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NIKLAS GÖTZ

- Physicist specializing in Machine Learning, Data Science, and High-Performance Computing (HPC)
- Extensive experience in numerical simulation, statistical analysis, and model-based decision-making
- Published researcher with numerous peer-reviewed articles, invited talks, and supervision of students
- Analytical, resilient, and adaptable, with a clear focus on precision and efficiency
- Motivated to achieve outstanding results in data-driven environments and innovative projects with analytical rigor and curiosity

ACADEMIC EDUCATION

2020–2025: Doctoral Researcher

Goethe University Frankfurt, FIAS

- PhD thesis: *Extraction of Transport Coefficients in a Hybrid Approach for Heavy-Ion Collisions* (simulation of heavy-ion collisions)
- PhD completion in Autumn 2025; thesis graded *magna cum laude*, defense *summa cum laude*
- Experience: high-performance computing, statistical methods, machine learning, data analysis in Python, and complex simulations in C++
- Work in an international environment and presentation of research results

2018–2020: Master of Science in High-Energy Physics

Joint program École Polytechnique (Paris-Palaiseau) and ETH Zurich

- École Polytechnique, first year, grade 16.4/20 (ECTS Grade A)
- ETH Zurich, second year, grade 5.6/6 (ECTS Grade A)
- Master's thesis: *Machine Learning for Monte Carlo Integration Techniques*
- Extensive experience in developing generative AI methods

2014–2017: Bachelor of Science in Mathematical Physics

Julius-Maximilians-Universität Würzburg

- Focus on computational physics and numerical analysis
- Bachelor's thesis: *Positivity-preserving nodal discontinuous Galerkin methods of high order for the one-dimensional Euler equations*

SELECTED PUBLICATIONS

Nicolas Deutschmann and Niklas Götz. "Accelerating HEP simulations with Neural Importance Sampling", *JHEP* 03 (2024).

Niklas Götz, Iurii Karpenko and Hannah Elfner. "Bayesian analysis of a (3+1)D hybrid approach with initial conditions from hadronic transport", *Phys. Rev. C* 112 (2025).

Niklas Götz, Lucas Constantin and Hannah Elfner. "Role of initial transverse momentum in a hybrid approach", *Phys. Rev. C* 110 (2024).

ADDITIONAL QUALIFICATIONS

Programming

- Python incl. Torch
- C++
- Bash
- Java
- SQL

Working knowledge of R, CUDA, JavaScript, Matlab

Software

- Git
- Microsoft Office
- Visual Studio Code
- Eclipse
- IntelliJ IDEA
- Oracle SQL Developer

Languages

- German (native)
- English (C2)
- French (C1)
- Spanish (A2)
- Marathi, Hindi (basic)

Additional Skills

- Agile development (Scrum)
- Project management
- Teamwork
- Intercultural competence
- Presentations
- Analytical thinking

PROFESSIONAL EXPERIENCE

2020–2025: Research Associate

Goethe University Frankfurt, Institute for Theoretical Physics

- Taught courses incl. *Introduction to Programming with C++*; supervised multiple Bachelor's and Master's theses
- Led international research and software projects
- Accountable for publications and coordination within research teams

04/2019–07/2019: Research Intern

Institut de Physique Théorique, Saclay

- Investigated the early-time Glasma state in heavy-ion collisions with a focus on thermalization (with Prof. François Gelis)
- Extended a highly parallelized Boltzmann solver to include momentum-dependent cross sections
- Awarded "Distinction" by École Polytechnique for outstanding work

04/2018–06/2018: R&D Intern

Heidelberg Engineering

- Developed image-processing algorithms for ophthalmic retina scanners and implemented numerical methods in C++
- Designed new UI elements and integrated them into existing interfaces

01/2018–03/2018: Intern, Risk & Investment Management Consulting d-fine

- Conducted data analysis and automated inconsistency checks in databases (Oracle SQL Developer)
- Contributed to the implementation of financial regulatory strategies at a credit bank
- Supported project planning and execution within an IRBA audit

10/2017–12/2017: Software Engineering Intern

Senacor

- Agile full-stack development of a B2B CRM platform (Java/Spring Boot, AngularJS)
- Implemented automated tests (Cucumber) and optimized SQL queries
- Coordinated tasks via JIRA; close collaboration within a Scrum team

AWARDS AND CERTIFICATES

Scholarships

- German Academic Scholarship Foundation (Studienstiftung) (2014–2025, Bachelor, Master and PhD)
- Polytechnic Society Frankfurt Foundation (2020–2025)
- École Polytechnique Foundation (top international students) (2018–2020)
- Konrad Adenauer Foundation (2014–2018)

Awards

- First Prize, AI Safety Fundamentals course project competition (2024)
- Giersch Excellence Award (2022) (Outstanding research during PhD)
- Recognition by the École Polytechnique Physics Faculty (2019, Outstanding internship research)
- Second Place (state level), German Student Entrepreneurship Award (2013)

Certificates

- NVIDIA DLI — Fundamentals of Accelerated Computing with CUDA
- NVIDIA — Accelerating CUDA C++ Applications with Multiple GPUs
- AI Safety Collab Germany — AI Safety Fundamentals (Summer 2024)

SELECTED VOLUNTEERING

2020–present: Scientists for Future

Board member, Frankfurt am Main regional group. Scientific support for the “for Future” movement and analysis of policy impacts related to climate change. Lead role in developing the movement’s internal structure; support for outreach to policymakers and subject-matter research. Development of a scientifically well-founded climate action chatbot.

2023–present: Superblock Bockenheim

Supported traffic-flow analyses for a citizens’ initiative to improve quality of life in a Frankfurt district.

2023–2025: CRC-TR 211 Equal Opportunity Committee

Developed and delivered events and concepts to support underrepresented groups and parents in their scientific careers.

2023–2024: Open Science Festival Mainz

Member of the program committee. Developed formats, defined content focus, and selected participants.

2019–2021: Polykum

Editor and author for the ETH Zurich student magazine.

2014–2018: JDPG

German Physical Society (students). Founder and head of the regional group; administrative tasks; organizing student events; official liaison to the DPG headquarters.

INTERESTS

Sports (Canne de Combat, mountain hiking), creative writing/poetry slam, piano, cooking, travel, board games