

Madisen Johnson - PhD Candidate

Education

1. PhD Candidate Astronomy and Physics, Rutgers University, 2023 - present
2. B.S. Astronomy-Physics, University of Wisconsin-Madison, 2023

Relevant Employment

1. Rutgers University Department of Physics and Astronomy Teaching/Graduate Assistant, August 2023 - present
2. University of Wisconsin-Madison Undergraduate Research Assistant, January 2022-August 2023
3. Harvard-Smithsonian Center for Astrophysics Solar Fellow, June 2022 - August 2023

Publications

1. **Madisen Johnson**, Yeimy Rivera, Tatiana Niembro-Hernandez, Michael Stevens, Samuel Badman, Isabella Dieguez, Kristoff Paulson, 2024.
“Helium Abundance Periods Observed by the Solar Probe Cup on Parker Solar Probe: Encounters 1-14”, ApJ, 964, 81.
2. Blakesley Burkhart, Shmuel Bialy, Daneil Seifried, Stefanie Walch, Erika Hamden, Thomas J. Haworth, Keri Hoadley, Shuo Kong, **Madisen Johnson**, Sarah Jeffreson, Mark R. Krumholz, Min-Young Lee, Amiel Sternberg, Neal J. Turner, 2024.
“The Molecular Cloud Life Cycle. II. Formation and Destruction of Molecular Clouds Diagnosed via H₂ Fluorescent Emission”, ApJ, 964, 269.
3. **Madisen Johnson**, Blakesley Burkhart, Shmuel Bialy, Benjamin Goddard, Erica Nelson, Matt Orr, Shyam Menon, Sandro Tachella, Amiel Sternberg, Daniel Eisenstein, Hannah Ubler, Jacques Le Berlot, Evelyne Roueff, Frank LePetit, Krumholz, Jeffreson++, Submitted ApJ
“A Tentative Detection of Molecular Hydrogen (H₂) Emission Lines at Cosmic Dawn”

Scientific and Technical Experience

Johnson has been conducting numerical analysis on astrophysical data for two years, with her initial experience in research occurring during her undergraduate education at the University of Wisconsin-Madison. In 2022, Johnson began her work at the Harvard-Smithsonian Center for Astrophysics, initially as a Solar REU student and later as a fellow, where she worked on particle composition in the solar wind using the Parker Solar Probe by creating her own fitting algorithm. Additionally, in 2022 she began her research at the University of Wisconsin-Madison, working with numerical simulations to further investigate the atomic-to-molecular transition within molecular clouds. Due to her experience and access to both simulations and observational data, she is readily equipped to conduct analyses using many methods to fully investigate the HI-to-H₂ transition in order to understand star formation within the interstellar medium.