University of Maryland, College Park, MD** *2016 - 2019*
B.S. in Astronomy (High Honors), B.S. in Physics *GPA: 3.87*
Minor in Planetary Science
Honors Thesis: "Mapping water ice and silicates in interstellar dust clouds using background spectra and broadband photometry"
Advisors: Lee Mundy, Tracy Huard
- Towson University, Towson, MD** *2010 - 2014*
B.S. in Psychology and Family Science *GPA: 3.93, summa cum laude*

RESEARCH AND TEACHING EXPERIENCE

- Graduate Research Assistant** *2019 - Present*
The University of Texas at Austin, Austin, TX
Work with CHIMERA, an atmospheric retrieval code in Python, to incorporate the effects of clouds, disequilibrium chemistry, and variability in brown dwarf and exoplanet atmospheres. Work with PI-CASO and VIRGA, an atmospheric and cloud model in Python, to forward model the effects of silicate grains on brown dwarf and directly-imaged exoplanet spectra
- Graduate Teaching Assistant** *2019*
The University of Texas at Austin, Austin, TX
Held 4 hour-long review sessions, graded exams and projects, and assisted students in learning course objectives during class time.
- Undergraduate Research Assistant** *2018 - 2019*
University of Maryland, College Park, MD
Characterized interstellar dust clouds and molecular cores including star forming regions by analyzing spectra and broadband photometry of background stars. Modified and a spectra fitting code in IDL to measure characteristic absorption features of water ice and silicates in the infrared.
- Research Associate** *2014 - 2019*
WRMA, Inc., A Trimetrix Company, Rockville, MD
Worked on several social science research contracts for the Department of Health and Human Services (DHHS) which included overseeing the data collection and data standardization of all federally reported child abuse and neglect data from the 50 states, District of Columbia, and Puerto Rico as the data collection and validation task lead. Conducted data analyses on large data sets (more than 45 million records of 152 variables) for annual reports publicly released by DHHS, national conferences, reporters, and members of congress using Tableau and SPSS software.

- Mathematics Tutor** *2011 - 2013*
Towson University, Towson, MD

Tutored developmental math and pre-calculus to undergraduates.

Undergraduate Research Assistant

2012 - 2013

Towson University, Towson, MD

Conducted physiological psychology research studying the effects of the striatum on memory in mice.
Conducted literature reviews and assisted in developing the maze apparatus.

SEMINARS AND CONFERENCE TALKS

Texas Area Planetary Science Meeting, San Antonio, TX, August 15, 2024
Challenge Accepted: Linking Planet Formation with Present-Day Atmospheres, Heidelberg, Germany, July 10, 2024
Cool Stars 22, San Diego, CA, June 24, 2024
Extreme Solar Systems V, Christchurch, New Zealand, March 18, 2024
Other Worlds Laboratory, Santa Cruz, CA, July 18, 2023
Arizona State University Stars/Brown Dwarfs/Exoplanets Seminar, March 3, 2023.
The American Museum of Natural History Astros Seminar, February 21, 2023.
CloudZweiCon, Ringberg Castle, Germany, January 26, 2023.
University of Texas at Austin Stars and Planets Seminar, November 9, 2022.
University of Texas at Austin Stars and Planets Seminar, December 1, 2021.
21st National Conference on Child Abuse and Neglect, Washington, D.C., April 24, 2019
College of Liberal Arts Commencement Speaker, Towson University, MD, May 21, 2014

POSTER PRESENTATIONS

Texas Area Planetary Science Meeting, San Antonio, TX, August 17, 2023
Sagan Summer School, Pasadena, CA, July 24, 2023
Cool Stars 21, Toulouse, France, July 4, 2022.
Exoplanets IV, Las Vegas, Nevada, May 2, 2022.
Cool Stars 20.5, Virtual Conference, March 2, 2021.
Exoplanets 3, Virtual Conference, July 30, 2020
AAS Winter Meeting 2019, Seattle, WA, January 8, 2019

PUBLICATIONS

Rowland, M.J.; Morley, C.V.; Miles, B.E.; Suarez, G.; Faherty, J.K.; Skemer, A.J.; Beiler, S.A.; Line, M. R.; Bjoraker, G.L.; Fortney, J.J.; Vos, J.M.; Alejandro Merchan, S.; Marley, M.S.; Burningham, B.; Freedman, R.; Gharib-Nezhad, E.; Batalha, N.; Lupu, R.; Visscher, C.; Schneider, A.C.; Geballe, T.R.; Carter, A.; Allers, K.; Mang, J.; Apai, D.; Limbach, M.A.; Wilson, M.J. Protosolar D-to-H abundance and one part per billion PH₃ in the coldest brown dwarf, *The Astrophysical Journal Letters*, submitted (2024).

Hoch, K.; **Rowland, M.;** + 28 others. Direct detection of silicate clouds in a multiplanet system around a Sun-like star, *Nature*, submitted (2024).

Faherty, J.K.; Burningham, B.; Gagné, J.; Suárez, G.; Vos, J.M.; Alejandro Merchan, S.; Morley, C.V.; **Rowland, M.;** Lacy, B.; Kiman, R.; Caselden, D.; Kirkpatrick, J.D.; Meisner, A.; Schneider, A.C.; Kuchner, M.J.; Bardalez Gagliuffi, D.C.; Beichman, C.; Eisenhardt, P.; Gelino, C.R.; Gharib-Nezhad, E.; Gonzales, E.; Marocco, F.; Rothermich, A.J.; Whiteford, N. Methane emission from a cool brown dwarf, *Nature*, accepted (2024).

Rowland, M.J.; Morley, C.V.; Line, M. R. Toward Robust Atmospheric Retrieval on Cloudy L Dwarfs: the Impact of Thermal and Abundance Profile Assumptions, *The Astrophysical Journal*, accepted (2023).

GRANTS AWARDED

2024, Fred T. Goetting, Jr. Memorial Endowed Presidential Scholarship (\$8,500) 2020, Future Investigators in NASA Earth and Space Science and Technology (FINESST) (\$135,000)

TECHNICAL STRENGTHS

**Modeling and Analysis
Software & Tools**

Python, IDL, Matlab, SPSS, Tableau
MS Office, Latex