

# Customizable and Advanced Software for tomographic reconstruction (CASToR) training for beginners

## COURSE OVERVIEW

The purpose of this training session is to give the participants the basics of CASToR, an open-source software platform for 4D iterative reconstruction in emission (PET and SPECT) and transmission (CT) tomography, providing generic programming, flexibility, and modularity

## WHO IS THE COURSE FOR?

Lab researchers, PhD. students, engineers, medical physicists working in hospitals, laboratories or companies in the biomedical imaging field

## TARGETED SKILLS

- Identify the general features of the CASToR software platform and the scope of its applications
- Manage all the concepts involved in iterative tomographic reconstruction
- Run the CASToR reconstruction platform for different imaging modalities: PET, SPECT and CT systems definition and their integration to the platform
- Run CASToR for various penalized optimization algorithms
- Run CASToR for dynamic PET reconstructions
- Run CASToR to reconstruct images from both GATE Monte Carlo simulated and real datasets

## ENTRY REQUIREMENTS

Attendees must have a general knowledge in both tomographic image reconstruction algorithms and nuclear/X-ray imaging (from radiation detection to biomedical applications)

## CONTENT

- Key points of the CASToR architecture: data types, scanner geometries, input datafile format, system matrix and projectors and iterative optimization algorithms
- How to make new contributions to CASToR
- Focus on dynamic PET reconstruction: whole-body and respiratory/cardiac gated acquisitions, multi-frame acquisitions, tracer kinetic modelling, involuntary patient motion
- Practical considerations regarding CASToR installation, parallel execution and various utilities for data processing, generation or conversion



Image: © CASToR-project

**Duration:** 2 days - 13 hours

**Location:** INSTN, Saclay, France

**Groups limited to** 20

**Contact:** Albertine Dubois

[albertine.dubois@cea.fr](mailto:albertine.dubois@cea.fr)

**Course code:** 11C

**Registration fees:**

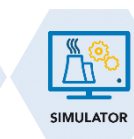
- ✓ Industrial: 1000 €
- ✓ Student and academic: 600 €



PRESENTATIONS  
& DEBATES



TESTIMONIALS  
& FEEDBACK



SIMULATOR

Please contact us for more information on this course.

## WHY TAKE THIS COURSE?

- ✓ Combination of detailed lectures and CASToR software demos on real datasets
- ✓ Lectures partly provided by the two designers and main contributors to CASToR: Thibaut Merlin and Simon Stute
- ✓ Possibility for more advanced users to ask specific questions and to be advised in generating new features