Martin Castellanos-Cubides
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EDUCATION

Columbia University, Fu Foundation School of Engineering and Applied Science, New York, NY
Bachelor of Arts, Applied Physics; STEM GPA: 3.570 Expected May 2026

University of Virginia, School of Engineering and Applied Science, Charlottesville, VA Bachelor of Arts, Electrical Engineering; STEM GPA: 3.775 Aug 2022 - May 2023

Relevant Coursework:

- **Quantum Physics:** Quantum Mechanics for Engineering, Intro to Quantum Mechanics, Graduate Quantum Mechanics I, Graduate Quantum Mechanics II, Quantum Field Theory I, Quantum Field Theory II, Quantum Optics
- **Quantum Information:** Quantum Simulation Lab, Quantum Optimization and Machine Learning
- **Condensed Matter:** Thermal and Statistical Dynamics, Solid State Physics, Frontiers of Condensed Matter Physics

HONORS AND GRANTS

University of Rochester Bausch & Lomb Award (2021)
National Merit Finalist (2022)
UVa Undergraduate Research Symposium: 1st Place (2023)
NYC HAQ Quantum Hackathon: 2nd Place (2024)
SAME NYC Post Scholar (2024)
SC Quantathon v2: 2nd Place (2025)
MIT iQuHACK NVIDEA Challenge: 1st Place (2026)
Work Exemption Program Grant (2025-2026)

RESEARCH EXPERIENCE

University of Virginia, Ultracold Matter Lab
Undergraduate Researcher, Aug 2022 – May 2023
Advisor: Dr. Peter Schauss (ps5nw@virginia.edu)

Developed and implemented an optical tweezers system using a Phase-only Spatial Light Modulator (SLM) to trap atoms for quantum computing applications. Utilized Fourier Optics and optimization algorithms to modulate the phase of light and create optical arrays. Applied experimental feedback to address hardware imperfections, refining the results through iterative correction algorithms. Contributed to the advancement of light modulation techniques in the context of quantum computing by designing and testing methods to improve phase accuracy and system performance.

Columbia University, Zhang Lab
Undergraduate Researcher, Jan 2025 – Present
Advisor: Dr. Xueyue (Sherry) Zhang (zhang.xueyue@columbia.edu)

Performed foundational work on the silicon T-center project of photonics subgroup since the first semester of the lab's establishment. Main contribution has been multi-semester development of optimization algorithm that explores photonic structures that maximize cavity coupling and Q-factor. Also supported early-stage grant proposals by developing a custom molecule renderer along with python based visualization tools, laid the groundwork for future experiments by investigating and ordering the components for the first room temperature coupling setup, and other short-term photonic crystal simulations to optimize waveguides, mirrors, and other silicon photonic components.

PRESENTATIONS

UVa Undergraduate Research Symposium, Charlottesville, VA
QuEra Quantum Creators Con 2025
"MartinQQ.com" website project to provide an overview of my projects and academic journey
YouTube "MartCC", Ongoing reviews of Quantum Computing adjacent Research Labs and concepts

TECHNICAL SKILLS

Coding: Python, Lumerical, Qiskit, C++, MATLAB
Applications: Adobe Photoshop and Premiere, Microsoft and Google Suite
Languages: Spanish (native)