

Mathias Findrihan

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Profile

Master's student in Applied Physics at EPFL, pursuing a minor in Quantum Science and Engineering. Research interests include quantum optics, photonics, condensed matter physics, quantum technologies and machine learning. Experience in microwave spectroscopy, single-photon emitter characterization, superconducting-circuit modeling, plasma diagnostics, data analysis, and quantum computing experiments.

Education

MSc in Applied Physics – Minor in Quantum Science and Engineering Sep 2025–Aug 2027
EPFL, Switzerland

Primary focus on atomic, molecular, and optical physics, condensed matter physics, and quantum technologies. Relevant coursework: Quantum Computing, Solid-State Physics, Quantum & Nonlinear Optics, and Statistical Physics.

BSc in Physics Sep 2022–Jul 2025
EPFL, Switzerland

Coursework and projects in programming, data science, experimental methods, and theoretical physics.

French Scientific Baccalaureate Sep 2019–Aug 2022
Lycée Saint-Marc, Nivolas-Vermelle, France
European Section; graduated with highest honors (*mention très bien*).

Research and Professional Experience

Summer Research Intern Jul–Aug 2026
Hybrid Quantum Circuits Laboratory, EPFL

- Investigated quasiparticle poisoning in Cooper-pair-box qubits through microwave spectroscopy and charge-parity analysis, assessing its impact on qubit coherence.
- Conducted a feasibility study of a fluxonium qubit coupled to a one-dimensional coupled-cavity array in the ultrastrong-coupling regime of waveguide QED, combining literature review, circuit design, theoretical modeling, parameter optimization, and numerical simulations.

Teaching Assistant Sep 2024–Present
EPFL, Switzerland

Teaching assistant for :

- Analytical Mechanics (PHYS-202)
- Experimental Physics II (UNIL-123)
- Solid-State Physics (PHYS-337)

Wrote structured lecture notes based on Prof. Victor Gorbenko's Classical Electrodynamics (PHYS-324) course for third-year physics students.

Summer Research Intern Jul–Aug 2025
Swiss Plasma Center, EPFL

Contributed to the simulation and development of a short-pulse reflectometer for the TCV tokamak, designed to measure electron-density profiles and investigate plasma turbulence.

Academic and Technical Projects

Design and Simulation of a Superconducting Qubit Coupled to a Two-Dimensional Coupled-Cavity Array Feb–Jun 2026

Hybrid Quantum Circuits Laboratory, EPFL

Simulated a superconducting qubit coupled to a two-dimensional coupled-cavity array representing photonic graphene. Investigated its mode structure, qubit–mode coupling, and hybridization effects.

Experimental Characterization of Single-Photon Emitters Sep 2025–Jan 2026
Laboratory of Quantum and Nano Optics, EPFL

Characterized single-photon emitters through optical measurements, experimental data processing, and quantitative analysis.

Design and Experimental Characterization of a Hollow Cathode

2024–2025

EPFL Rocket Team – Hyperion P-Class

Designed and built a hollow cathode for electric-propulsion applications and low-density plasma environments as part of a semester project.

Leadership and Extracurricular Experience

Manufacturing Team Member – EPFL Watchmakers

Mar 2025–Feb 2026

MAKE Project, EPFL

Contributed to the precision machining and manufacturing of components for the final in-house clock prototype.

R&D Team Member – EPFL Rocket Team

Sep 2024–Sep 2025

Hyperion P-Class, MAKE Project, EPFL

Contributed to the research and development of a Hall-effect thruster for the Hyperion P-Class project.

Physics Course Coordinator – Students 4 Students

May–Sep 2024

Student Association, EPFL

Recruited and led a team of 10–15 students to develop a physics preparation course for EPFL’s pre-entry week. Designed lectures and exercises for approximately 800 incoming students and coordinated large lecture sessions.

Skills

Programming: Python, MATLAB, C++, LaTeX

Scientific tools: SolidWorks, Fusion 360, Ansys Electronics Desktop, Sonnet

Languages: French (native), English (C1)