Verena Bellscheidt

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ⓘ | *Inspire HEP* | *Google Scholar*

EDUCATION

PhD Physics, Massachusetts Institute of Technology, Cambridge MA (USA)   2025 -
- Graduate student at the MIT Center for Theoretical Physics - a Leinweber Institute

B. Sc. Physics, Technical University of Munich, Garching (Germany)   2021 - 2025
- Passed with distinction
- Thesis: *Neural Network Parametrisation of Generalised Wilson Loops in Lattice QCD*
- Supervisor: Nora Brambilla

INTERNSHIPS

Internship, Nicolaus Copernicus Astronomical Center, Warsaw (Poland)   Aug - Oct 2023
- Project title: *Chemical abundances in a planet-host star of the Praesepe open cluster*
- Supervisor: Rodolfo Smiljanic

Internship, Max Planck Institute for Astrophysics, Garching (Germany)   Aug - Oct 2022
- I continued working on this project with my supervisor until July 2023, and co-authored two papers [1, 2].
- Supervisor: Enrico Garaldi

PUBLICATIONS

[1]   E. Garaldi, **V. Bellscheidt**, A. Smith, and R. Kannan. "The galaxy-IGM connection in THESAN: the physics connecting the IGM Lyman-α opacity and galaxy density in the reionization epoch". In: *The Open Journal of Astrophysics* (2025). DOI: 10.33232/001c.143245.

Submitted for publication ....

[2]   E. Garaldi and **V. Bellscheidt**. *The galaxy-IGM connection in THESAN: observability and information content of the galaxy-Lyman-α cross-correlation at $z{\geq}6$.* 2024. DOI: 10.48550/arXiv.2410.02850.

HONORS, FELLOWSHIPS, AND AWARDS

MIT physics graduate fellowship Covers tuition fees and salary for one year ($\approx \$ 120,000$)   2025

Distinction for undergraduate performance at the Technical University of Munich   2025

Female physicist of the week Featured on the social media channels of the German Physical Society   2025

DAAD RISE worldwide scholarship Full funding for a research internship abroad (€ 1984)   2023

Deutschlandstipendium Germany's national scholarship (€ 3600)   2021

Abitur prize of the German Physical Society (one year of free membership)   2021

TEACHING

Teaching Assistant, Technical University of Munich, Garching (Germany) 2023 - 2025
- Tasks: Lead weekly 90 min. tutorials for 15-20 undergraduate students, graded homework and exams
- Courses: Winter 2024/25: Introduction to Scientific Programming (IN8008) $\varnothing$ *1.5 tutorials per week*
            Summer 2024:   Theoretical Physics 1: Classical Mechanics (PH0005)
            Winter 2023/24: Theoretical Physics 2: Electrodynamics (PH0006)

SUMMER SCHOOLS

Dark Matter and the Cosmos Summer school by TU Munich, FAU, and the University of Stuttgart   2022

SKILLS

Programming: C++, Python (incl. PyTorch), Bash, basic knowledge of Mathematica

Languages: English (C2), German (native speaker)

UNDERGRADUATE RESEARCH PROJECTS

Neural network optimization of the lattice computation of the $q\bar{q}$ potential   Apr - Sep 2024
- Implementation of a neural network that finds an optimized operator to compute the $q\bar{q}$ potential on the lattice
- The operator used for the computation is a superposition of Wilson loops, where the coefficients of the terms in the superposition are determined during the training process of the neural network

Chemical abundances in a planet-host star of the Praesepe open cluster   Aug - Oct 2023
- Determination of abundances of several chemical abundances in the atmosphere of three main sequence stars in the Praesepe open cluster using stellar high resolution spectra
- Study of the possible correlation between the abundances of refractory and volatile elements in the stellar atmosphere and the existence of planets around the star

Galaxy-IGM correlations in the Thesan simulations [1, 2]   Aug 2022 - Jul 2023
- Study of the Galaxy–Lyman-α cross-correlation in the Thesan simulations (cosmological radiation-hydrodynamic simulations of the Epoch of Reionization)
- Study of the relationship between the optical depth along lines of sights and the distribution of galaxies around them using data from the Thesan simulations