Gabriele Rolleri

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EDUCATION

ETH Zürich **Zürich, CH**
MSc Quantum Engineering *2023 - Present*

Politecnico di Milano **Milan, IT**
BSc Engineering Physics *2020 - 2023*

- 110/110 cum laude
- Student rep in the Engineering Physics council.

École Polytechnique Fédérale de Lausanne **Lausanne, CH**
Visiting student, Physics *September 2022 - February 2023*

- GPA 5.97/6
- Courses focused on nonlinear/quantum optics, laser systems and machine learning.

WORK & RESEARCH EXPERIENCE

Quantum Device Lab – ETHZ / Paul Scherrer Institut **Zürich, CH**
Semester project student March *2024 – June 2024*

- I am working in Prof. Wallraff's group in the Quantum Computation team. The team aims to advance QC with Superconducting Circuits across multiple state-of-the-art physical setups.
- I am upgrading the control electronics necessary for the operation of the new 43-qubit chip which will ultimately allow for the entanglement of two logical qubits as aimed in the ELQ program from IARPA.
- I am physically integrating new RF equipment in the setup. After mounting the new chip inside the dilution refrigerator, I will assess the correct performance of the setup by running a surface code experiment.

Laboratory for Quantum and Nano-Optics - EPFL **Lausanne, CH**
Lab Assistant *October 2022 – January 2023*

- I worked in Prof. Galland's lab on a setup to measure over-biased emission of nanoscale molecular junctions. I helped build the apparatus, optimizing the measurement workflow, and operated the instrumentation to acquire the necessary data. The system combines electronic transport and spectroscopic techniques to measure vibrational and charge dynamics of molecules in plasmonic nanocavities.
- Our work was published as Amirtharaj, S.P., Xie, Z., See, J.S., Rolleri, G., Chen, W., Bouhelier, A., Lortscher, E., & Galland, C. (2023). Light Emission and Conductance Fluctuations in Electrically Driven and Plasmonically Enhanced Molecular Junctions.

EnginSoft S.p.A. **Trento, IT**
Internship *2022 - 2023*

- Collaborated with EnginSoft on the OPTIMA project, directed at obtaining performance improvements through FPGA integration in HPC systems.
- Optimized a fluid dynamics simulation library using the Lattice Boltzmann Method on FPGA equipped systems located at the Jülich Supercomputing Centre.

Lista Aperta per il Diritto allo Studio – Politecnico di Milano **Milan, IT**
Vice-president *2021-2022*

- Managed a budget of 65k€ for social and cultural student events.
- In this role I organized various activities and international trips, interfacing with administrative staff and businesses, streamlining the usual process.

ACADEMIC AWARDS

International Mobility Scholarship – Politecnico di Milano / EPFL *2022*

- Selected as one of the two students to receive funding for a mobility program to EPFL

"Best Freshmen Prize" – Politecnico di Milano *2022*

- Yearly prize awarded to the best performing freshmen (about 200 out of ~7500)

"Merit Scholarship for students enrolled during the 2020/2021 AY" – Politecnico di Milano
1st place *2021*

- University wide scholarship reserved to 16 new students (out of 7747 freshmen)

Young Engineers Program - Maxon *2020*

- My robotics team was accepted into the YEP program by Maxon, an industry leader in actuation technologies.

SKILLS & INTERESTS

Skills:

- Software Development:
  - C/C++ language and algorithms/data structures
  - Python/MATLAB for general purpose applications and statistical analysis
  - OOP development for large scale libraries
  - FPGA programming using MaxIDE
  - Software version control using Git
  - Programming embedded systems (with the Arduino & Raspberry families)
- CAD (MicroStation)
- Elementary LabView knowledge
- Multiphysics simulation (e.g. E.M. phenomena, ray-tracing, diffusion) using COMSOL
- PCB design using commercial software
- RF circuits design
- PCB soldering

Interests: Amateur landscape photographer, skier, all round technology enthusiast and avid newspaper reader.