



Benno Kaech

Curriculum Vitae

Skills and Strengths

- Generative Modeling** Specialized in advanced generative modeling techniques within the context of the LHC CMS experiment. Proficient in handling and analyzing petabytes of data, and adept in developing state-of-the-art models such as GANs (Generative Adversarial Networks), Normalizing Flows, and Flow Matching based Continuous Normalizing Flows. Demonstrated capability in applying these techniques to solve complex problems in high-energy physics.
- Progress-Oriented** Proven track record of working independently and efficiently, always aiming for progress and innovation in challenging research environments.
- Collaborative** Effective in both leadership and collaborative roles, contributing to team success through clear communication and a commitment to shared goals.
- Adaptable** Quick to adapt to new environments and challenges, especially evident in transitioning from academia to the dynamic setting of a startup and back.

Education

- 2021–2024 **Ph.D. in Particle Physics**, *Deutsches Elektronen-Synchrotron (DESY)*.
- 2019–2020 **M.Sc. in Physics**, *ETH Zurich*.
- 2015–2018 **B.Sc. in Physics**, *ETH Zurich*.

Selected Scientific Record

Selected Publications

- NeurIPS 2022 Point Cloud Generation using Transformer Encoders and Normalizing Flows
- NeurIPS 2023 Pay Attention to Mean-Fields for Point Cloud Generation

PhD Thesis

- Title *Generative Modelling in High-energy Physics* - Grade: Magna Cum Laude

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Experience

- 2017–2020 **Data Analyst and Project Lead**, *Simpego*, Zurich, Switzerland.
Contributed to pioneering insurance technology solutions by developing pricing models, automating processes, and analyzing large datasets. Demonstrated a hands-on approach and adaptability in a fast-paced startup environment. Played a pivotal role in several key projects, balancing 40% to 100% employment alongside academic pursuits.
- 2020–2021 **Research Assistant**, *Institute for Machining and Manufacturing (IWF)*, *ETH Zurich*.
Focused on innovative research and development introducing machine learning based solutions to manufacturing technologies, contributing to advanced projects and collaborating effectively in a multidisciplinary team.
- 2021–2024 **PhD Candidate**, *DESY CMS*, *Deutsches Elektronen Synchrotron*.
Engaged in advanced research in experimental particle physics and machine learning, concentrating on generative modeling for large cardinality point clouds and interpolation of parameter dependencies in supersymmetric models.

Additional Information

- Interests Enthusiastic about the beauty of physics, especially in the field of particle physics.
- Language Proficiency
- **German:** Native
 - **English:** Proficient
 - **French:** Intermediate
 - **Italian:** Basic
- References Available upon request.