STEFANO CASTRO TOGNINI

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

Research Associate at **Oak Ridge National Laboratory** mainly working on *Celeritas*, a **GPU Monte Carlo** (MC) detector simulation code for **High Energy Physics** (HEP) that will enable the use of **DOE's Leadership Computing Facilities**—such as Frontier and Summit—by HEP experiments. In the past I 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. My **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. Finally, I have experience **teaching** at undergraduate level, **mentoring** graduate students, presenting technical seminars, and talking to the public at **science outreach** events.

PROFESSIONAL EXPERIENCE

Postdoctoral Research Associate

Oak Ridge National Laboratory

HPC Methods for Nuclear Applications | Nuclear Energy and Fuel Cycle Division

📅 2019 — Present   📍 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.
- Snowmass white paper: 10.48550/arXiv.2203.09467

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.
- Integrated a Monte Carlo package with the Fermilab computing framework that is being used by two other experiments at Fermilab and CERN.
- Commissioned/maintained a Remote Operation Center (ROC) at UFG.
- Tested avalanche photodiodes before their installation in the Near Detector.

MINOS/MINOS+ Experiment

www-numi.fnal.gov

📅 2011 — Present   📍 Fermilab / ANL / UFG

- Contributed to Phys. Rev. D **91**, 112006 / Phys. Rev. D **93**, 052017.
- Installed and maintained the MINOS Main Operation Center at Fermilab.
- Built, documented, and maintained a MINOS ROC at UFG.

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 — 2010   📍 Goiania (GO), Brazil