Leila Freitag

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PROFILE

- Date & Place of Birth: 16.01.2001 in Philadelphia, Pennsylvania, USA
- Nationality: American (USA), German

EDUCATION

University of Zürich (UZH) **Zürich, Switzerland**
Bachelor in Physics *Sept 2019 – Feb 2023*
Current GPA – 5.68/6.00

- **Relevant Coursework**: Computer Assisted Experimentation I | Machine Learning for the Sciences Data Analysis II | Scientific Computing II | Solid State Physics II | Mathematical Methods for Physics II Mechanics | Mechanical Workshop I | Quantum Mechanics I | Thermodynamics | Electrodynamics

Briarcliff High School **Briarcliff Manor NY, USA**
High School Diploma *Sept 2015 – June 2019*

WORK & VOLUNTEER EXPERIENCE

Intern at the National Renewable Energy Lab (NREL) *Boulder, CO – Feb 2023 - May 2023*
- Worked on the acoustic tomography (AT) project, which uses an array of acoustic transducers to reconstruct wind velocity and temperature fields.
- Developed a method to optimize speaker signal emission times for effective signal distinction in the microphones.
- Simulated and proposed several chirp signals with distinct acoustic properties for use at NREL's AT array.
- Built up the project documentation using sphinx.

Bachelor Thesis on Detector Simulation *UZH – Sept 2022 - Jan 2023*
- Simulate a low material budget vertex detector based on curved silicon sensors for a proposed electron-positron collider (the Future Circular Collider Project).
- Analyze the effect on particle reconstruction by studying impact parameter and secondary vertex resolution.

Summer Student at the Deutsches Elektronen-Synchrotron (DESY) *Hamburg – July-Sept 2022*
- Worked with the BRIL group on the calibration of BCM1F, a luminosity detector of the CMS experiment that has been upgraded for Run-3 of the LHC at CERN.
- Analyzed regular emittance scans for the online calibration and monitoring of the detectors, and wrote python plotting scripts to evaluate their linearity and stability.
- Calculated a new data-driven correction for out-of-time detector hits for BCM1F, and investigated its effect on the calibration of the detector.

Semester Project with the CMS group at the University of Zürich *UZH – Spring Semester 2022*
- Studied the radiation hardness of pixel sensors by measuring the leakage current as a function of applied bias voltage before and after irradiation using a probe station. These silicon pixel sensors are being newly developed for the upgrade of the CMS Tracker for the High-Luminosity phase of LHC.

Physics Lab Teaching Assistant *UZH – Fall Semester 2021*
- Led students through weekly lab experiments in mechanics, electrical conductivity, and fluid mechanics.

Guest Lecturer in Scientific Computing course *UZH – Spring Semester 2021*
- Created teaching videos about sequential data in Python as a guest lecturer for a first year university course.

Teaching Assistant at the German International School New York *Aug 2018 - June 2019*
- Assisted in teaching a class of first grade children German each Saturday morning at the language school.

Intern at Teatown Lake Reservation *Yorktown, NY – May 2019 - June 2019*
- Created a field guide about identifying native tree species, conducted trail walk-throughs, and organized activities for visiting school groups to spread environmental awareness.

Homemade Skis *Briarcliff High School – Spring 2017*
- Constructed a ski press from scratch in a semester-long engineering project, allowing for the layup of a pair of skis and a monoski. Assembled and tested the pair of skis, which included a custom wooden core.

SKILLS & INTERESTS

- Python (numpy, matplotlib, scikit-learn, scipy) — Java — LabVIEW — LaTeX — ROOT
- Fusion 360 — Github — Unix command line interface — MS Excel — Basic machining skills
- **Languages**: English [native] German [fluent] French [intermediate] Mandarin [conversational]
- **Interests**: Earth processes — Cycling — Backpacking — Snowboarding — Cooking — Painting

Conference talks & Publications

- Joint presentation at the 6th FCC Physics Workshop: Performance of an ALICE ITS3-like vertex detector for FCC-ee and progress on the IDEA vertex detector implementation in full simulation