

# Ravi Dhaliwal

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## Education

**University of California, Los Angeles** - Physics B.S.

Dec 2025

Coursework: Graduate Plasma, Statistical Mechanics, Electricity & Magnetism, Analog Circuits

GPA: 3.4

## Research Experience

**Student Researcher**, Putterman Group

June 2025 – Present

- Worked with a graduate student on iteratively implementing a bubble collapse algorithm from a naval research paper, specifically a 1-D compressible fluid solver, implemented grid refinement and parallelized it to speed up computation by 8x.

**Student Researcher**, UCLA Basic Plasma Science Facility

June 2024 – Present

- Analyzed how various beam characteristics and perturbation geometry affect DBS/CPS backscattered power.
- Developed and verified COMSOL simulation results to match known linear and non-linear relations of plasma turbulence with scattered beam power, with further data analysis in Python
- Automated simulations for millimeter-wave propagation in plasma using GENRAY, integrating Python scripts with OMFIT's DBS module to enhance wave propagation analysis.

**Aerodynamics Subteam**, Bruin Formula SAE

Sept 2023 – June 2024

- Mounted pitot tubes on custom 3D-printed fixtures to measure local airflow around the chassis.
- Ran STAR-CCM CFD studies and used results alongside measurements to influence drag-reduction design iterations.

**Principal Investigator**, NASA NPWEE – Remote

Sept 2023 – Dec 2023

- Lead a proposal for funding a conceptual engineering project to enhance thrust in satellite electronic propulsion systems.
- Specifically focused on investigating the feasibility of utilizing super-capacitors to induce large current increases in the thruster, which in turn increased thrust output
- Led research efforts, organized and managed teams by assigning roles and responsibilities, and conducted various simulations using pSpice
- Cumulated in a ten page proposal that was presented to a NASA board.

**Student Researcher**, University of California, Riverside – Riverside, CA

June 2022 – Feb 2023

- Tasked with designing a venturi tube that would be used in a water filtration system
- Conducted CFD simulations in SolidWorks to verify the designs functionality under load, ensuring a sufficient pressure drop was achieved.

## Publications

**Full-Wave Modeling of Doppler Backscattering in Turbulent Plasmas**

In Review

## Projects

**Level Two Rocket**

Sept 2025

- Designed, Simulated, and Fabricated a 3 ft rocket with custom avionics, reaching an apogee of 1500m.

## Skills

Software: COMSOL, STAR CCM+, SolidWorks, Inventor, AutoCAD

Languages: Python, MATLAB, R, SQL, C++, C, C#, Java