

MEHUL NAIR

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Education

University of California Berkeley

August 2022 - May 2026

B.S. Materials Science and Engineering & Nuclear Engineering

Berkeley, CA

Relevant Coursework

Upcoming: Transformations and Kinetics, Materials Characterization, Crystal Structure and Bonding (Graduate-level)

Current: Nuclear Reactions; Bonding, Crystallography and Defects; Controlled Fusion; Quantum Physics, Special Relativity and Optics

Completed: Multi-variable Calculus; MATLAB; Properties of Materials; Electricity and Magnetism; Linear Algebra and Differential Equations; Intro to Radiation Detection

Experience

Applied Nuclear Physics Division, LBNL

March 2023 – Present

Research Affiliate

Berkeley, CA

- Testing novel image reconstruction algorithms for low noise near-field imaging of radioactive sources in medical settings
- Utilized python and various statistical models including MLEM and LBFGS along with various penalty functions for the purpose of image reconstruction
- Reconstructed images of radioactive sources for medical settings
- Developed fitting algorithms for spectral analysis of radionuclides

Nuclear Materials Lab, UC Berkeley

September 2022 – Present

Undergraduate Research Assistant

Berkeley, CA

- Currently working on radiation effects on fusion materials in conjunction with the Superconducting Magnet Program at LBNL
- Conducted mechanical properties testing on epoxies used for superconducting accelerator magnets (See publications)
- Helped adapt a MATLAB heat transfer simulation to work with REBCO at quench temperatures

Radiation Safety Committee, UC Berkeley COE

June 2023 – Present

Undergraduate Student Representative

Berkeley, CA

- Helps review and approve all uses of ionizing radiation and radioisotopes and establish campus policy on ionizing radiation safety
- Advises Environment, Health & Safety (EH&S) staff in implementing campus radiation safety and radioactive waste programs

Superconducting Magnet Program, LBNL

October 2023 – Present

Affiliate Researcher

Berkeley, CA

- Developing hardware and software used to detect quenches in superconducting magnets
- Using MATLAB and LabView to develop software that can detect rapid changes in voltage

Publications

Investigating Irradiated Superconducting Magnet Insulation Materials for Particle Accelerators

- IEEE Transactions on Applied Superconductivity, vol. 33, no. 5, pp. 1-7, Aug. 2023, Art no. 7700307, doi: 10.1109/TASC.2023.3252480.

Technical Skills

Software: Python, Java, MATLAB, \LaTeX , Fusion360

Technical: Scanning Electron Microscopy (SEM), Sample Preparation, Mechanical Property Testing

Other: Organizational Skills, Teamwork, Leadership, Interpersonal Skills

Extracurricular

Net Impact Berkeley

Fall 2023 – Present

Associate Consultant

UC Berkeley

- Assisting a nonprofit to expand the reach of their message
- Working with a team of 5 members to conduct interviews, analyze market research and present findings