Reed Hodges

reed.hodges@duke.edu
https://reedhodges.github.io/

Education

Ph.D. in Physics, Concentration: Theoretical Nuclear/Particle Physics
Duke University, expected spring 2024

B.S. in Physics, Minor: Mathematics
Georgia Southern University, 2018

Relevant Experience

Graduate Research Assistant, QCD Theory Group
Duke University / Durham, NC / 2018-present
Advisor: Thomas Mehen

- Adapted models to make qualitative and quantitative predictions for the results of experiments at particle colliders
- Wrote programs to test models and hypotheses via numerical computation and data visualization
- Derived new formulae that describe how particles can fragment and create different particles, utilizing a combination of mathematical calculations and simplification in a computer program
- Collaborated as part of global research teams spanning multiple organizations, playing a key role in research, writing, and presentation
- Published papers in top-ranked journals, contributing to cutting-edge research areas in nuclear/particle physics
- Delivered presentations of research findings at regional, national, and international conferences, engaging with academic peers and contributing to the broader discourse in the field
- Contributed as a member of the HEFTY Collaboration, a theoretical nuclear physics research collaboration funded by the U.S. Department of Energy

Graduate Teaching Assistant
Duke University / Durham, NC / 2018-2021
- Translated complex physics concepts into clear, understandable terms for students
- Modeled and taught best practices in scientific data collection, ensuring accuracy and reliability, while encouraging a data-driven mindset and approach among students
- Provided comprehensive instruction on utilizing specialized data collection software, enabling students to gather and manage data efficiently and accurately

- Engaged in regular data entry and management tasks, ensuring accuracy and integrity of student records and performance metrics

Undergraduate Research Assistant, Computational Nanotechnology Group
Georgia Southern University / Statesboro, GA / 2015-2018
Advisor: Maxim Durach
- Developed and executed computer programs to model and understand how special micrometer-sized materials interact with light
- Conducted research and iterative testing to identify a design of a micrometer-sized sphere that has near-invisibility when exposed to light
- Optimized code for efficiency and performance to meet high computational demands
- Published papers in peer-reviewed journals and presented research findings at regional and national conferences

Blue Waters Petascale Computing Intern
Shodor Education Foundation / 2016-2017
- Completed an intensive educational program on parallel computing at the National Center for Supercomputing Applications, where I gained knowledge on parallel programming interfaces such as OpenMP, MPI, and CUDA
- Applied parallel computing techniques to optimize my undergraduate research simulations, achieving significant improvements in computational speed
- Gained practical experience with the Blue Waters supercomputer, enhancing research outcomes through high-performance computing

Languages
Python, SQL, C, Fortran, R, HTML

Software, Applications, & Development Tools
Github, Pandas, Numpy, Linux/Unix, Tableau, Mathematica, LaTeX, MATLAB, Microsoft Suite

Skills
Analytical Thinking, Problem Solving, Data Analysis, Data Visualization, Critical Thinking, Collaboration, Project Management, Research Skills, Communication, Technical Writing, Adaptability, Presentation Skills, Teamwork, Mentoring, Learning Agility, Creativity, Public Speaking