GATE version 7.1 - 03/30/2015

General set-up and installation:

- This version is validated for Geant4 10.1
- The compilation is validated for from gcc4.4 to gcc4.9
- It is no more needed to use system CLHEP. Geant4 embedded version now works (flag GATE_USE_SYSTEM_CLHEP=OFF by default). Alternatively, users may still use system CLHEP version 2.2.0.4 (put the flag ON).
- To download binary data for benchmark and example folders, set ON GATE_DOWNLOAD_BENCHMARKS_DATA and GATE_DOWNLOAD_EXAMPLES_DATA variables.
- For GPU features the CUDA tools are needed (see doc).

All information regarding the installation are provided by the documentation:

Generic page: InstallationGuideV7.1
Cmake procedure: New_Compilation_ProcedureV7.1
GPU modules: GPU_.26_CUDA_tools

New developments and features:

- GPU modules for Optical applications. For details, read the user's guide on the section: How_to_use_Gate_on_a_GPU.
  Note: technical limitations of the GPU modules are indicated in the user's guide. Read also the examples provided within the GATE sources for understanding the interests and limitations.
- Reader of voxellized sources within GATE have been extended. They now can read 3D images in following formats:
  - Interfile (8-bit, 16- or 32-bit Signed and Unsigned, and 32- or 64-bit Real)
  - Analyze
  - MetaImage (mhd/raw)

  For details, read the user's guide on the section: Voxelized_sources

- New options with the General Particle Source (GPS) to define and customize an energy spectrum associated to primary events. For details, read the user's guide on the section: Defining_the_energy

- Physic list builder mechanism is available, following the Geant4 approach. For details, read the following section: New_physics_list_mechanism
- DoseActor now uses double precision for computation (so the required memory is doubled). Outputs are still in float. This should solve precision issues in some situations.
- New fast algorithm to compute dose for low energy gamma beams (lower than 1 MeV), the seTLE (split-exponential Track Length Estimator), about 10^5-10^6 faster than plain Monte-Carlo. See exemple 10 in the source code and TLE_and_seTLE
- Various bug corrections for the PhaseSpaceActor (store all steps default value to off).
- Various bug fixes and improvements

Documentation updates:

Generic page: UsersGuide
Dedicated wiki page: Users_Guide_V7.1

Examples

- GPU modules: Optical configurations are described in the following source directory $GATEHOME/examples/example_GPU
- How to define an customize an energy spectrum: $GATEHOME/examples/example_UserSpectrum
- Dosimetry example: $GATEHOME/examples/example_Radiotherapy