



GATE Workshop Introduction

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on behalf of

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CREATIS, Centre de lutte contre le cancer Léon Bérard



The program for today

12:00

OpenGATE collaboration news	<i>Olga KOCHERINA</i>
<i>PACIFICO Yokohama North building</i>	12:15 - 12:30
UC Davis Activities (optics & AI)	<i>Stephan Naunheim</i>
<i>PACIFICO Yokohama North building</i>	12:30 - 12:45
Computational Protocol for Performance Evaluation of Preclinical MicroPET Systems	<i>Paul Muka</i>
<i>PACIFICO Yokohama North building</i>	12:45 - 13:00

13:00

Towards Patient-Realistic PET Simulations: Benefits and Challenges of 4D Extended Cardiac-Torso Phantom Integratio...	<i>Wenhong Lan</i>
Design of a sub-0.5 mm resolution PET scanner using GATE with staggered 3-layer DOI detectors	<i>Han Gyu Kang</i>
<i>PACIFICO Yokohama North building</i>	13:15 - 13:30
SPECT Imaging of 155Tb and Evaluation of the Impact of 156Tb Contamination Using GATE 10 simulation	<i>Mohammed Hussein</i>



Today's workshop page



The collaboration

25 members, public laboratories
and companies developing an open
source platform

Spokesperson: Lydia Maigne

Technical coordinator: David Sarrut

Europe



FH Aachen, University of Applied Sciences, Julich, Germany

Medisip, Ghent University, Belgium

Medical University of Vienna, Wiener Neustadt, Austria

MedAustron, Wiener Neustadt, Austria

Christie Medical Physics & Engineering, Manchester, UK

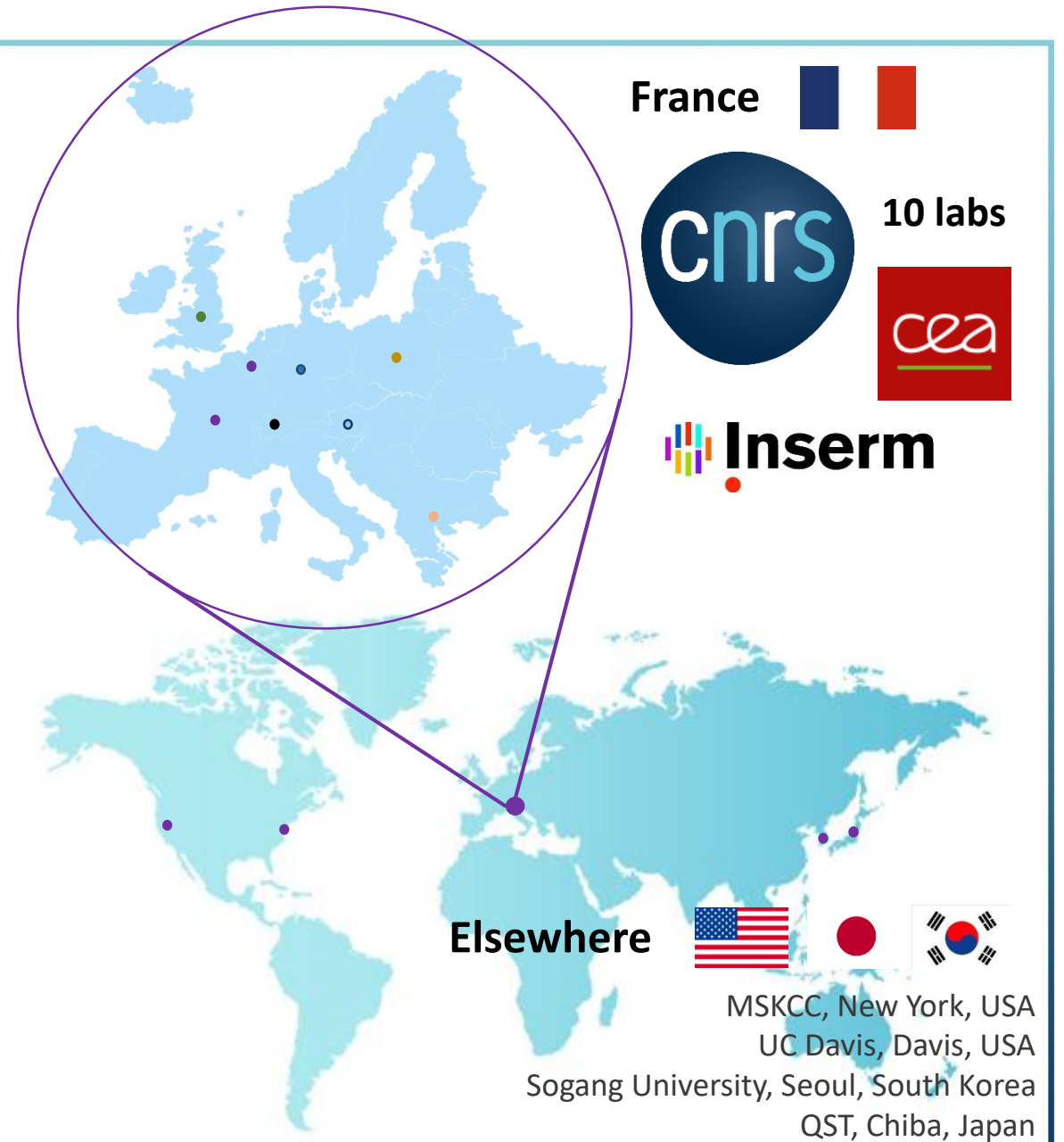
JPET collaboration, Poland

Institute of Nuclear Physics Polish Academy of Sciences, Poland

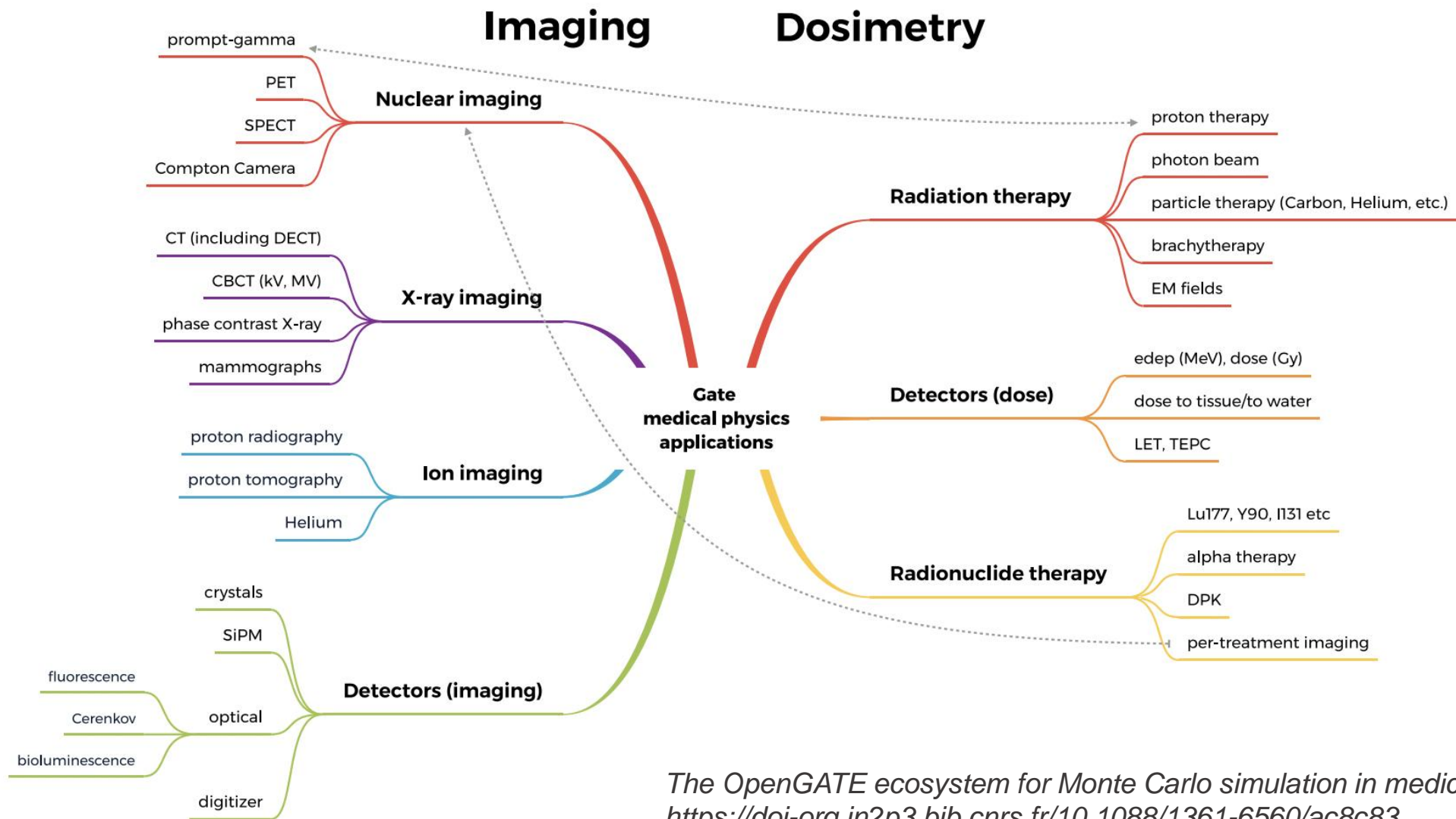
Univ. of Patras, Dept of Med. Phys., Greece

BioemTech, Athens, Greece

Paul Scherrer Institute (PSI), Switzerland



Applications : Medical physics



The OpenGATE ecosystem for Monte Carlo simulation in medical physics - <https://doi-org.in2p3.bib.cnrs.fr/10.1088/1361-6560/ac8c83>

A large community of users

Around 2000 registered users

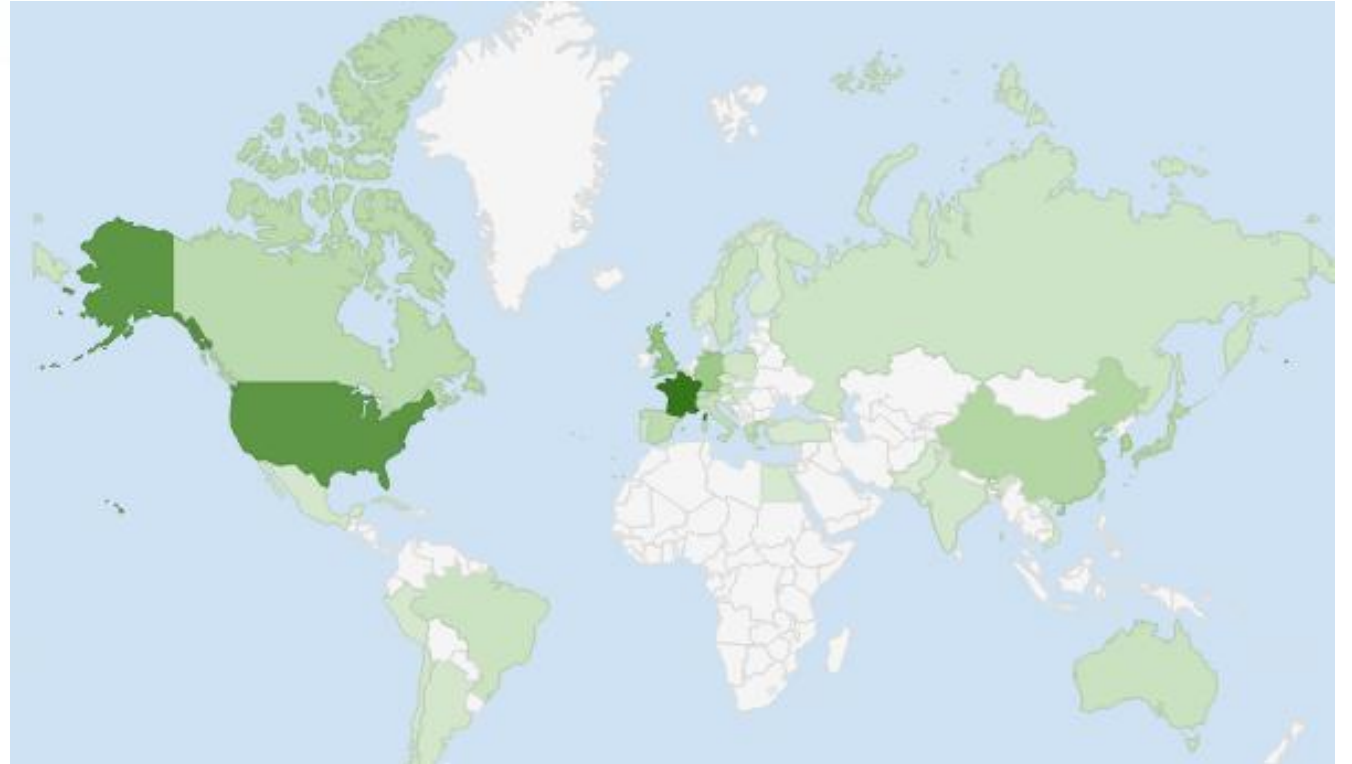
- Large communities in France and USA
- Increasing number in Asia: China, Japan and South Korea

GATE USERS MAILING LIST

What is for?

- The mean for the collaboration to send information about releases, job offers, interesting papers
- The mean for users to ask any question regarding GATE: bugs, compilation problems, good practice for using or developing the platform

To register to the mailing-list: <https://listserv.in2p3.fr/cgi-bin/wa?A0=OPENGATE-L>



Soon the OpenGATE FORUM

GATE 10

- **Reminder:** Macros become python scripts
- Python but without speed lost
- Open source
- Most of GATE 9 features are available
- **GATE 10.0.0 → Officially released in November 2024!**
- **Current version 10.0.3**

Easy install:

Create a Python environment (highly recommended)

```
pip install opengate  
opengate_tests
```

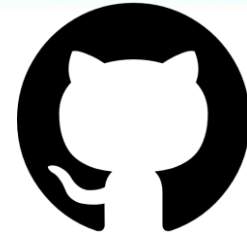
See: <https://github.com/OpenGATE/opengate>

Docs: <https://opengate-python.readthedocs.io>

Examples: <https://github.com/OpenGATE/opengate/tree/master/opengate/contrib>

Tests: <https://github.com/OpenGATE/opengate/tree/master/opengate/tests>

More than 100 tests & examples available



PMB Focus collection for GATE10 in 2025-2026

<https://iopscience.iop.org/collections/pmb-250417-827>

Co-editors for the FOCUS collection:

Lydia Maigne, Nils Krah, Christian Morel, Emilie Roncali and David Sarrut

- Indicate that your work is related to GATE 10
- All articles are published once they are accepted
- No need to wait for the collection to close
- The review process follows the usual procedure in PMB
- You can publish open access, but you do not have to

2 collaboration papers should be published soon:

- GATE 10 Monte Carlo particle transport simulation -Part I: development and new features
- GATE 10 Monte Carlo particle transport simulation -Part II: architecture and innovations

GATE 10 Technical news

Last release (Oct 2025): 10.0.3 (Geant4 v11.3.2)

Current work in progress:

- Maintenance (updates QT, ITK, pybind, Geant4 ...)
- Coincidence sorter improvements
- Compton Camera coincidence sorter
- Tessellated volumes formats: STL, OBJ, OFF
- Interfacing with reconstruction software
 - SPECT: Pytomography, RTK
 - PET: CASToR, Siemens o7tools
 - Compton Camera: Coresi

GATE 10 Technical news

Future work:

- Multiprocessing
- PET digitizers: pile-up and dead-time
- More generic filters
- And much more!

Future work:

- Multiprocessing
- PET digitizers: pile-up and dead-time
- More generic filters
- And much more!
- **Your ideas? Your needs?**
- **Motivation to contribute to the GATE 10 development?**
- **You and your institute are interested in joining the OpenGATE collaboration?**



GATE 10 Technical news

Future work:

- Multiprocessing
- PET digitizers: pile-up and dead-time
- More generic filters
- And much more!

**Next release: beginning of 2026
(with Geant4 v11.4.0)**

Current version: 9.4.1

- Slow pace maintenance
- Bug corrections
 - Memory leak in Coincidence Sorter (since v9.3) → Corrected
 - Fix of some other mem. leaks
- Minimal development of new features

Next version: 9.4.2

- Beginning of 2026
- Geant4 v11.4.0

Next GATE Hackathon

- 3-5 February 2026, Delft (Netherlands) <https://indico.in2p3.fr/e/gate-hackathon-2026-delft>

Scientific meeting:

- **31 March - 2 April 2026, Strasbourg (France), to be announced**
 - Users meeting day
 - Developers meeting day
 - Hackathon day

Next GATE 10 trainings

- [Remote GATE training for beginners](#) **19-21 November 2025**
- **GATE trainings in master programs**
- **Specific GATE trainings for companies**



The OpenGATE young developer prize 2026

- The call will open in **January 2026** to master and PhD students
- Guidelines provided to participants to commit their code with tests and documentation
- Easy online application procedure
- **6 months** to provide the developments with mid-term projects presented during our scientific meeting in **April 2026**
- A committee composed of 4 developers to rank the commits
- Thomas Baudier will provide a technical support to candidates

3 awards will be given to the top 3 developers

Conclusions

- **Releases at the beginning of 2026: GATE v10.1.0 and GATE 9.4.2**
- **Next events**
 - 3-5 February 2026: GATE Hackathon, Delft (Netherlands)
 - 31 March - 2 April 2026: GATE Scientific meeting Strasbourg (France)
- **GATE trainings available!**
- **All master and PhD students are invited to participate to the OpenGATE young developer prize**
- **Everyone willing and motivated to contribute to the development are highly welcome**
- **We also invite you to join the OpenGATE collaboration!**

Today's workshop page



Thank you!

Today's workshop page



GATE 10 - The source code



Analyse



opengate



opengate geometry sources data actors
tests contrib bin mac postprocessors



core opengate_core g4_bindings
opengate_lib



Geant4

