



## 1ST ESTRO PHYSICS WORKSHOP

*Science in  
development*

17-18 November 2017  
Glasgow, UK

# The multidisciplinary Gate/Geant4 Monte Carlo platform in medical physics: clinical applications and research

*Chairs: U. Pietrzyk, H. Fuchs, L. Grevillot*

### Short description of the workshop:

GATE/GEANT4 is a unique multidisciplinary Monte Carlo platform supporting a wide range of medical physics applications involving ionizing radiation.

This workshop will cover the use of GATE/GEANT4 Monte Carlo simulation for emission and transmission imaging, internal and external radiotherapy and dosimetry applications in general.

The workshop will be divided in three main parts:

- A general introduction to GATE and GEANT4, including an overview of the current state of physics validation, future perspectives and possibilities for clinical use and research purposes
- Monte Carlo simulation for emission and transmission imaging including design and imaging modeling activities
- Internal and external radiotherapy including beam modeling and TPS validation activities.

Keynote speakers will introduce the different sessions and selected speakers will present their current activities and research results. A specific time for discussion will be dedicated at the end of each session in order to allow direct exchange between the speakers and the audience. The debates and discussion will be animated by the chairs in order to stimulate exchanges and networking activities within the attendees.

### Preliminary program - list of topics to be covered:

- Introduction into Geant4: Status, physics models, validation, future developments
- Introduction into GATE: Status, future developments
- Additional tools for medical application and research
- Transmission and emission imaging & therapy verification
- Internal and external radiotherapy & dosimetry.

### Expected outcome:

To create awareness of the possibilities of GATE/GEANT4 Monte Carlo simulations in the field of medical physics. To stimulate networking activities between the attendees and brainstorm together with some of the core developers of GATE/GEANT4 on the future development directions and expectations from the users.

### Target group:

Medical physicists and researchers in radiation oncology, imaging and biological modelling.