

# Installation Guide V8.0

From Wiki OpenGATE

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## General Information about GATE

### The GATE mailing list

You are encouraged to participate in the dialog and post your suggestion or even implementation on the Gate-users mailing list, the GATE mailing list for users. You can subscribe to the Gate-users mailing list, by registering to the GATE web site (<http://www.opengatecollaboration.org>) or directly using this link (<http://lists.opengatecollaboration.org/mailman/listinfo/gate-users>)

If you have a question, it is very likely that it has been asked, answered, and stored in the archives. Please use the search engine (<http://dir.gmane.org/gmane.comp.science.opengate.user>) to see if your question has already been answered before sending a mail to the Gate-users list.

# The GATE project on GitHub

GATE project is now publicly available on GitHub (<https://github.com/OpenGATE/Gate>). So, any people identified as a GATE contributor on GitHub can

- Report bugs by creating, assigning and closing an issue (<https://github.com/OpenGATE/Gate/issues>)
  - Add/modify the source code or fix bugs
    - Start by copying the GATE public repository from GitHub: `git clone https://github.com/OpenGATE/Gate.git`
    - Create a specific branch on your repository copy and commit your modifications in that branch
    - Create your own copy (fork) of GATE public repository inside your GitHub account so as to be able to push your branch onto this copy
    - Once your code is ok,
1. Create a pull-request (<https://help.github.com/articles/using-pull-requests/>) from your Gate repository to the official Gate repository
  2. Provide an example that tests your new feature
  3. If you implemented a new feature, have the associated documentation ready
  4. Inform these three people from the collaboration (S. Jan, D.Sarrut and A. Dubois) who will then get in touch with you to integrate your changes in the official repository (once merged, pull-requests and corresponding source code changes can be visualized using GitWeb (<http://git.opengatecollaboration.org/gitweb/?p=opengate.git;a=shortlog;h=refs/heads/develop>)).

## Installing GATE on Linux

This section describes the installation procedure of GATE. This includes three steps:

- Install Geant4 ;
- Install ROOT (most of the time);
- Install GATE itself.

This section starts with a brief overview of the recommended configurations, followed by a short introduction to the installation of Geant4, and then explains the installation of GATE itself on Linux.

It should be highlighted that features depending on external components (libraries or packages) may only be activated if the corresponding component is installed. It is the user's responsibility to check that these components are installed before activating a feature. Except for Geant4, which is closely related to GATE, the user should refer to the Installation Guide of the external components.

In addition, you should also install any Geant4 helper you wish to use, especially *OpenGL* if required, before installing Geant4 itself. You can either download the source codes and compile the libraries or download precompiled packages which are available for a number of platform-compiler. If you choose to or have to compile the packages, you will need:

- a C++ compiler
- the GNU version of *make*
- CMAKE tool

The ROOT data analysis package may also be needed for post-processing or for using the GATE online plotter (enabling the visualization of various simulation parameters and results in real time). ROOT is available for many platforms and a variety of precompiled packages can be found on the ROOT homepage (<http://root.cern.ch/>).

The LMF (<http://www.opengatecollaboration.org/releasedownload>) and ecat7 (<http://www.opengatecollaboration.org/ECAT>) packages are also provided on the GATE (<http://www.opengatecollaboration.org>) website. They offer the possibility to have different output formats for your simulations.

## Package Requirements

Compiling software usually requires certain system libraries and compilation tools. Furthermore, GATE and Geant4 have various package requirements which have to be met BEFORE installing or compiling. Currently lists have been created for Ubuntu 10.04, Ubuntu 11.x, Fedora 14 and Scientifix Linux 6. Visit the Package Requirements page for detailed package lists.

## Installing with MacPorts on OS X

GATE can be installed on Mac OS X by following the previous installation instruction on Linux. An alternative way is to install Gate via MacPorts (<http://www.macports.org/>) with

```
sudo port install gate
```

Apart from the `Gate` command this also installs a standalone app:

```
/Applications/MacPorts/Gate.app
```

(Thanks Mojca Miklavac for this contribution).

# GATE compilation and installation

## Recommended configuration

For the 8.0 release, the recommended configuration is the following:

- Geant4 10.3 (available in <http://geant4.web.cern.ch/geant4/support/download.shtml>).

Note that the 8.0 release remains backward compatible with Geant4 10.2 patch 03 (available in <http://geant4.web.cern.ch/geant4/support/source/geant4.10.02.p03.tar.gz>)

- The CLHEP embedded from Geant4 is available (flag OFF by default). Users can also use the external CLHEP (version 2.3.4.3)
- gcc 4.8 to 6.2
- CMake minimal version: 3.3 (with SSL support)
- CUDA tools to use the GPU modules: see <http://doc.ubuntu-fr.org/cuda> for details

!!!WARNING: From the 6.2 GATE version, the installation procedure is managed by CMake (<https://cmake.org/>)!!!

## Compilation instructions

([http://wiki.opengatecollaboration.org/index.php/Compilation\\_Instructions\\_V8.0](http://wiki.opengatecollaboration.org/index.php/Compilation_Instructions_V8.0))

## Validating Installation

If you are able to run Gate after installation by typing

```
Gate
```

it is an indication that your installation was successful.

**However, before you do any research, it is highly recommended that you validate your installation.**

See Validating Installation for benchmarks and further information.

## Other Web Sites

G4 Agostinelli S et al 2003 GEANT4 - a simulation toolkit Institute Nucl. Instr. Meth. A506 250-303 GEANT4 website: <http://geant4.web.cern.ch> (<http://geant4.web.cern.ch/geant4/>)

CLHEP - A Class Library for High Energy Physics: <http://proj-clhep.web.cern.ch>

OpenGL Homepage: <http://www.opengl.org/> (<http://www.opengl.org>)

DAWN release: <http://geant4.kek.jp/tanaka/>{<http://geant4.kek.jp/tanaka/>}

ROOT Brun R, Rademakers F 1997 ROOT - An object oriented data analysis framework Institute Nucl. Instr. Meth. A389 81-86 ROOT website: <http://root.cern.ch>

libxml website: <http://www.libxml.org>

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- This page was last modified on 15 March 2017, at 17:59.