Maurizio Ungaro

Research and Software Resume

Staff Scientist, Jefferson Lab | Nuclear physicist and simulation software developer
ungaro@jlab.org maureeungaro.github.io/home github.com/maureeungaro
Google Scholar INSPIRE ORCID 0000-0001-6982-3310 LinkedIn

Summary

Staff Scientist at Jefferson Lab with experience spanning nuclear physics, detector systems, Geant4 simulation, GEMC development, CLAS12 production workflows, and scientific software infrastructure.

Core Strengths

- Build and support Geant4-based simulation workflows for detector and radiation-transport studies.
- Develop GEMC and CLAS12 Simulations tooling for reproducible geometry, digitization, and production workflows.
- Support CLAS12 detector operations, including LTCC calibration, maintenance, and performance studies.
- Translate complex scientific software into tutorials, examples, technical notes, and user-facing documentation.
- Teach and mentor students in laboratory instruction, data analysis, detector calibration, and scientific computing.

Selected Experience

Staff Scientist 2011–present
Jefferson Lab, Hall-B
Geant4 and GEMC simulation support; CLAS12 simulation releases; OSG production workflows; LTCC detector work; nucleon-structure analysis.

Research Associate 2004–2011
University of Connecticut
CLAS analyses, meson electro-production, CLAS12 software, and detector simulation development.

Selected Projects

GEMC	Database-driven Geant4 simulations with a Python-friendly workflow.
Geant4 at JLab	Tutorials, examples, and support material for Jefferson Lab users.
CLAS12 Simulations	Tagged simulation releases and production workflows.
CLAS12 on OSG	Distributed simulation production using HTCondor and Open Science Grid.
Low Threshold Cherenkov Counter	Forward detector operation, calibration, and performance for pion/kaon discrimination.
Heavy Photon Search	Dark-sector search collaboration at Jefferson Lab.
SPring-8	Prior experimental work in Japan through LEPS/SPring-8 collaboration.

Technical Skills

Simulation: Geant4, GEMC, CLAS12, ROOT, detector geometry, digitization.
Programming: C++, Python, shell, Git, CI, Docker, Meson, CMake, SCons.
Computing: HTCondor, OSG, SQLite, CSV/JSON/ROOT workflows, reproducible environments.
Communication: documentation, tutorials, talks, mentoring.

Education

Ph.D. in Nuclear Physics, Rensselaer Polytechnic Institute.
Laurea in Fisica, Universita degli Studi di Genova.

Teaching and Mentoring

Adjunct Assistant Professor of Physics, Christopher Newport University, 2011. Instructor for PHYS 105 and PHYS 152 laboratories. Teaching assistant at Rensselaer Polytechnic Institute for Physics I and Electromagnetic Theory. Mentor for undergraduate and graduate research in Jefferson Lab data analysis, detector calibration, and CLAS/CLAS12 physics.

Profiles

maureeungaro.github.io/home github.com/maureeungaro ORCID 0000-0001-6982-3310