

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 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) *Ø1.5 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