Kevin Han

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EDUCATION

The University of Texas at Austin, Austin, TX May 2025
Bachelor of Science in Computational Physics
Bachelor of Science and Arts in Mathematics
Scientific Computation and Data Sciences Certificate
Computational Sciences and Engineering Certificate
Elements of Computing Certificate

- GPA: 3.89

Relevant Coursework: Quantum Physics 1-3, Elements of Computer Programming, Computational Physics, Lagrangian and Hamiltonian Mechanics, Various Physics Laboratories, Differential Equations with Linear Algebra, Applied Linear Algebra, Complex Analysis, Discrete Math, Vector Calculus

EXPERIENCE

Fermi National Accelerator Laboratory, Austin, TX August 2022 - Present
Undergraduate Researcher in Dr. Lang's High Energy Physics Group

- Organized and analyzed various physical parameters from raw and unfiltered data from Fermilab's hadron monitor
- Implemented particle physics theory in the analysis of data from Fermilab's NOvA project
- Coordinated with NOvA scientists and collaborators from other universities on a weekly basis
- Skills used: Numerical and computational methods, various python libraries including pandas, C++

University of Texas Physics Department, Austin, TX August 2022 - Present
Physics Lab Learning Assistant

- Prepared and facilitated physics laboratory sessions for undergraduate students
- Held weekly office hours to answer student questions on physics theory and experiments
- Assessed 100+ students' progress throughout the term and worked closely with teaching assistants and professors to efficiently plan and coordinate work and pedagogy

PROJECTS

- **Critical Phenomena: Ising Model** - Studied critical phenomena in statistical mechanics and utilized python and computational/numerical methods to create both exact calculations and Monte Carlo simulations of multi-dimensional Ising Models with a large amount of spin sites. Held a multimedia presentation of project to other physics undergraduate and graduate students.
- **Hadron Monitor Analysis** - Developed a program to time-align a multitude of physical parameters in a month-long data collection session from Fermilab's hadron monitor on a second basis. Normalized, plotted, and correlated aligned data to verify Fermilab's detector hardware performance in the NOvA's NuMI neutrino beam.
- **Higgs Boson Particle Simulation** - Implemented MadGraph software to simulate the 2012 CERN discovery of the Higgs Boson through 10 runs of 10,000 proton-proton collision events. Studied quantum field theory and used Feynman diagrams to analyze simulation. Utilized python to plot and correlate four-momenta of post-collision particles with respect to their event density and discovered the Higgs particle resonance peak.

TECHNICAL SKILLS

Coding Languages: Proficient in Python, Java and MATLAB. Intermediate in C++, HTML, CSS, and Javascript. Exposed to ROOT.
Computational Skills: Proficient in numerical analysis and Monte Carlo simulations.