Federico G Lopez Armengol

Ph.D. Astrophysics & High-Performance Computing

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I am a Ph.D. in Astrophysics with 7 years of experience in Computational Physics and High-Performance Computing. I am highly interested in the latest technologies and in how they can enable a more sustainable future.

Experience

POSTDOCTORAL RESEARCHER Rochester Institute of Technology

January 2020 – Current | Rochester, USA

- +2.5 years of experience designing and performing large-scale three-dimensional simulations (∼ 5000 cores) of magnetized fluids in strong gravitational fields, making use of Top500 supercomputers (Frontera, BlueWaters, Perlmutter). **Acquired proficiency with GNU/Linux and High-Performance Computing with C, C++ and Python, MPI, OpenMP and CUDA parallelization, and related software**.

CONICET FELLOW Instituto Argentino de Radioastronomía

April 2015 – January 2020 | Berazategui, Argentina

- +5 years of experience solving physical modelling and data processing problems with analytical and computational techniques (Fortran, C, Python, Make, Bash).
- Close collaboration with the IT team of the observatory at "Instituto Argentino de Radioastronomía". Radio-astronomical data aquisition, manipulation of large datasets (∼ TB; Globus), compilation of specialized algorithms for data reduction, and development of data processing pipelines (GNU/Bash, Python, Docker).

TEACHING Universidad Nacional de La Plata

2012-2017 | La Plata, Argentina

- 5 years of experience teaching advanced Math and Physics for engineering programs at "Universidad Nacional de La Plata".

Education & Training

PH.D. ASTROPHYSICS Universidad Nacional de La Plata

April 2015 - January 2020

- Post-graduate courses on Magneto-Hydrodynamics, Gravitation, and High-Performance Computing.

M.SC. ASTROPHYSICS Universidad Nacional de La Plata

January 2008 - February 2015

- Strong background in Math, Physics, Astronomy, and Statistics.

WORKSHOPS/ONLINE COURSES

Most recent

- Workshop on Exascale Computing | University of Illinois (2022)
- Machine Learning | Udacity (2022)
- Training Neural Networks in C++ | LinkedIn Learning (2022)
- Python for Computer Vision with OpenCV and Deep Learning | Udemy (2022)
- CUDA programming Masterclass with C++ | Udemy (2022)
- Applied Machine Learning: Algorithms | LinkedIn Learning (2022)
- C++: Advanced Topics | LinkedIn Learning (2022)
- NERSC December GPU Hackathon | OpenACC organization (2021)

Skills

HIGH-PERFORMANCE COMPUTING

C • C++ • Python • Fortran •
GNU/Linux • Bash • Make
MPI • OpenMP • CUDA
TORQUE • Slurm • HDF5
Git • GitHub/Bitbucket
Docker • Globus
Design patterns • UML

PHYSICAL MODELLING

Gravitation • Fluid dynamics
Numerical Simulations
Scientific visualization/analysis

OTHER TOOLS

Scikit-Learn • Keras
Pandas • SQL
Matplotlib • Seaborn
OpenCV • Jupyter

COMMUNICATION

Teaching • Teamwork
Scientific writing/presentation
Outreach

LANGUAGES

English (advanced)
Spanish (native)

Others

- ∼ 20 scientific publications in high-impact refereed journals.
- ∼ 10 presentations in scientific meetings.
- Member of organizing committee at 3 scientific meetings.