CURRICULUM VITAE

Luis Roberto Jimenez Arteta

I am interested in quantum technologies, with a focus on quantum computation and low-dimensional systems. I have expertise in first-principles calculations and quantum-mechanical simulations for studying the electronic and optical properties of quantum systems and materials. I am motivated and open to developing methods that bridge fundamental theory with emerging quantum technologies, exploring both experimental and theoretical (computational simulation) paths.

Contact Information

Nationality: Colombian
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Education

2022–2025 M.Sc. in Materials, Nanophysics, and Quantum Technology
University of Oslo, Norway
A first-principles study of point defects in w-AlN for quantum technologies
Focus: Defects in semiconductors for quantum technology applications focus on spin qubits, single-photon emitters. By applying first-principles calculations based on Density Functional Theory (**DFT**), we modeled the material's single-electron properties to seek interesting quantum behaviors.
Supervisor: Marianne Etzelmüller Bathen, Morten Hjorth-Jensen, Christopher Linderälv, and David Rivas Gongora.

2017–2022 B.Sc. in Physics
Universidad del Atlántico, Colombia.
Study of electronic state spectra in qubits formed by semiconductor nanowires with three-dimensional confinement induced by electrical and structural potentials.
Focus: Theoretical study on the dynamics of a qubit in a double quantum dot on an indium arsenide (InAs) nanowire. By constructing a simplified Hamiltonian, we modeled the system to calculate key properties related to qubit initialization and manipulation.
Supervisor: Jairo Ricardo Cardenas Nieto.

Research Experience

2023-2025 at University of Oslo
Research focus: Material defects applied to quantum technology, such as spin qubits and single-photon emitters, using first-principles simulations.

Computational Skills

- **Programming languages:** Python (Advanced), C++ and Java (basic)
- **Software:** VASP, Quantum Espresso, and other computational tools for solid-state and quantum systems simulations
- **Techniques:** Machine Learning, Process Automation, Statistical analysis in Variational Monte Carlo Method and Object-oriented programming.

Awards and Achievements

- **Bachelor's Degree with honors thesis**, Universidad del Atlántico, Colombia (2022)
- **Master's Program Fellowship**, University of Oslo, Norway (2022–2025)

Languages

Spanish (native)
English (fluent)

Media, Interviews Conferences and Talks

- Oct. 1 Physics Colloquium, Celebration of the International Year of Quantum Science and Technologies, University of Atlántico, Barranquilla, Colombia, presentation.
- Oct. 8–10 Physics national congress, National university, Manizales, Colombia, Short presentation.

References

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