S. Reece Boston
University of North Carolina
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Education

Ph.D., Physics University of North Carolina-Chapel Hill, 2022

M.S., Physics University of Georgia, 2015

B.S., Mathematics and Physics Georgia College, 2010

Published Work

- Alejandro H. Córsico, S. Reece Boston, Leandro G. Althaus, Mukremin Kilic, S. O. Kepler, María E. Camisassa and Santiago Torres, "General relativistic pulsations of ultra-massive ZZ Ceti stars," Monthly Notices of the Royal Astronomical Society, [submitted June 1, 2023].
- Boston, S. Reece, C. R. Evans and J. C. Clemens, "Relativistic Corrections in White Dwarf Asteroseismology." Astrophysical Journal, [accepted May 9, 2023].
- Boston, S. Reece, *Newtonian and Relativistic White Dwarf Asteroseismology*, Ph.D. dissertation, UNC, (2022).
- de Souza, Rafael, S. Reece Boston, Alain Coc, and Christian Iliadis, "Thermonuclear fusion rates for tritium+deuterium using Bayesian methods." Physical Review C, (2018).
- Boston, S. Reece, "Time Travel in Transformation Optics." Physical Review D, (2015).

Research Codes

`GRPulse`**:** High-precision asteroseismology code for Newtonian, post-Newtonian, and General Relativistic stellar models. Built-in capability for several basic stellar backgrounds.

`Thrain`**:** Asteroseismology code for simple analytic models of white dwarf stars, using analytic equations of state for high numerical accuracy.

Research Experience

Scientific Software Engineer at Oak Ridge National Laboratories, Mar 2023 - present

Topic: data reduction for neutron scattering in the Spallation Neutron Source

Responsibilities: design, create, and test code for data reduction from scattering experiments; update and maintain existing community code for new purposes; coordinate with stakeholder researchers.

Research Assistant at University of North Carolina - Chapel Hill, Fall 2016 - Spring 2022

Research Advisor: Charles R. Evans

Topic: The numerical calculation of pulsation frequencies for white dwarf and other stellar objects in classical and general relativistic settings. Calculations performed in C++.

Industry Experience

Quant Researcher at Anchorage Digital, Oct 2022 - Present

R&D Data Scientist at Community, Sept 2021 - June 2022

Responsibilities: causal inference; market archetyping; analyze big data for product insights; transforming data for data lakehouse; natural language processing.

Technology: python [pandas, numpy, sklearn, spaCy]; github; Snowflake SQL; Docker; AWS.

Languages

- English (native)
- Spanish (spoken in home)
- C++ (advanced)
- R (advanced)
- python (intermediate)
- SQL (advanced)

Teaching Experience

University of North Carolina – Chapel Hill

Teaching Professor Summer 2019, Summer 2020

Course: Physics for Life Sciences (PHYS 115), lecture/studio format

Lectured on physics. Setup online homework, wrote exams for courses, coordinated lab section, and organized student absences. Recorded many of the online lectures during COVID-19 response (Lec 7-10,14,26-27).

Research Mentor Summer 2020-Summer 2021

Role: Acting mentor for REU/Senior Honor's Thesis in relativistic pulsation of neutron stars and white dwarfs (LOI: python).

Research Mentor Fall 2018 - Summer 2019

Role: Mentoring NCCMS high school student in guided research project on relativistic pulsation of neutron stars. Student won Regeneron STS 2019 Scholarship.

Teaching Assistant Fall 2016 - Fall 2020

Courses: Numerical Methods (LOI: python), Electronics Lab, Physics for Life Sciences

University of Georgia

Teaching Assistant Fall 2010 - Spring 2015

Courses: Physics Labs, Scale-Up Physics for Engineers

Mount Pisgah Christian School

STEM Teacher Fall 2015 - Spring 2016

Courses: AP Physics 1, High School Physics, Introductory Programming (LOI: C++)

Coach: FIRST Robotics Competition, FIRST Lego League

Awards and Honors

Hamilton Award 2021, UNC
Monetary award given by the Physics and Astronomy department at UNC.

NC Space Grant 2020, UNC
Monetary grant awarded through NASA for promising gradate student work related to NASA missions.

Outstanding Physics TA 2018, UNC
Awarded for performance as teaching assistant. Included monetary award.

Sarah Nelson Scholarship 2008-2009, GCSU
Presented to exceptional math majors.