

Rebecca L. Preston

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Current Position

8/2023-current **Graduate Assistant Researcher**
Southern Methodist University

8/2025-current **Adjunct Professor**
Southern Methodist University

Past Position

6/2021-7/2023 **Graduate Assistant Researcher**
Texas A&M University - Commerce

10/2019-5/2021 **Undergraduate Researcher**
Texas A&M University - Commerce

Education

8/2023-current **Southern Methodist University**
PhD in Astrophysics
Advisor: Dr. Fred Olness

9/2021-7/2023 **Texas A&M University - Commerce**
MS in Physics
Thesis: "Inference of whole neutron star EOS from combined astrophysical and nuclear observables"
Advisor: Dr. William G. Newton

8/2019-5/2021 **Texas A&M University - Commerce**
BS in Physics: Concentration in Astrophysics
Graduated Magna Cum Laude
Advisor: Dr. Kent Montgomery

2009-2017 **Collin College**
AA in Art

Academic Honors

2021 Sigma Pi Sigma, honorary national physics society
2021 Magna Cum Laude
2021 Dean's List
2020 President's List
2019 Dean's List

Research

2025-current

Graduate Projects

“From proton-neutron short range correlations to neutron star cooling”

Collaborators: William Newton, Fred Olness, Lami Suleiman

2023-2025

“SURGE collaboration: machine learning for nuclear cross section calculations”

Collaborators: Fred Olness

2021-2023

“Constraining nuclear symmetry energy using multimessenger resonant shattering flares”

Collaborators: Duncan Neill, David Tsang

“Comparison of methods for the inferred neutron skin thickness and dipole polarizability of ^{208}Pb and ^{48}Ca ”

Collaborators: Reed Essick, Philippe Landry, Achim Schwenk, and Ingo Tews

Master’s Thesis: “Inference of whole neutron star EOS from combined astrophysical and nuclear observables”

2019-2021

Undergraduate Projects

“Constraining nuclear symmetry energy using neutron skin data”

“Effects of Crust Core Transition Modeling on Neutron Star Properties”

Awards and Fellowships

2025

NASA/Texas Space Grant Fellowship 2025-2026 - \$5,000.00

2023

NASA/Texas Space Grant Fellowship 2023-2024 - \$5,000.00

2022

1st Place - TAMUC Annual Research Symposium: Oral Presentation - \$250.00

2022

NASA/Texas Space Grant Fellowship 2022-2023 - \$5,000.00

2022

TAMUC Phys & Astr Department:

Outstanding Graduate Student - \$200.00

2021

TAMUC Phys & Astr Department:

Outstanding Undergraduate Researcher - \$200.00

2020-2021

National Science Foundation:

Phys and Astronomy Scholarship for Success - \$6958.00

2019-2020

National Science Foundation:

Phys and Astronomy Scholarship for Success - \$9681.00

2020

1st Place - Texas Section of the American Physics Society:

Outstanding Undergraduate Presentation

Professional Development

June 2025

CTEQ Summer School on QCD and Electroweak Phenomenology

MSU East Lansing, MI

June 2024

HEFTY Summer School

Santa Fe, NM

May 2022

Frontiers in Nuclear Astrophysics Conference and Junior Researchers’ Workshop

University of Notre Dame, South Bend, IN

July 2022

National Nuclear Physics Summer School

Massachusetts Institute for Technology, Cambridge, MA

Sept 2022

Ecole Joliot-Curie School for Nuclear Physics Summer School

St. Pierre d’Oleron, France

Teaching

Texas A&M University at Commerce

Aug 2021 *Substitute Instructor*

Course: PHYS 420 Quantum Mechanics

Publications

- 2021 “From neutron skins and neutron matter to the neutron star crust”,
William G. Newton, **Rebecca Preston**, Lauren Balliet and Michael Ross
Physics Letters B 834, 137481
arXiv:2111.07969
- 2022 “Constraining Nuclear Symmetry Energy with Multi-messenger Resonant Shattering Flares”,
Duncan Neill, **Rebecca Preston**, William G. Newton, and David Tsang
PRL 130, 112701
arXiv:2208.00994
- In Prep “Comparison of methods for the inferred neutron skin thickness and
dipole polarizability of ^{208}Pb and ^{48}Ca ”,
William G. Newton, **Rebecca Preston**, Reed Essick, Philippe Landry,
Achim Schwenk, and Ingo Tews
- In Prep “Inference of whole neutron star EOS from combined astrophysical and nuclear observable”,
William G. Newton, **Rebecca Preston**

References

Dr. William G. Newton

Associate Professor

Physics and Astronomy Department

Texas A&M University-Commerce

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Dr. Kurtis Williams

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Dr. Fred Olness

Professor

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