

## Training overview

The purpose of this training session is to give the participants the basics of [GATE](#), an advanced opensource software developed by the international [OpenGATE collaboration](#) and dedicated to numerical simulations in medical imaging and radiation therapy

## Who is the training for?

Lab researchers, engineers, medical doctors and physicists working in hospitals, laboratories or companies in the medical imaging and radiation therapy fields

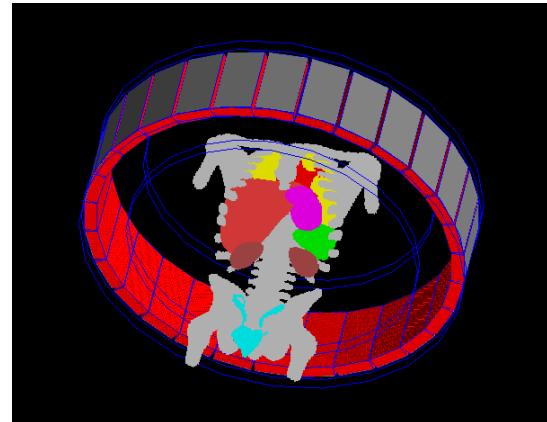


Image: © IMNC/CNRS-IN2P3

## Entry requirements

Attendees must have a good understanding of medical physics, and should have experiences in Linux and basic programming

## Training objectives

- Handling user interface and visualization
- Illustrating a GATE simulation architecture and its general concepts
- Managing anthropomorphic voxelized phantoms and sources to simulate realistic acquisitions
- According to the trainee's domain of expertise/interest, building a complete simulation set-up by for medical imaging applications or dosimetry and radiation therapy experiments
- Perform output data analysis
- Perform code development to add new features into GATE

**Duration** 19 hours (3 days)

**Location** Saclay, France

**Groups limited to** 16 trainees

**Contact** Albertine DUBOIS – [albertine.dubois@cea.fr](mailto:albertine.dubois@cea.fr)

**Training code** 915

Please contact us for more information on this course.

## Course content

- Main principles of GATE: scanner/beam and phantom geometry, materials, physics processes, source(s), actors and output data formats
- GATE for imaging applications: system, sensitive detector and digitizer
- GATE for dosimetry and radiation therapy applications: dose actor, phase-space actor, production cuts and variance reduction techniques
- Using both ROOT software and Python language for dose distribution and/or PET output data analysis
- Using C++ for creating a new actor in GATE



SIMULATOR



PRACTICE FOR  
REAL LIFE SCENARIOS



FEEDBACK  
& LESSONS LEARNED

## Why take this training?

- ✓ Most of the time reserved for hands-on exercises on Scientific Linux workstations
- ✓ Based on modern pedagogical approaches (active learning and flipped classroom model)
- ✓ Detailed lectures provided by two GATE experts, S. Jan and D. Sarrut, both members of the OpenGATE collaboration