STEFANO CASTRO TOGNINI

📍 Oak Ridge National Laboratory   @ togninis@ornl.gov   ○ stognini   in stognini

Research Scientist at **Oak Ridge National Laboratory** working on computational High Energy Physics (HEP). His main efforts are 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**, all developed using **C++, Python, ROOT, shell scripting, massive 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 apparatus 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