Building and Installing Geant4 on Linux (Ubuntu 14.04)

By Arnulfo Moisés Maciel Hernández

Software Required to Build Optional Components of Geant4

- Installation of build-essential. In Terminal set:

  sudo apt-get install build-essential

- Installation of Cmake. In Terminal set:

  wget http://www.cmake.org/files/v3.5/cmake-3.5.0-rc2.tar.gz
  tar xf cmake-3.5.0-rc2.tar.gz
  cd cmake-3.5.0-rc2
  ./configure
  make
  sudo make install

- X11 Xmu library and/or headers

  sudo apt-get install libxaw7-dev libxaw7

- Qt User Interface and Visualization. In Terminal set:

  wget http://download.qt.io/official_releases/qt/5.0/5.0.2/qt-linux-opensource-5.0.2-x86_64-offline.run
  chmod +x qt-linux-opensource-5.0.2-x86_64-offline.run
  ./qt-linux-opensource-5.0.2-x86_64-offline.run

  (if error “qmake: could not exec '/usr/lib/x86_64-linux-gnu/qt4/bin/qmake': No such file or directory” execute in Terminal: sudo apt-get install qt5-default)

- MesaGL headers and libraries. In Terminal set:

  sudo apt-get install mesa-common-dev
  sudo apt-get install libglu1-mesa-dev -y

- Xerces-C++ headers and libraries. In Terminal set:

  wget http://www.eu.apache.org/dist//xerces/c/3/sources/xerces-c-3.1.2.tar.gz
  tar xf xerces-c-3.1.2.tar.gz
  cd xerces-c-3.1.2
  ./configure
  make
  sudo make install

Geant4 Software Download

Download geant4 from:

- http://geant4.web.cern.ch/geant4/support/download.shtml

Unpack the Geant4 source package geant4.XX.XX.tar.gz to a location of your choice. For illustration only, this guide will assume it's been unpacked in a directory named **/path/to**, so that the Geant4 source package sits in a subdirectory . (geant4.XX.XX means the latest Release of Geant4)

/path/to/geant4.XX.XX

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Inside geant4.XX.XX folder, make the folders;

- geant4-install
- geant4-build

In Terminal go thought geant4-build folder

- cd geant4-build

Geant4 Build Options

In Terminal set:

- cmake -DCMAKE_INSTALL_PREFIX=/path/to/geant4.XX.XX/geant4-install -DGEANT4_INSTALL_DATA=ON -DGEANT4_USE_GDML=ON -DGEANT4_USE_QT=ON -DGEANT4_USE_OPENGL_X11=ON -DGEANT4_USE_SYSTEM_EXPAT=OFF /path/to/geant4.XX.XX

  (if fails, rm -rf * in g4build before rerunning cmake)

- make -j4 (the four is replaced by your number of processor cores)
- make install

If all went well, add this to your ~/.bashrc

```
if [ -f /yourpath/g4install/bin/geant4.sh ]; then
. /yourpatht/g4install/bin/geant4.sh
fi
```

Setting Datasets

After you have installed Geant4. To do this,

download the following files:

(or the latest versions from http://geant4.web.cern.ch/geant4/support/download.shtml)

http://geant4.cern.ch/support/source/G4NDL.4.5.tar.gz
http://geant4.cern.ch/support/source/G4EMLOW.6.48.tar.gz
http://geant4.cern.ch/support/source/G4PhotonEvaporation.3.2.tar.gz
http://geant4.cern.ch/support/source/G4RadioactiveDecay.4.3.tar.gz
http://geant4.cern.ch/support/source/G4NEUTRONXS.1.4.tar.gz
http://geant4.cern.ch/support/source/G4PII.1.3.tar.gz
http://geant4.cern.ch/support/source/RealSurface.1.0.tar.gz
http://geant4.cern.ch/support/source/G4SAIDDATA.1.1.tar.gz
http://geant4.cern.ch/support/source/G4ABLA.3.0.tar.gz
http://geant4.cern.ch/support/source/G4ENSDFSTATE.1.2.tar.gz

and unpack them under the directory:

/path/to/geant4.XX.XX/geant4-install/share/Geant4-10.2.0/data