

S. Reece Boston

numerical astrophysics researcher
expert scientific software engineer

email: reece@thebostons.us

github: [rboston628](#)

orcid: [0000-0001-8122-1961](#)

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
A.A., Mathematics	Georgia Perimeter College	2007

Research Appointments

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.

Research Assistant at University of Georgia Fall 2011 - Spring 2015

Research Advisors: Steven P. Lewis and William Dennis

Topic: Design of metamaterials to imitate the properties of curved space-time geometries. Simulated propagation of light inside these materials using FDTD methods.

Research Software

Thrain: Asteroseismology code for simple analytic models of white dwarf stars, using analytic equations of state for high numerical accuracy (C++).

GRPulse: High-precision asteroseismology code for Newtonian, post-Newtonian, and General Relativistic stellar models (C++).

SNAPRed: Data reduction code for highly-reconfigurable neutron scattering instruments (Python).

Mantid: Multi-institutional neutron data analysis platform and python API (C++).

Published Work

- Alejandro H. Córscico, [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](#), (2023).

- Boston, S. Reece, C. R. Evans and J. C. Clemens, “Relativistic Corrections in White Dwarf Asteroseismology.” [Astrophysical Journal](#), (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).

Teaching Experience

University of North Carolina – Chapel Hill

Teaching Professor Summer 2019, Summer 2020

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

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

Industry Experience

Quant Researcher at Anchorage Digital, Oct 2022 - Mar 2023

Worked on crypto market liquidity metrics. Transitioned following FTX collapse.

Technology: python [pandas, gsheets]; SQL[BigQuery]

R&D Data Scientist at [Community](#), Sept 2021 - June 2022

Studied causal inference in text message responses; market archotyping; analyze big data for product insights; transforming data for data lakehouse; natural language processing.

Technology: python [pandas, numpy, sklearn, spaCy]; SQL [Snowflake]

Technical Skills

Computer Languages: C++ (expert), Python (advanced), SQL (intermediate), R (historical)

Human Languages: English (native), Spanish (advanced spoken fluency, domestic use)

Tools: Git, GNU/Linux, Bash. Conda/Mamba, CMake, Github Actions, VS Code, L^AT_EX

Awards and Honors

Hamilton Award 2021, UNC

Granted by the Physics and Astronomy department at UNC.

NC Space Grant 2020, UNC

Awarded through NASA for promising gradate student work related to NASA missions.

Outstanding Physics TA 2018, UNC

Monetary award recognizing exceptional work as teaching assistant.

Outstanding Physics Major 2010, GCSU

Presented to top graduating physics major.

Sarah Nelson Scholarship 2008-2009, GCSU

Presented to exceptional math majors.