

Education

Ph.D in Astrophysics Sep 2024-now

Centre de Recherche Astrophysique de Lyon (CRAL), France

I am pursuing a Ph.D. in Astrophysics on the topic of "accretion in warped astrophysical disc around black holes" under the supervision of Guillaume Laibe. Practically, I am in the core development team of the Shamrock code. Shamrock is a new multi-GPU astrophysics code that was released this year, written in templated C++17 and using SYCL's unified shared memory (USM) approach to manage domain decomposition, and MPI for communication between patches.

Msc of Theoretical Physics Sep 2020 - Sep 2024

Ecole Normale Supérieure de Lyon (ENS), France

The ENS is a French school that trains future researchers and professors in 4 years, including 4 mandatory research internships (listed in the Research section). I obtained a Master's degree (M2) of Theoretical Physics.

Undergraduate student Sep 2017 - Aug 2020

Lycée du Parc, Lyon, France

Preparatory classes are three intensive years of formation in Mathematics and Physics. I majored in Mathematics with a minor in Physics.

HPC-specific training

Parallel to my studies, I followed the following HPC trainings.

Hybrid Programming in HPC - MPI+X Jan 21-23, 2025

HLRS, University of Stuttgart, Germany

Courses and tutorials on using MPI with OpenMP, overlapping communications, using MPI with accelerators and how to optimize node-to-node communication.

In-situ visualization on high-performance computers 10-11 Sep, 2024

HLRS, University of Stuttgart, Germany

General introduction on ParaView/Catalyst, Ascent and Conduit software.

AMD GPU Instinct training April 22-25, 2024

HLRS, University of Stuttgart, Germany

Courses and tutorials including OpenMP offloading on AMD GPUs, Real-World OpenMP Language Constructs, AdvancedOpenMP-zero-copy, debugging and optimization, Optimizing HIP applications, HIP and OpenMP interoperability, and profiling via Omniprf.

Adastra Hackathon Feb 5-8, 2024

Centre Informatique National de l'Enseignement Supérieur (CINES), Montpellier, France

Teams of selected projects came on site to port their code onto the Adastra GPU supercomputer, and perform several optimizations with the help of Hewlett Packard engineers and CINES members. With two fellow members of the Shamrock development

team, we performed scalability and efficiency tests on 256 nodes of the cluster (2,048 GPUs).

Teaching

During my PhD, I taught the following classes at University Claude Bernard in Lyon:

- Programmation in C/C++, L2
- Modeling problems in astrophysics/cosmology, M1
- Mathematics for geophysics, M1

Skills

Professional use of Fortran, C++, SYCL, openMP, and MPI.

French: Native Speaker

English: Professional Proficiency (Cambridge English Advanced, Grade A, corresponding to a level C2)

Spanish: Professional Proficiency (level C2 diploma delivered by the Cervantes institute) .

Japanese: Conversational level.