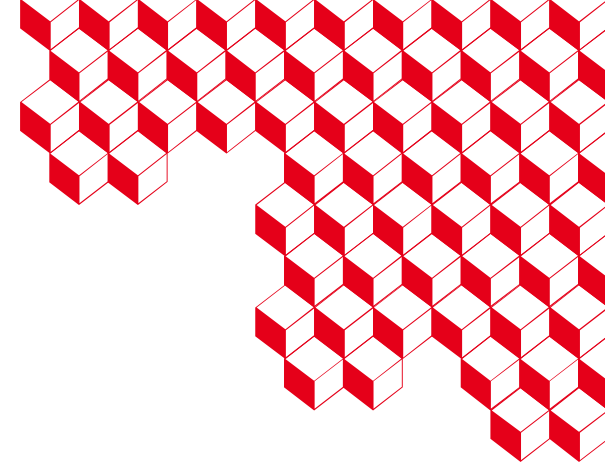


GATE Scientific Meeting 2026

Strasbourg, France



GATE Activities @ Orsay

Olga Kochebina

Michel Atieh

Marc Granado

Sébastien Jan



31 Mars 2026

Outline

1. Activities for Gate 9.4.2

Release 2026

Devs for monolithic crystals PET (AAIMME project)

Panorama 35 by United Imaging

2. Activities with Gate 10

Dosimetry for Immuno-PET

3. Conclusions

Conclusions





1. GATE 9 acticites

Gate 9.4.2 release (not only Orsay!)

New version of **Geant4 11.4.0**

→ Gate 9.4.2 release on the 24th March 2026

■ **Memory leaks corrections**

- Mathieu Dupont
- Konrad Klimaszewski

■ Other small fixes

- Martin Rädler
- Marc Granado

■ Docker and VM are available

■ Offline digitizer → started and ongoing

Smooth and slow pace support

AAIMME 1st image and plans

The follow up of ClearMind project (GATE: Marc Granado work)

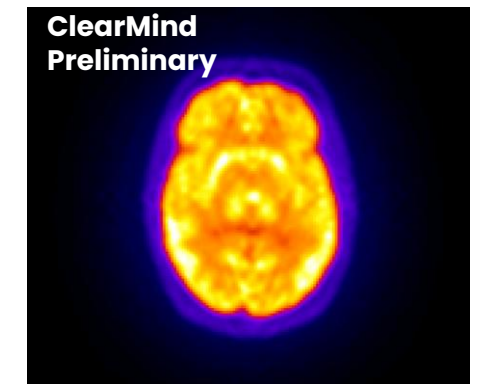
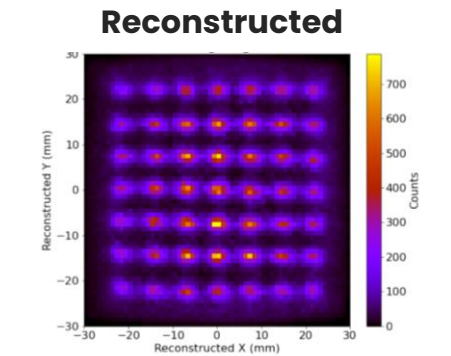
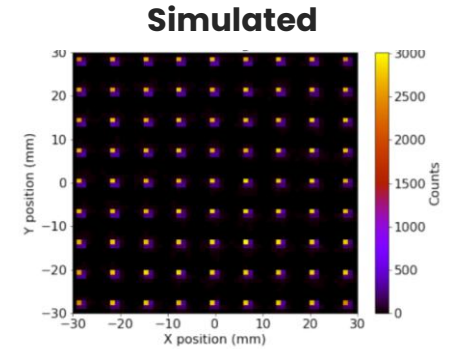
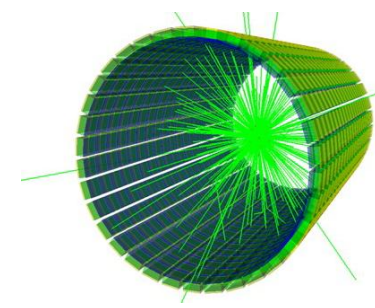
- Large Axial FOV TOF PET (1 m)
- Monolithic crystal of PbWO_4 - 59x59x10 mm³
- Spatial resolution is a 2D function of position (from AI)
 - Added to GATE 9

AAIMME project

- AI for reconstruction of position of gamma interaction, time, energy and their errors
- How do the errors on the reconstructed position propagate to the images?
- GATE: Creation of the model and simulated data production

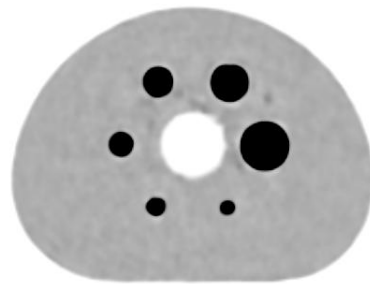
Dedicated AAIMME digitizer module to develop

- Efficiency, resolution as a function of position inside the crystal and the hits multiplicity
- Optional output attributes with information on the initial interaction
- Offline Digitizer

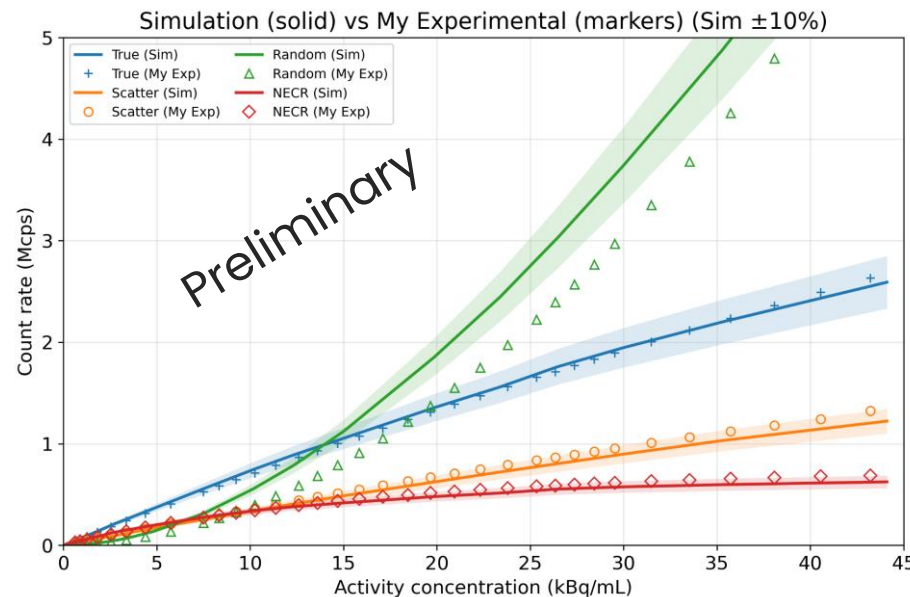
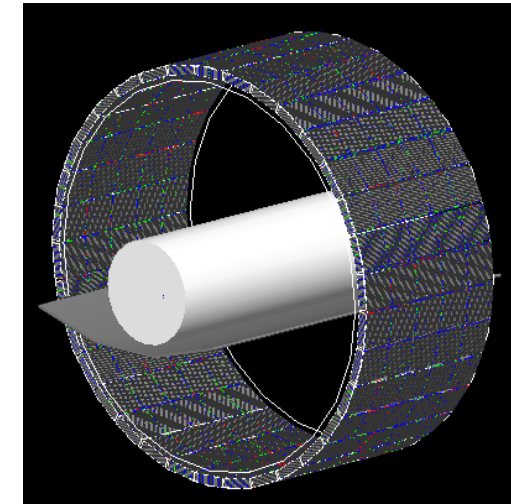


Panorama™ 35 by United Imaging

- 35 cm axial FOV
- LYSO + SiPM for γ detection
- Validation of GATE model for
 - Sensitivity (SSRB)
 - NECR
 - Spatial resolution
 - Time resolution
 - Image quality
- Next:
 - ^{90}Y radioembolization



M. Atieh PhD thesis





2. GATE 10 activities

Dosimetry for Radiolimmuno therapy

Radiolimmuno therapy project @ BioMpas:

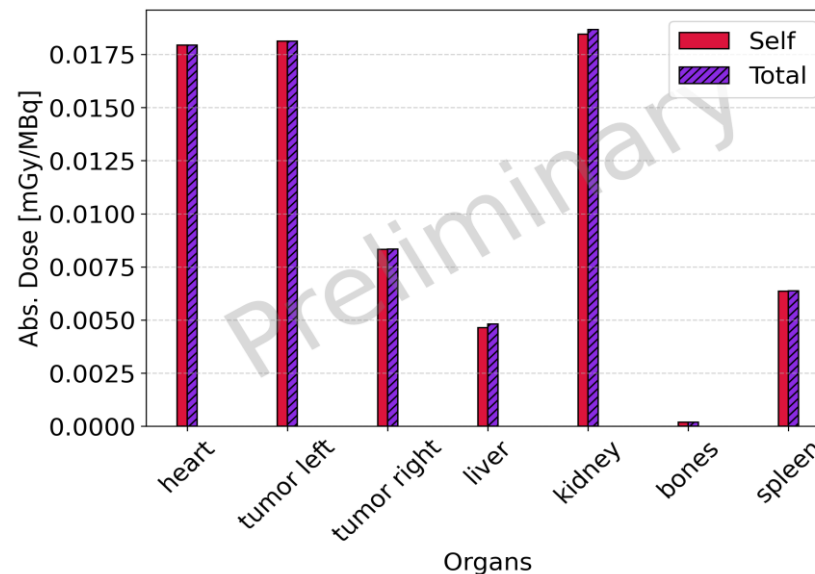
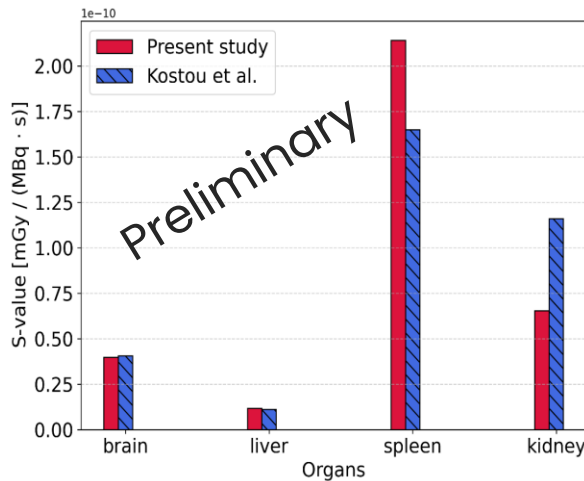
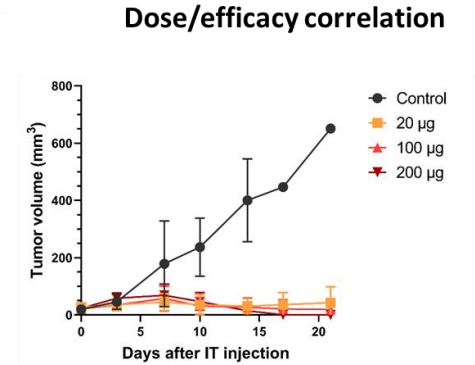
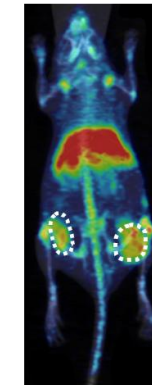
^{89}Zr PET imaging

^{177}Lu therapy → dosimetry

→ Preclinical studies

→ Dosimetry for better understanding of bio-effects

- Organ based MIRD so far
- Preliminary results
- Automatization of workflow at the moment: 80 subjects/ study



Aim pipeline:

- Validated
- Fast
- Personalized
- Precise
- Easy to use

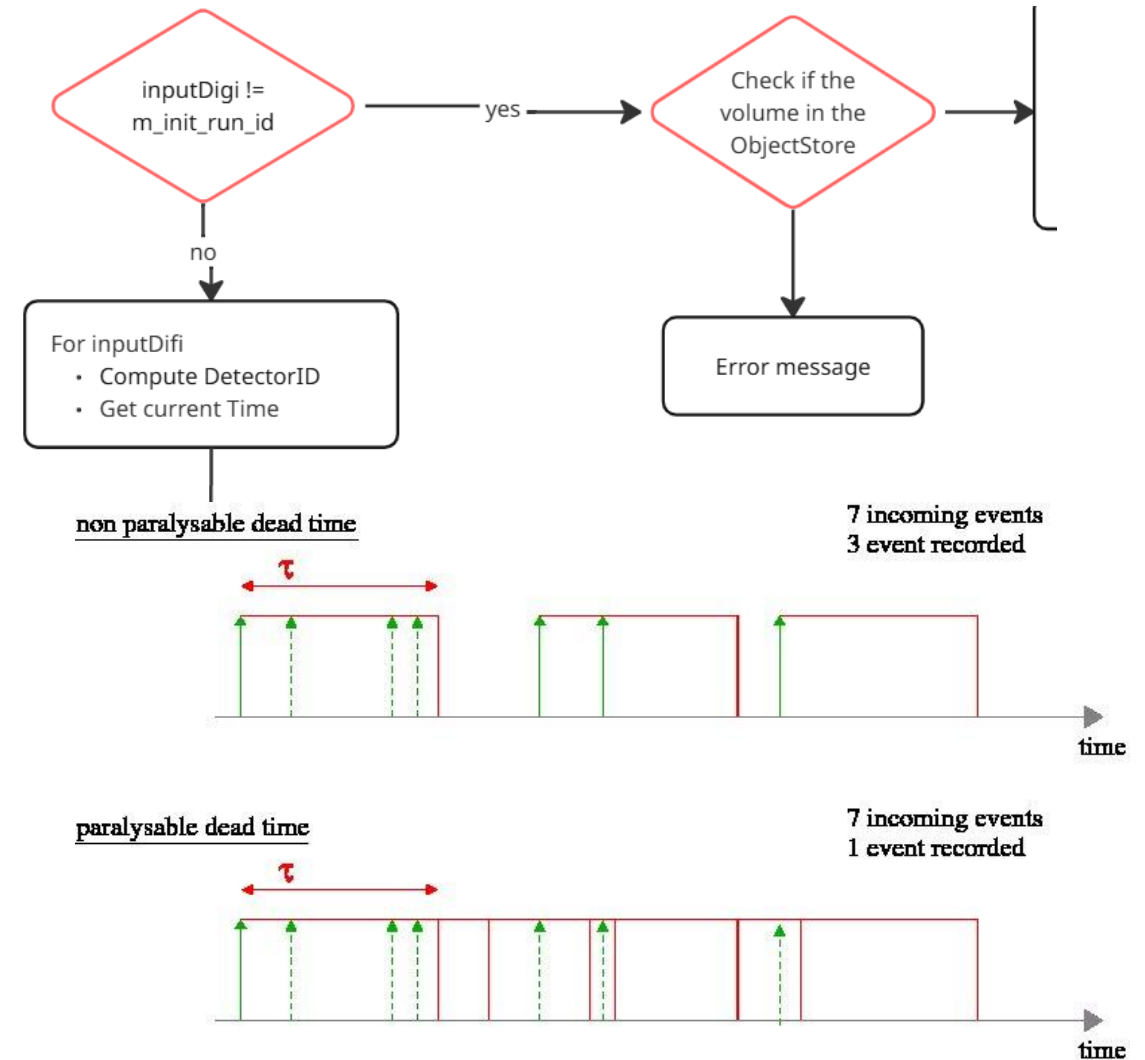
Dead Time Digitizer Actor

Dead Time: Detection system is blocked while two signals arrives too close in time

- Required parameters
 - Dead time duration
 - Policy
 - Non-paralyzable: entries during dead time are ignored
 - Paralyzable: each event during dead time extends the dead period
 - Volume Name, level where dead time is applied
- Optional
 - Buffer size
 - Buffer mode (what to do when is full)
- Attention: Time Sorting (Gert ;-)

[Link to spec doc](#)

[Link to diagram](#)





3 ■ Conclusions

Conclusions

1. GATE 9

Release of v.9.4.2

ClearMind PET simulation

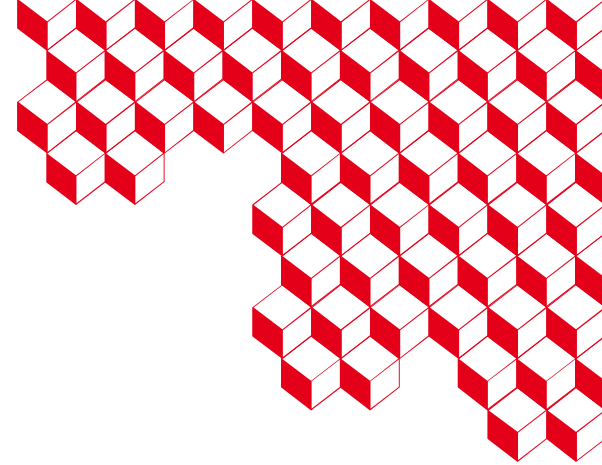
uMI Panorama 35 simulation

2. Gate 10

Application: dosimetry for internal immuno-radiotherapy

Developments: Dead Time Digitizer Actor





Thank you !

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