





foglienimatteo



PROFESSIONAL EXPERIENCE

Leibniz Supercomputing Centre (LRZ) Garching bei München, DE SCIENTIFIC EMPLOYEE 01/10/2022 - today

- Project InHPC-DE WP6: provide access to LRZ supercomputers with modern IDEs (Jupyter, VSCode)
- Heavily working with containers and their orchestrators (**Rancher, Kubernetes, Docker**) on Linux Virtual Machines the **Openstack Compute Cloud** of LRZ
- Experience with High-Performance Computing paradigms and topics: OpenMP, ccNUMA domains, MPI
- Confidence with networking topics and debugging
- Many tools and softwares involved and/or configured: XFS, Ansible, Terraform, Slurm, Magic_Castle, Apache AirFlow, git, Spack, EESSI
- Side project: parallelization in Julia with KernelAbstractions.jl over CPU and with **agnostic GPU offloading**

PUBLICATIONS

- Foglieni, Pantiri, Di Dio, Castorina: *"Large Scale Limit of the Observed Galaxy Power Spectrum"* (2023), Physical Review Letters, DOI 10.1103/PhysRevLett.131.111201
- Pantiri, Foglieni, Di Dio, Castorina: *"The power spectrum of luminosity distance fluctuations in General Relativity"* (2024), Journal of Cosmology and Astroparticle Physics, DOI 10.1088/1475-7516/2024/11/021
- Friedman-Shaw, Krolewski, Foglieni, Afshordi: "Doppler bias: impact of peculiar velocities on color selection and the large scale structure of galaxy surveys" (2025), Journal of Cosmology and Astroparticle Physics, DOI 10.1088/1475-7516/2025/03/059

SEMINARS AND CONFERENCES

- Oct 2023 (online): "SPHEREx 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)**
- June 2025: "Parallelizing GaPSE.jl with KernelAbstraction.jl", **Platform for** Advanced Scientific Computing (PASC25) conference, (FHNW Campus Brugg-Windisch, Switzerland)



ABOUT ME

Physicist grown up with the dream to go into space.

I am curious and interested in several science fields, I enjoy discovering and learning new things.

Problem solving is the aspect of science I love the most, causing me to explore new ideas and learn new methods to improve myself in ways I've never previously considered.

LANGUAGES

Italian • Mother tongue English • Fluent German • ca. B1 (learning!)

INTERESTS AND HOBBIES

- Playing chess since I was 7 (current ELO 2083)
- In love with history, philosophy and political topics
- Keen on strategic board games and movies
- Reader of popular scientific books and amateur guitarist in leisure time
- Football, boxe, gym, climbing, ballroom dancing and many more to come!

2025/05/22

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EDUCATION

Master Degree in Physics

Università degli Studi di Milano

- Title : "The Galaxy Number Counts in General Relativity: implications for Primordial Non-Gaussianities"
- Supervisor: Prof. Emanuele Castorina
- Assistant Supervisor: Prof. Luigi Guzzo
- Final grade: **110/110 cum laude**

Bachelor's Degree in Physics

Università degli Studi di Milano

- Title : "Evaluation of the Two-Point Correlation Function in cosmological simulations"
- Supervisor: Prof. Luigi Guzzo
- Assistant Supervisor: Dr. Ben Granett
- Grade: *110/110 cum laude*

High School Diploma

LICEO SCIENTIFICO STATALE LORENZO MASCHERONI

• Final grade: *100/100*

Bergamo, IT 09/2011 - 07/2016

COMPUTATIONAL SKILLS

Language	# hours (range 0-1000 h)	Main usage
Julia		Development of a raytracing program for photorealistic image gener- ation, see the Github repository Raytracing
		Implementation of a Galaxy Power Spectrum Estimator for cosmo- logical surveys (Master's Degree and following papers) (GitHub repo GaPSE.jl)
		Parallelisation over CPU and agnostic GPU offloading with KernelAb- straction.jl (talk at PASC25)
Python		Bayesian inference applied to astrophysical computational problems, through the Markov Chain Monte Carlo sampler algorithm <i>emcee</i>
		Basic experience with Deep Learning in Tensorflow with CUDA GPU (introductory courses at LRZ)
C++		Efficiency comparison of Two-Point Correlation Function numerical estimators with different STL containers (Bachelor's Degree)
Mathematica		Basic usage of the Mathematica notebook for symbolic calculus (Mas- ter's Degree)
SYCL, Fortran		Introductory courses and debugging with colleagues
Machine Learning		Introductory courses to Tensorflow; configured ollama to work with the JupyterLab extension jupyter-ai

AT_EX

Milan, IT

Milan, IT

09/2016 - 11/12/2019

09/2019 - 05/07/2022