

MATTEO FOGLIENI

HPC & Cloud Specialist

in foglienimatteo

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📍 München, DE

EXPERIENCE

HPC Employee

Leibniz Supercomputing Centre (LRZ)

📅 Oct 2022 - present

📍 Garching bei München, DE

Administered and maintained 5+ clusters composed of Rocky/Ubuntu Virtual Machines on the LRZ **OpenStack Compute Cloud**, provisioning scalable environments for teaching and research activities

- Automated infrastructure deployment and configuration management with **Ansible**, **Terraform** and **Magic Castle**
- Managed **Kubernetes clusters** (RKE/RKE2 with Docker/containerd as container runtime) via **Rancher Fleet** for CI/CD
- Experience with **Apache2**, ufw, sshd hardening, and **Caddy** reverse proxy with automated Let's Encrypt SSL certificates via ACME and Certbot: maintainer of the Gauss Centre for Supercomputing website VM on **Nutanix**
- Configured custom Jupyter IDE containers integrated with **XFS** and **NFS** for persistent user storage
- Maintained 2 **Slurm clusters**, overseeing software stack provisioning via Spack, **EESSI**, and Conda environments
- Applied Julia KernelAbstractions.jl for backend-agnostic GPU offloading to **GaPSE.jl**
- Experience with **High-Performance Computing** paradigms (OpenMP, MPI) with a strong understanding of **hardware architectures** (e.g. ccNUMA domains)
- Troubleshoot network configurations using netcat, Wireshark, and tcptraceroute
- Main LRZ instructor for the course "Introduction to Julia" (Jun 2026)
- Supported dozens of training courses hosted on these clusters, with student groups ranging from 10 to 70 participants

EDUCATION

Master's Degree in Physics

110/110 cum laude

University of Milan

📅 Sept 2019 - July 2022

📍 Milan, IT

- **Thesis:** "The Galaxy Number Counts in General Relativity: implications for Primordial Non-Gaussianities". Developed the Julia code **GaPSE.jl**
- **Relevant Coursework:** Implemented **Raytracing software** for photorealistic image generation
- **Data Analysis:** Applied Bayesian inference and Markov-Chain Monte Carlo (MCMC) methods in Python using the **emcee** package

Bachelor's Degree in Physics

110/110 cum laude

University of Milan

📅 Sept 2016 - Dec 2019

📍 Milan, IT

- **Thesis:** "Evaluation of the Two-Point Correlation Function in cosmological simulations". Computed astrophysical metrics in C++ leveraging STL containers

PUBLICATIONS & TALKS

M. Foglieni, M. Pantiri, E. Di Dio, E. Castorina: "Large Scale Limit of the Observed Galaxy Power Spectrum" (2023), Physical Review Letters, [10.1103/PhysRevLett.131.111201](https://doi.org/10.1103/PhysRevLett.131.111201)

B. Friedman-Shaw, A. Krolewski, M. Foglieni, N. Afshordi: "Doppler bias: impact of peculiar velocities on color selection and the large scale structure of galaxy surveys" (2025), JCAP, [10.1088/1475-7516/2025/03/059](https://doi.org/10.1088/1475-7516/2025/03/059)

Oct 2023 (online), talk: "Large Scale Limit of the Observed Galaxy Power Spectrum", invited by Dr. Henry S. Gebhardt and the SPHEREx team from **Caltech University (California, USA)**

Jun 2025, talk: "Parallelizing GaPSE.jl with KernelAbstractions.jl", **Platform for Advanced Scientific Computing (PASC25)** conference (CH)

Jun 2026, Poster: "Rethinking Compute Platforms: When Cloud Can Replace HPC, and When It Cannot", **ISC High Performance 2026** conference (Hamburg, DE)

LANGUAGES

Italian Native

English Fluent (C1)

German Intermediate (B1/B2)