

Francesco Pogliano

During his time as an experimental nuclear physicist, Francesco developed skills in data analysis, statistical analysis, simulations of physical processes, machine learning and quantum computing. His work also involved collaborations with international teams of researchers and development of data analysis pipelines. His main programming language is Python with 8+ years of experience, and he also worked with C, ROOT and Matlab/Octave. Francesco has also worked on Linux-based systems running nuclear simulations on high-performance clusters. He is not afraid of taking up challenging tasks and likes learning the skills that can help him solving these in a quick and efficient way.

Technical Skills

Tools	Pydantic, Jupyter Notebook, Pytorch, Git, Pandas, FastAPI, LaTeX, AutoCAD, Pytest, Matplotlib, PostgreSQL, Tensorflow, Scipy, Talys, Numpy, Streamlit, JupyterLab
Languages	Octave, Python, Matlab, C, Bash, ROOT
Platforms	Microsoft Windows, Linux, Docker

Extended Description of Selected Projects

Efficient statistical analysis method for nuclear reaction experiments

07.2024 – 09.2024
University of Oslo
Researcher/Developer

Francesco developed a new and more efficient algorithm for the statistical analysis of nuclear reaction experiments. The code is written in Python, and aims at propagating statistical and systematic uncertainties through the final part of the data analysis, giving more accurate uncertainty estimates. It is an improvement of a previous algorithm, making it easier to use and freeing both time and resources. More specifically Francesco cut down hours on runtime and removed the need of using supercomputers for the last step in the analysis, making it easier and faster to use. The code employs process parallelization and Monte Carlo type statistical analysis in order to obtain the final results.

- Developed data analysis Python software
- Freed up resources by making the code more effective

Tools: Python, Talys, Numpy, Numba, multiprocessing, Matplotlib

Data Analysis of ^{167}Ho

10.2022 – 06.2023
University of Oslo
Researcher

As member of a research team Francesco ideated, planned and performed a nuclear reaction experiment at the Oslo Cyclotron Laboratory. He performed data calibration and statistical analysis of the experimental raw and processed data using C, ROOT and Python (Numpy). He utilized the nuclear reaction code Talys on high-performance computers to obtain

model simulations and post-process experimental results. He then collaborated with an international team to assess their implications to the astrophysical setting. Finally, he redacted the associated article as first author, which is now published on the peer-reviewed journal Physical Reviews C.

- Ideated, planned, performed a nuclear reaction experiment
- Analyzed experimental results
- Collaborated internationally to explore results implications
- Redacted scientific article

Tools: Python, C++, ROOT, Tallys, Numpy, Scipy, Matplotlib, LaTeX, HPC, Overleaf

Professional Experience

2024 Consultant. Expert Analytics.
2023 – 2024 Postdoctoral fellow in nuclear astrophysics. University of Oslo.
2019 – 2023 PhD research fellow in nuclear astrophysics. University of Oslo.
2018 – 2019 Intern. Gabeltek AS.

Languages

Italian	Native
Norwegian	Fluent
English	Fluent
Spanish	Fluent

Personal Skills

Communication Francesco has been a seminar leader at the University of Oslo, given seminars, written popular science pieces and has participated to many conferences, workshops and schools in Norway and abroad. This has taught him to communicate difficult ideas and his own research findings in a clear and efficient way to different audiences and in different settings, both verbally and visually.

Learning agility Francesco learns eagerly new skills and adapts quickly to new challenges, making it easy to apply those skills to the task at hand.

Effective Francesco has a good sense of time management, he can plan clear objectives and is committed to meeting project deadlines.

Interests and Hobbies

Active Tango dancing, mountain hikes, indoor bouldering.
Intellectual Learning new languages, anthropology, history, philosophy and music.

Education

2019 – 2023 **PhD in Nuclear Astrophysics** at Department of Physics, University of Oslo, Norway.
Thesis title: "Nuclear astrophysics and the Oslo method".

2017 – 2018 Spanish, Latin American studies and history, Literature – at UNSAM - Buenos Aires, Argentina and UNAN - León, Nicaragua.

2015 – 2017 **Master's degree in Astrophysics** at Department of Physics, NTNU - Norwegian University of Science and Technology, Norway. Thesis title: "Neutron stars".

2012 – 2015 **Bachelor's degree in Plasma Physics** at Department of Physics and Technology, UiT - The Arctic University of Norway, Norway. Thesis title: "Numerical solution to the Plasma Dispersion Relation of Ion Acoustic waves in a Plasma".