Aditya Advani
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EDUCATION

Haverford College **May 2024**
B.S.- Double Major in Physics & Mathematics, Concentration in Scientific Computing GPA: 3.8/4.0
Relevant courses completed: Advanced Quantum Mechanics, Advanced Electrodynamics, Abstract Algebra, Algebraic Geometry, Differential Equations, Experimental Physics Labs, Biophysics, Topological Data Analysis, Relativity, Topology, Algebraic Combinatorics

WORK EXPERIENCE

Brzinski Group (Squishlab), *Research Assistant, Haverford* **May 2022 – Present**

- Conducted research in collaboration with UCSD and NCSU. This research aims to forecast failure in granular systems (earthquakes and landslides) by measuring the characteristics of the boson peak in the Vibrational Density of Modes of a material.
- The Vibrational Density of Modes is measured using a thermal technique by measuring acoustic emissions from excited granular matter that is compressed or sheared.
- Designed and constructed a system using piezoelectric ceramics to measure the Vibrational Density of Modes in the field and performed tomography on granular matter at BerkeleyLab (LBNL). This project is funded by the NSF from 2023-2026.

Haverford College, *Laboratory Assistant, Haverford* **August 2021 – Present**

- Assisted Haverford College's Physics department by performing lab experimental setup/teardown and lab grading weekly for 6 semesters.

JOEST GMBH, *Intern, Duelmen, Germany* **April 2019 – August 2019**

- Researched about the practical applications of Mechanical Vibration using industrial shakers with granular materials.
- Assembled an industrial water-cooling system and attached it to a JOEST spiral conveyor with a team of mechanical engineers.

Animal Factory Amplification*, Intern, Mumbai, India* **August 2019- October 2019**

- Researched about electronic distortion and fuzz used in guitar amplifiers. This involved learning about I.C.s, diodes and transistors in relation to sound editing.
- Assembled a Fuzz and Distortion-Overdrive pedal with custom graphics and controls for electric guitars.

PROJECTS AND SKILLS SUMMARY

- Experienced in Python, Java, MATLAB, Arduino, Fusion360, EagleCAD (and other relevant milling software).
- I enjoy studying the principles of Physics by conceptualizing and making various objects like a piezo-electric battery charging shoes, an electric monowheel, a thermo-couple phone charger, etc. (Details on my website)
- During my education, I have undertaken experimental projects on:
    - Measuring the acoustics of failure using the Density of Modes (2023)
    - The small-large boat problem (Alcuin Numbers) (2023)
    - Diagonal Ramsey Numbers using Simplicial Complexes (2023)
    - Quantum Entanglement and Testing Local Realism (2022)
    - Modelling the electric fields in an electric eel (2022)
    - Para/Di-magnetism of ligands complex ions (2020)
    - Hybridization theory using Fourier transforms (2020)
    - Fractals in image resolution (2020)