Jonah Rose

fCurriculum Vitae

Department of Astronomy
University of Florida
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Education

2021–present **PhD, Astronomy**, *Univeristy of Florida*.
Cosmological simulations, alternative dark matter, machine learning

2019–2021 **Master of Astronomy**, *University of Florida*.
GPA: 3.97
Thesis: *Where Binary Neutron Stars Merge: Predictions from IllustrisTNG*

2015–2019 **Bachelor of Physics, Computer Science & Math**, *University of Oregon*.
Upper-Division GPA: Physics - 3.82; Math - 3.93; CS - 4.00

Publications

Journal Articles

2023 **Rose, Jonah C.**, Paul Torrey, Mark Vogelsberger, and Stephanie O'Neil. Unravelling the interplay between SIDM and baryons in MW haloes: defining where baryons dictate heat transfer. *MNRAS*, volume 519, pages 5623–5636, March 2023.

2023 **Rose, Jonah C.**, Paul Torrey, Francisco Villaescusa-Navarro, Mark Vogelsberger, Stephanie O'Neil, Ryan Low, Rakshak Adhikari, and Mikhail V. Medvedev. Inferring Warm Dark Matter Masses with Deep Learning; Submitted. *MNRAS*, March 2023.

2022 Stephanie O'Neil, Mark Vogelsberger, Saniya Heeba, Katelin Schutz, **Rose, Jonah** C., Paul Torrey, Josh Borrow, Ryan Low, Rakshak Adhikari, Mikhail V. Medvedev, Tracy R. Slatyer, and Jesús Zavala. Endothermic self-interacting dark matter in Milky Way-like dark matter haloes. *arXiv e-prints*, page arXiv:2210.16328, October 2022.

2021 **Rose, Jonah C.**, Paul Torrey, K. H. Lee, and I. Bartos. Where Binary Neutron Stars Merge: Predictions from IllustrisTNG. *APJ*, volume 909, page 207, March 2021.

2020 K. H. Lee, I. Bartos, G. C. Privon, **Rose, J. C.**, and P. Torrey. FIRST J1419+3940 as the First Observed Radio Flare from a Neutron Star Merger. *APJ Letters*, volume 902, page L23, October 2020.

Research Experience

University of Florida

Jun 2022 – present ***Machine learning with Alternative Dark Matter Models***.
Exploring how machine learning can be used to place constraints on alternative dark matter models, currently focusing on WDM.
Advisor **Dr. Paul Torrey**, *Associate Professor, Department of Astronomy*, University of Florida

Jul 2021 – present ***Exploring the Validity of the ETHOS Model in Hydrodynamic Simulations***.
Running SIDM and ETHOS simulations with IllustisTNG physics to understand if these models are viable to explain the small-scale problems.
Advisor **Dr. Paul Torrey**, *Associate Professor, Department Astronomy*, University of Florida

Sep 2019 – Nov 2020 ***Learning Where Binary Neutron Stars Merge***.
Using IllustrisTNG simulations to understand where binary neutron star mergers are most likely to occur to inform observational follow-ups of gravitational wave detections.
Advisor **Dr. Paul Torrey**, *Associate Professor, Department Astronomy*, University of Florida

University of Oregon

Jan 2018 – Jun 2019 ***The Assembly of Rich Clusters: A Wide-Field View of a Galaxy Protocluster at z = 2.16***. comparing galaxy cluster properties to nearby field galaxies.

Advisor **Dr. Ricardo Demarco**, *Associate Professor, Department Astronomy*, University of Concepción

Fellowships & Awards

2019 - present ***University of Florida Graduate Student Fellowship***

2015 - 2019 ***Oregon Summit Merit Scholarship***

Conferences & Workshops

Jun 2023 **Self-Interacting Dark Matter: Models, Simulations and Signals** - Pollica Physics Center, Italy (Accepted)

May 2023 **Cosmic Connections: A ML X Astrophysics Symposium** - Flatiron Institute, Simons Foundation (Applied)

Mar 2023 **Dust and Polycyclic Hydrocarbon Workshop** - University of Florida

Nov 2022 **CAMELS Workshop** - Flatiron Institute, Simons Foundation

Computer Skills

Programming Languages: Python, PyTorch, C, C++, Bash, Cuda

Database: SQL, MySQL

Outreach

2019 **Starry Night** - Natural History Museum, Gainesville, FL

2016-2018 **Public Night Volunteer** - Pine Mountain Observatory, Bend, OR

Teaching Assistantship

Spring 2023 **AST 4211: Essentials of Astrophysics**, University of Florida.

Fall 2020 **AST 2037: Life in the Universe**, University of Florida.

Fall 2020 **AST 2003: Introduction to the Solar System**, Univeristy of Florida.

Fall 2020 **AST 4903: Computational Astrophysics**, University of Florida.

2017 - 2019 **Math and Physics Tutoring**, University of Oregon.