

# DANIEL HARRINGTON

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## EDUCATION

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**B.Sc. Physics and Mathematics**, Tufts University

(in progress–May 2026)

*Relevant Coursework:* Quantum Mech. I, Real Analysis I, Linear Algebra, Mathematical Aspects of Data Analysis, Calculus I-III, Electronics, Differential Equations. GPA 4.0/4.0, Dean's List Honors.

*Spring 2024 Coursework:* Quantum Mech. II, Real Analysis II, Thermal Physics, Convex Optimization

## EXPERIENCE

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**Tufts Nanophotonics Group (PI Aseema Mohanty)** – Research Assistant

(Fall 2023—)

- Developing techniques to control electric field distribution in an integrated multimode waveguide through mode superposition modulation via microring resonators
- Simulation/design of photonic circuits, analytical modeling of mode propagation
- Planned application to addressable excitation of epitaxially grown quantum dots and single neuron activation

**National Institute of Standards and Technology** – Undergraduate Research Fellow

(Summer 2023)

- Investigated passivation effects of polymers on MoS<sub>2</sub> monolayers for FET photodetection applications
- Characterized polymer effects via Raman, PL, and THz spectroscopy (time-resolved/time-domain)
- Operation and alignment of Class 4 lasers and optics to improve SNR for THz setup
- Identified O<sub>2</sub> -passivated S vacancies could be impacting our photoconductivity data, presented solutions based on literature to quantify sample homogeneity
- Data analysis/presentation for colloquium, helped write and prepare publication (under review)

**Tufts SEDS Club** – Radio Telescope Team Lead, Board Member

(Fall 2022—)

- Lead project to develop and construct a 3-meter educational radio telescope for public use
- Develop full-stack software for user observation scheduling, data analysis/storage, dish rotator control

## PUBLICATIONS

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C.K. McGinn, D.M. Harrington, E. Heilweil, and C.A. Hacker. Spectroscopic Analysis of Polymer and Monolayer MoS<sub>2</sub> Interfaces for Photodetection Applications. (*Submitted to Applied Physics Letters*)

## PROJECTS

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See Portfolio Site

- **Bures-Wasserstein (BW) Learning for Quantum State Tomography** – Comparison of compressed sensing and deep learning QST methods to novel application of BW barycenters for matrix recovery
- **Spatial Light Modulator** – LCD-based SLM for optics demonstrations
- **Muon Detector** – SiPM-based muon counter with signal amplification and detection circuit

## SKILLS

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**Software:** Python (Pandas, numpy, matplotlib, meep), C/C++, JS, CAD (Fusion360), Mathematica, web development (React, Flask), SQL, Git, Office, LaTeX, Linux/MacOS/Windows