



# MATTEO FOGLIENI

## HPC & Cloud Specialist

in foglienimatteo  foglienimatteo.com  München, DE

## EXPERIENCE

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### HPC & Cloud Specialist

#### Leibniz Supercomputing Centre (LRZ)

 Oct 2022 - present  Garching bei München, DE

Administered and maintained 5+ clusters composed of Rocky and 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** and **Caddy** reverse proxy with automated SSL certificates via ACME and Certbot
- 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), strong understanding of **hardware architectures** (e.g. ccNUMA domains)
- Troubleshoot network configurations using netcat, Wireshark, and tcptraceroute
- [Jun 2026] Main LRZ instructor for the course "Introduction to Julia"
- Supported dozens of training courses hosted on these clusters, with students ranging from 10 to 70 participants

## EDUCATION

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### 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 methods in Python using **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

## SELECTED PUBLICATIONS & TALKS

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

[2025] 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", JCAP, [10.1088/1475-7516/2025/03/059](https://doi.org/10.1088/1475-7516/2025/03/059)

[Oct 2023 - Online] **Caltech University (California, USA)**, Talk: "Large Scale Limit of the Observed Galaxy Power Spectrum", invited by Dr. Henry Gebhardt and the SPHEREx team

[Jun 2025 - CH] **Platform for Advanced Scientific Computing (PASC25)**, Talk: "Parallelizing GaPSE.jl with KernelAbstractions.jl"

[Jun 2026 - Hamburg, DE] **International Supercomputing Conference (ISC26)**, Research Poster: "Rethinking Compute Platforms: When Cloud Can Replace HPC, and When It Cannot"

## LANGUAGES

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Italian Native   English Fluent (C1)   German Intermediate (B1/B2)