

An introductory training on the Geant4 simulation toolkit

Tuesday, 16 April 2024 14:00 (1h 30m)

Geant4 is among the most widely used toolkit today in the simulation of the interaction of radiation with matter. It uses Monte Carlo methods and its areas of application includes high energy, nuclear and accelerator physics, as well as medical and space science. It heavily relies on object oriented C++ programming language. Because of its complex nature, this platform can be a steep learning curve especially to users who may not be familiar with object oriented C++ programming. Since simulations are in some cases unavoidable in physics and related research projects, an introduction training in Geant4 usage is usually a good idea.

Given the inclusive nature of the Advanced Nuclear Science and Technology Techniques (ANSTT5) workshop, a training of this nature will benefit a lot of attendees as it will furnish them with basic skills on how to build an experimental setup of their choice (in the various fields of research), simulate, extract and analyze the data generated. This training is tailored to be hands-on, therefore will make part of the afternoon activities at this workshop.

In this training, we will use Geant4.11.2 which is conveniently installed on the Geant4 Virtual Machine developed and maintained by CENBG and CNRS, which can be downloaded here [\url{https://geant4.lip2ib.in2p3.fr/}](https://geant4.lip2ib.in2p3.fr/) for free. Virtual Machines hosting various older versions of Geant4 are also available here [\url{https://extra.lip2ib.in2p3.fr/G4/download/}](https://extra.lip2ib.in2p3.fr/G4/download/). Attendees should download the Virtual Machine and install it on their computers according to the instructions given here [\url{https://indico.cern.ch/event/1370034/page/32238-geant4-virtual-machine}](https://indico.cern.ch/event/1370034/page/32238-geant4-virtual-machine).

Primary author: CHISAPI, Maluba Vernon J. (iThemba LABS/Stellenbosch University)

Presenter: CHISAPI, Maluba Vernon J. (iThemba LABS/Stellenbosch University)

Session Classification: Lectures on Nuclear Data