

Dr. Lorenz Ennio Gärtner

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Work & Research Experience

Postdoctoral Researcher – DEMOS 2026 – present
BMFTR ErUM-Data project, funding acquired by myself *Ludwig Maximilians University, Munich, Germany*

- **Research:** Statistical methods and open-source tooling for sharing probabilistic models across experiments.

PhD Researcher – Accelerating Discovery in Particle Physics 2022 – 2025
Belle II experiment *PhD, summa cum laude* *Ludwig Maximilians University, Munich, Germany*

- **Method:** Developed a novel statistical method for reinterpreting published measurements ([publications](#)).
- **Software:** Built the open-source Python package [redist](#), now applied within the Belle II and LHCb collaboration.
- **Open source:** Contributed to the scientific Python packages [pyhf](#), [cabinetry](#), and [eos](#).
- **Strategy:** Contributed to the European Strategy for Particle Physics Update 2026 through the global Forum for Open Science [\[5\]](#).
- **Public Talks:** Presented at 10+ international conferences ([CERN](#), [ICHEP](#), [PyHEP](#), [WLCG/HSF](#), [IPPP](#), ...).
- **Teaching:** Designed a course on scientific Python packages for 60+ students, delivered [tutorials](#) for 50+ researchers, and taught physics courses to 300+ students.

Scientific Advisor to MP Lars Rohwer Mar. – May 2026
German Parliament *Berlin, Germany*

- **Technical consulting:** Advise Lars Rohwer, Member of the German Bundestag, on energy, economic policy, and emerging technologies by turning ambiguous topics into clear recommendations.
- **Communication & coordination:** Translate frontier research into briefings, speeches, and media outputs while aligning political and scientific stakeholders.

Applied Researcher & Policy Coordinator 2021 – 2022
IAEA Fast Reactors Team, Intern *Vienna, Austria*

- **Project coordination:** Coordinated a cross-disciplinary IAEA project connecting fusion and fission experts.
- **Stakeholder alignment:** Organised workshops for 50+ experts and supported knowledge transfer across domains.
- **Technical writing:** Authored and reviewed scientific proposals, papers, and presentations.

Scientist: Simulations in Astrophysics 2021 – 2022
ALMA experiment *Max Planck Institute for extraterrestrial Physics, Munich, Germany*

- Evaluated observational data against theoretical models using large-scale C++ simulations with Athena++.

Scientist: Machine Learning for Research Acceleration June – July 2018
Belle II Experiment *Ludwig Maximilians University, Munich, Germany*

- **Applied machine learning:** Improved classification accuracy by >10% with a neural network replacing expensive detector simulations.

Scientist / Software Engineer for Astrophysics June – July 2017
SLAC (Stanford Linear Accelerator Center) *Stanford, USA*

- **Tool development:** Extended the [redMaPPer](#) Python galaxy cluster finder with uncertainty estimation and masking corrections.

Education

Professional Development

2023 – 2025

- [BlueDot AGI Strategy Course](#): 5-week course on AGI strategy, covering technical trends of AI progress, “defence in depth” frameworks for AI safety, and strategic considerations for AI governance.
- [Leading for Tomorrow](#): Leadership training for early career researchers, covering topics such as project management, communication, and team building.
- [CERN School of Computing](#): 50+ hours of training on software development, machine learning, security and data management.
- [Origins Data Science Block Course](#): Machine Learning block course covering deep learning, automatic differentiation, and supervised/unsupervised learning architectures.

MSc Physics

2018 – 2020

Very good, 1.09

Ludwig Maximilians University, Munich, Germany

- Built strong mathematical modeling and problem-reduction skills across particle physics, quantum field theory, gravity, and cosmology, alongside research-level coding projects.

BSc Physics with Theoretical Physics

2015 – 2018

First Class, 86.7% (1st in cohort)

University of Manchester, Manchester, United Kingdom

Responsibility, Funding & Awards

- **Belle II Early Career Researchers Representative** (2024 – 2025): represented early career researchers in the 1000+ member collaboration and worked with senior scientists on research-environment issues.
- **ErUM-Data Project: DEMOS – 300 000 €** (2025): acquired funding for a three-year project.
- **Climate Fresk Facilitator** (2022 – present): volunteer facilitator for evidence-based climate workshops using IPCC-based cause-effect chains.
- **Franz Mandl Prize** (June 2018): awarded to the best BSc theoretical physics graduate at the University of Manchester.

Technical Expertise

Coding Languages	Python, C++, LaTeX, (Julia, HTML, CSS)
AI/ML/stat.	Statistical inference, uncertainty estimation, supervised learning, automatic differentiation, AI safety strategy
Tools/frameworks	Git, CI/CD, Docker, pytest, PyPI/conda, HPC workflows, agentic development
Research & Strategy	Technical program coordination, stakeholder management, technical writing
Languages	German (native), English (fluent); French, Italian (basic)
Interests	AI safety (alignment & governance), science & technology, politics, climate action

Selected Publications

- [1] Lorenz Gärtner, Nikolai Krug, Thomas Kuhr, Michael A. Schmidt, et al. [Constraints on invisible \$B^+ \rightarrow K^+ X\$ decays from the Belle II \$B^+ \rightarrow K^+ \nu \bar{\nu}\$ measurement](#). In: *Phys. Rev. D* 114.3 (2026), p. 032003.
- [2] Merna Abumusabh et al. [Model-agnostic likelihood for the reinterpretation of the \$B^+ \rightarrow K^+ \nu \bar{\nu}\$ measurement at Belle II](#). In: *Phys. Rev. D* 112.9 (2025), p. 092016.
- [3] Lorenz Gärtner, Nikolai Hartmann, Lukas Heinrich, Malin Horstmann, et al. [Constructing model-agnostic likelihoods, a method for the reinterpretation of particle physics results](#). In: *Eur. Phys. J. C* 84.7 (2024), p. 693.
- [4] Johannes Albrecht, Florian Bernlochner, Marco Colonna, Lorenz Gärtner, et al. [Joint LHCb–Belle II prospects to constrain new physics in \$B \rightarrow D^{\(*\)} \tau \nu\$](#) . In: *Eur. Phys. J. C* 86.6 (2026), p. 718.
- [5] Jonathan Butterworth et al. [Reinterpretation and preservation of data and analyses in HEP](#). In: (Mar. 2025).