Ruben Leuzinger

Zurich, Switzerland | rl@rubenleuzinger.com | rubenleuzinger.com

Projects

Home-built Scanning Tunneling Microscope (STM) — Ongoing
- Collaborating with Luzian Trapletti on a functional STM to study quantum tunneling currents between a metallic tip and sample with the goal of atomic-scale spatial resolution.
- Mechanical approach system, vibration mitigation, custom PCBs for current measurement and control.

Smart Pass Manager: A Noise-Aware Transpiler Pass for Qiskit — June 25
- Developed a Python Qiskit transpiler plugin using graph-theoretic heuristics to map circuits onto the least-noisy subset of qubits on IBM noisy intermediate-scale quantum (NISQ) hardware.
- Links: Code, Short Paper

Personal Website — Feb 25
- Created a personal website to publish academic documents, projects and personal insights.
- rubenleuzinger.com

Das Doppelpendel: Zufall oder Chaos? Eine Analyse chaotischen Verhaltens — Oct 22
- Simulated a double pendulum using Python and studied the chaotic behavior under consideration of phase-space structures and Lyapunov-Exponents.
- Maturitätsarbeit supervised by Dr. Florian Leupold

Education

Eidgenössische Technische Hochschule Zürich (ETH Zurich), BSc in Physics — Sept 24 – Oct 27 (expected)
- **Noteworthy Courses:** theoretical and experimental physics, mathematics, data analysis, electronics, labwork

Kantonsschule Uster, Matura focused on Applied Mathematics and Physics — July 19 – July 23
- **Noteworthy Courses:** Applied Mathematics, Python

Accomplishments and Honors

IBM Tech Talent Program — Feb 26 - Sep 26
- Mentorship Program offered by IBM.

Hasler excellence Scholarship — Sep 25 - Sep 27
- Merit-based scholarship supporting undergraduate studies in physics at ETH Zurich.

Náboj International Mathematics Competition — Mar 23
- 1st place Switzerland. Náboj is an international Mathematics Team Competition for high-school students.

Swiss Physics Olympiad — 22/23
- 16th place at the second round of the national physics Olympiad, qualifying for final round and training weekend in Lausanne.

Work Experience

I had already had the opportunity to gain work experience in different fields. During my time in school I tutored math. I completed the mandatory basic training in the swiss army as a Panzergrenadier, worked briefly in a pharmacy, and in a primary school as a teaching assistant. I did fundraising for non-profit organizations where I was promoted to team leader, being responsible for a team of five employees.

Skills

Programming: C++, Python (with Qiskit)

Others: LaTeX, ECAD (KiCad, Altium), SystemVerilog (for FPGAs), CAD (Onshape), Linux (Ubuntu), Wordpress

Languages: German (Native), English (Fluent), French (B2)