STEFANO CASTRO TOGNINI

Oak Ridge National Laboratory | @ togninis@ornl.gov | stognini | stognini

Research Scientist at **Oak Ridge National Laboratory** working on computational High Energy Physics (HEP). His main effort is focused on ***Celeritas***, a **GPU Monte Carlo** (MC) detector simulation code for HEP that will enable the use of **DOE's Leadership Computing Facilities**—such as Frontier and Summit—by HEP experiments. In the past he was a collaborator on **MINOS** and **NOνA**, managed by **Fermi National Accelerator Laboratory** (Fermilab). These are long-term multi-million dollar endeavors built to understand the nature of neutrinos and answer fundamental questions related to astrophysics, dark matter, and more. His **7+ years of experience**, working with diversified teams led to many **published data analyses** using **C++, Python, ROOT, shell scripting, parallel computing, and MC simulations**. Software development is managed using **GIT**, allied with automated code referencing (**Doxygen**). Production of **technical documentation** is routinely done. He also has experience **teaching** at undergraduate level, **mentoring** graduate students, presenting technical seminars, and talking to the public at **science outreach** events.

PROFESSIONAL EXPERIENCE

Research Scientist

Scalable Engineering Applications

Computational Sciences and Engineering Division

Oak Ridge National Laboratory

2023 — Present | Oak Ridge (TN), U.S.

Postdoctoral Research Associate

HPC Methods for Nuclear Applications

Nuclear Energy and Fuel Cycle Division

Oak Ridge National Laboratory

2019 — 2023 | Oak Ridge (TN), U.S.

COLLABORATIONS

Celeritas Project

github.com/celeritas-project

2020 — Present | ORNL

A GPU Monte Carlo particle transport code for HEP experiments.

DOE **CODE**: 10.11578/dc.20221011.1

URL Muon Detector Project

2020 — Present | ORNL

A compact muon detector developed to test and validate new non-destructive techniques for Geological Disposal Safety Assessments (GDSA).

NOνA Experiment

novaexperiment.fnal.gov

2013 — 2018 | Fermilab / ANL / UFG

- Leading author of Phys. Rev. D **99**, 122004.
- Contributed to Phys. Rev. D **104**, 012014.

MINOS/MINOS+ Experiment

www-numi.fnal.gov

2011 — Present | Fermilab / ANL / UFG

- Contributed to Phys. Rev. D **91**, 112006 / Phys. Rev. D **93**, 052017.

PUBLICATIONS

iNSPIRE HEP | inspirehep.net/authors/1074966

SOFT SKILLS

Teaching | Mentoring | Science outreach

Portuguese (native) ●●●●●
English ●●●●●
Italian ●●●○○
French ●●○○○

HARD SKILLS

Technical skills

Data analysis | Monte Carlo simulation | Data structuring | Parallel computing

Programming & scripting languages

C/C++ | Python | SQL | Shell | LaTeX

Frameworks, libraries & tools

art | GIT | Doxygen | Geant4 | ROOT | CORSIKA | Spack | LSF | TORQUE

EDUCATION

Ph.D. in Physics – High Energy Physics

Federal University of Goias

Funding: CAPES, CNPq, ANL

2012 — 2018 | Goiania (GO), Brazil

DOE OSTI www.osti.gov/biblio/1468447

M.Sc. in Physics – High Energy Physics

Federal University of Goias

Funding: CAPES, Fermilab

2010 — 2012 | Goiania (GO), Brazil

B.Sc. in Physics

Federal University of Goias

2005 — 2009 | Goiania (GO), Brazil