

Juan Daniel Torres

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SUMMARY

I am a PhD student at TU Delft working on theoretical design of hybrid superconducting-semiconducting devices. My research combines numerical optimization techniques with effective modelling of quantum devices and it is strongly influenced by interactions with experimental groups.

WORK EXPERIENCE

PhD Candidate at the Quantum Tinkerer group

Sep 2022 - present

Disertation: Design and optimization of hybrid Majorana devices.

Intern at Orange Quantum Systems

Jun - Aug 2021

Project: Superconducting qubit characterization using pyGSTi

EDUCATION

2022 - present PhD in Physics at **Delft University of Technology**

2020 - 2022 Master degree in Applied Physics at **Delft University of Technology** (Cum Laude)

2016 - 2020 Bachelor degree in Physics at **Yachay Tech University** (Cum Laude)

SELECTED PUBLICATIONS

Torres Luna, Juan Daniel et al. (Feb. 2024). “Design of a Majorana trijunction”. In: *SciPost Physics* 16.2. ISSN: 2542-4653. DOI: [10.21468/scipostphys.16.2.044](https://doi.org/10.21468/scipostphys.16.2.044).

Bordin, Alberto et al. (2025). “Probing Majorana localization of a phase-controlled three-site Kitaev chain with an additional quantum dot”. In: DOI: [10.48550/arxiv.2504.13702](https://doi.org/10.48550/arxiv.2504.13702).

Torres Luna, Juan Daniel, Sebastian Miles, et al. (2025). “Pareto-optimality of Majoranas in hybrid platforms”. In: DOI: [10.48550/arxiv.2510.07406](https://doi.org/10.48550/arxiv.2510.07406).

PROJECTS

Simulation of many-body fermionic systems

[Link to Demo](#)

Python package for simulating many-body fermionic systems.

Discrete geometry optimization for quantum dot devices

[Link to Demo](#)

Voxel optimization of gate geometries for quantum dot devices.

SKILLS

Python Numpy, Scipy, Sympy, Mkdocs, Matplotlib, Pandas, Pymoo.

Software CI/CD tools with Gitlab. Bash and Unix OS.

Languages English (Professional) - Spanish (Native) - Dutch (Conversational)