Dorotea Macrì

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EDUCATION

University of California, Berkeley — *B.S.*

Degree expected May 2022

Major: Mechanical Engineering. Minor: Physics. GPA: 3.63

RESEARCH

Laboratory for Emerging and Exploratory Devices (LEED)

University of California, Berkeley: Department of Electrical Engineering and Computer Science

August 2019 - Present

Participated in characterization of exploratory radiofrequency devices, including test setup, data collection and evaluation. Worked on early simulation and modeling of power absorption behavior of nitrogen-vacancy centers in diamond to evaluate feasibility of on-chip readout of NV center states. Current work includes design and fabrication of hardware for an optical table and writing control software for tabletop electromagnets.

Hybrid Quantum Systems (HyQu) Lab

ETH Zürich: Department of Physics

June - August 2019

Designed, assembled and tested a vibration isolation stage for a dilution refrigerator, resulting in a significant decrease in vibration noise interfering with qubit experiments. Assisted with curve-fitting and data analysis for an experiment concerning microwave-optical induction in superconducting qubits.

Berkeley Engineering and Space Tensegrities (BEST) Lab

University of California, Berkeley: Department of Mechanical Engineering

January 2019 - May 2021

Created mechanical designs with manufacturability and assembly constraints, used DFM/DFA principles, and prototyped mechanisms using both rapid prototyping and traditional manufacturing for an in-development quadruped robot. Led hardware tests for robotic movement using an actuated tensegrity (tension/integrity) structure.

Inertial Storage and Recovery (INSTaR) Lab

University of California, Berkeley: Department of Mechanical Engineering January - December 2018

Manufactured and designed parts for a renewable-energy test vehicle. Evaluated materials, software, and design for a mechanical drivetrain and battery pack with battery management system.

PUBLICATIONS

Jung, A., Macri, D., Margueron, S., Bartasyte, A., & Salahuddin, S. (2021). Double-peaked resonance in harmonic-free acoustically driven ferromagnetic resonance. Applied Physics Letters, 119(14), 142403.

SKILLS

Programming: Python, MATLAB. Some experience in Java, C++.

Software: SolidWorks, Autodesk Fusion 360, Autodesk Inventor, Autodesk Eagle, LabVIEW

Prototyping, Design and Fabrication: Drafting, CAD, design for manufacturing, digital manufacturing, electronics prototyping, and rapid prototyping

AWARDS

ThinkSwiss Grant Scholar 2021

LANGUAGES

Native fluency in English. Conversational and reading/writing fluency in Spanish.

EXPERIENCE

Berkeley Student Cooperative, Berkeley, CA — *Maintenance Manager*

August 2020 - Present

Oversees maintenance and upkeep of a 50-person cooperatively run student housing unit. Performs minor maintenance tasks, schedules and coordinates major repairs, and performs preventative maintenance and fire safety checks. Acts as a group with 5-6 other major managers to coordinate major house-wide decisions, assist with community building and conflict resolution.

CiTRiS Invention Lab, Berkeley, CA — *Superuser*

January 2019 - Present

Assisted hundreds of students with research, personal, and class projects involving design and prototyping using a wide range of rapid prototyping and digital manufacturing equipment and design practices. Trained students in safe and effective use of equipment and supervised safe use of lab space.

The Boeing Company, Seattle, WA — *Engineering Intern*

May - August 2019; May 2020 - January 2021

Participated in development of a closed-loop green material. Implemented an image processing algorithm for image enhancement and feature detection. Designed and prototyped a structural mechanism for usability and space economy, resulting in a patent application. Designed software to streamline use of analytic equipment.

UC Berkeley College of Engineering, Berkeley, CA — *Course Reader*

January - May 2019

Graded assignments and exams and provided constructive feedback to over 60 students; assisted the professor and graduate student instructor for Engineering 25: Visualization for Design, an introductory course offered to all engineering students and required of Mechanical Engineering majors.

Space Enterprise at Berkeley, Berkeley, CA — *Propulsion and Fabrication lead*

August 2018 - May 2019

Lead research, design, and simulation of a liquid-propellant rocket engine for a sounding rocket. Taught safety protocols and manufacturing methods to new team members; organized and led fabrication for a medium-scale sounding rocket.

Design the Future, Berkeley, CA — *Design Coach*

June- July 2018

Taught design thinking and problem solving skills to high school students, with a focus on inclusive design for assistive technology. Introduced students to design best practices, lab safety, and effective communication and ideation strategies. Helped students to design and manufacture a piece of custom assistive technology for a community member.