

Eben Quenneville

603-484-0402 | ebq1003@usnh.edu | [linkedin.com/in/eben](https://www.linkedin.com/in/eben) | github.com/TonehavenE

EDUCATION

Bachelor of Sciences in Engineering Physics, Research Track

August 2024 - May 2027

University of New Hampshire

Durham, New Hampshire

- **GPA:** 4.0/4.0
- **Coursework:** Machine Learning, Modern Physics, Classical Mechanics, Differential Equations, Electric Circuits

EXPERIENCE

3UCubed Student Collaborator

October 2024 - Present

NASA IMAP Student Collaboration

Durham, New Hampshire

- Calibrated the ultraviolet photomultiplier tube and electron retarding potential analyzer for the 3UCubed CubeSat, ensuring mission readiness for NASA's IMAP Student Collaboration
- Designed and reviewed flight electronics in KiCAD and assisted with mechanical assembly and CAD modeling in SolidWorks, contributing to the project's Q4 launch
- Supported mission concept of operations software and ground-station hardware, contributing to the objective of achieving 5 years of operational uptime

Academy of Math and Programming Teaching Assistant

June 2025 - August 2025

Jane Street

New York City, New York

- Taught 80 students combinatorics, number theory, and computer science in a rigorous summer program
- Introduced students to the foundations of quantitative thinking through strategy and trading games like Figgie
- Lead computer science and combinatorics classes and established a collaborative problem solving environment

Phylogenetics Researcher

May 2025 - June 2025

Fåhræus Institute

Lund, Sweden

- Spearheaded the analysis of the DNA sequences of over 70,000 butterfly specimens
- Wrote Bayesian inference algorithms to analyze millions of DNA base-pairs to determine species similarity
- Established a pipeline for DNA data processing on a remote Linux server with 192 CPU Cores and 384 GB of RAM
- Developed novel ideas about Markov Chain Monte Carlo integration using linear algebra techniques

RESEARCH

Modeling the Navier-Stokes Equations

January 2025 - Present

Department of Mathematics and Statistics

Professor John F. Gibson

- Modeled the Navier-Stokes equations for Plane Couette flow using Galerkin projection to identify invariant solutions and track the transition to turbulence
- Compared metrics of power input, energy dissipation, and L_2 norm using Julia to determine model accuracy

Machine Learning for the Phase of the S-Matrix

January 2025 - Present

Department of Physics and Astronomy

Professor Per Berglund

- Using cutting-edge techniques for physics-informed neural networks to reproduce the phase of the S-Matrix in 2-to-2 elastic scattering
- Seeking to push the lower-bound for $\sin(\mu)$, a metric for recognizing phase-ambiguous solutions, using modified loss functions, numeric integration methods, and different neural network architectures in PyTorch

PROJECTS

Physics-Informed Neural Networks for Fluid Dynamics

January 2025 - May 2025

- Explored physics-informed neural networks (PINNs) for a variety of applications to partial differential equations
- Trained a JAX neural network to minimize loss on the partial differential equation and direct-numerical simulation data; obtained mean-squared error between the velocity field and machine learning output on the order of 10^{-5}

TECHNICAL SKILLS

Languages: Python, Java, C++, Julia

Frameworks: Hugo, Django, Svelte, SvelteKit, PicoCSS, QMK, PyTorch, JAX

Developer Tools: Git, NixOS, Nix Flakes, SSH, Neovim, Linux Utilities

Technical Documentation: LaTeX, Typst, Obsidian, Markdown

Product Design: KiCad, Fusion 360, Cura, 3D Printing, Klipper, Soldering