COLIN METZ

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Portfolio · LinkedIn · GitHub

Education

Santa Clara University   2027
MS, Electrical Engineering
Grade: 3.92

University of Nevada, Reno   2024
BS, Mechanical Engineering
Relevant Coursework: Solid-State Mechanics, Materials Science, Mechatronics

Research Experience

Santa Clara University   Sept. 2025 – Present
Graduate Research Fellow

- Room temperature spin transport parameters and magnetic characteristics in thin films. Studying microwave ferromagnetic resonance in magnetic insulators (YIG), 2D materials, NV centers in diamond. Work with tunable Landau-Lifshitz field response and spin damping characterization. Relevant to room temperature spintronics, microwave to optical transduction, and ultrafast THz spin transport.
- Computational and theoretical modeling of high THz photonic transport in overmoded, planar waveguides and FEL/linac beamlines. Direct applications to accelerator physics at LCLS, SLAC, as well as high-fidelity nonlinear optics and harmonic generation.
- Characterization of electromagnetic and microwave noise, parasitics, and modal analysis in quantum materials (SQUIDs) in the Applied EM laboratory, alongside the Department of Physics and Engineering Physics.

University of Nevada – Palmer Research Group   Aug. 2022 – May 2023
Undergraduate Researcher

- Implemented electrostatic models using Ansys Maxwell/HFSS alongside thermal simulations to study energy efficiency in electrochemical fuel cells, and various novel ionized solid-state materials.
- Patterned crystalline thermal behavior of GaN energy transport devices, as well as other III-V semiconductor diodes for power and energy applications.
- Characterized solid-oxide fuel cell low-temp efficiencies, using hydrogen conversion factors in MATLAB and Excel.
- Utilized Autodesk Inventor and COMSOL multiphysics to describe thermal behavior in metallic nanostructures (Pt), and define crucial material temperature thresholds.

Technical Skills

Technologies: Python, MATLAB, LaTeX, COMSOL, Simcenter, CAD (SolidWorks, Inventor, NX), Ansys HFSS, Keysight ADS, C++
Experimental: Microwave and RF measurement, Precision data acquisition, Cleanroom / nanofabrication, Basic interferometry (Michelson, MZI), Discrete thermal analysis, Prototyping

Materials and Devices: GaN and III-V Semiconductor devices, TFLN, Solid-state laser sources, Multi-mode waveguides, Microwave antennas, Free-electron lasers

Teaching and Academic Appointments

Santa Clara University   Jan. 2026 – Present

Graduate Teaching Assistant

- Teaching assistant and lab instructor for ECEN50: Circuits I laboratory, and ECEN21: Digital Logic I laboratory.
- Oversee lab instruction, office hours, personal tutoring, and comprehensive application of early and foundational electrical engineering concepts.
- In addition, assist as a quarterly coursework grader for ECEN100: Power Circuits II lecture sections.

Santa Clara University   Dec. 2025 – Present

Graduate Research Assistant

- Research assistant in the Applied Electromagnetics lab, working under Dr. Kurt Schab and Dr. Adham Naji.
- Conduct literature reviews, perform experimental work, and assist with undergraduate research help/advising.

Publications, Theses, and Presentations

Metz, C. *Geometric mode selection in highly overmoded nanophotonic waveguides and cavities.* M.S. candidacy thesis, Advisor: A. Naji, Department of Electrical Engineering, Santa Clara University (2026 - in progress).

Professional Experience

Sensor Hardware Engineer   Menlo Park, CA

Stealth-mode Startup   Jan. 2025 - Dec. 2025

- Hardware and ML for manufacturing, retail, and point-of-sale consumer applications.
- Co-led hardware engineering team through prototyping and design, test, and development of smart electronics. Worked with IR mechanical hardware, and hw/sw co-design.

Principal Device Engineer   Los Angeles, CA

Brave Inc.   Dec. 2024 - Aug. 2025

- Hardware startup working on design and development of personal safety devices. Worked alongside the University of Southern California's Department of Biomedical Engineering.
- Directed embedded systems, RF design, and device architecture, as well as vendor-supply PCB needs.

Semiconductor and Nanofab Research Intern   Santa Clara, CA

Siemens AG   June 2023 - Dec. 2024

- Tested EDA software alongside various lithography hardware, ensuring process rigidity and QC. Utilized entire Siemens EDA suite to familiarize process and industry standards.
- Researched different industry computational methodologies for wafer fabrication, nanofabrication, and further deployment into new fields.

Lead Dynamics and Telemetry Engineer

Nevada Electric Racing

Reno, NV

Jul. 2022 - Aug. 2023

- Lead engineer of the Formula SAE Electric dynamics team, responsible for telemetry, modeling, and simulation.
- Team's work recognized by sponsors such as Tesla, Michelin, GM, among others.

Electronics and Vision Intern

Meta

Mountain View, CA

May 2018 - Jan. 2019

- Worked directly with Meta's VR/AR research department on hw/product testing and integration.
- Contributed to research and development of the precursor to the Meta Quest and Orion AR glasses, as well as applications to Penumbra's Immersive Healthcare suite.

Physical Devices and Design Intern

Sixense Enterprises (acq. by Penumbra, 2021)

Los Gatos, CA/Mountain View, CA

Dec. 2017 - Jan. 2020

- Developed MEMS, computer vision systems, and optical software integration of VR/AR electronics and software.
- Worked adjacent with Meta, Oculus, and Google VR design teams, as well as other 3rd party compute and physical hardware.