Prerequisites for the Geant4 course

A minimal knowledge of the C++ programming language and of the Linux operating system is useful for a more efficient work.
Participants must have their own laptop, equipped for supporting ssh connections to a Linux machine with graphical windows.

Wi-Fi connection will be available for the participants.

Each student can choose between three options for using the Geant4 toolkit during the course. We suggest to try to use the second one and, in case of problem, switch on the other ones:

1-Local installation

In order to have all the requirements necessary to install Geant4 (Geant4.10.03) in your own laptop, be sure to have the following programs installed in your own laptop:

Officially supported operative systems:

- Linux, gcc-4.8.5. Tested on 64 bit architectures (Intel or AMD) with CERN CentOS Linux 7 (CC7) (based on CentOS Linux 7).
- MacOSX 10.12 Sierra with clang-3.8 (Apple LLVM/Clang-8.0.0)
- Windows-10 with Visual C++ 14.0 (Visual Studio 2015)

Geant4 has also been successfully compiled on other Linux distributions, including Debian, Ubuntu and openSUSE. The main requirement is that the system has a GCC of sufficient version to support C++11 installed.

Multithreading of Geant4 is currently not supported on the Windows platform.

Required softwares:

- C++ Compiler and Standard Library supporting the C++11 Standard - Linux: GNU Compiler Collection 4.8.5 or higher.
- Mac OS X: Clang (Xcode 6 or higher).
- CMake 3.3 or higher, available at the link http://www.cmake.org

External libraries for visualisation
- Qt4 or Qt5 headers and libraries, OpenGL or MesaGL headers and libraries. - Qt libraries, version Qt4.8.5 (https://download.qt.io/archive/qt/4.8/4.8.5/)

We will give you all the necessary support to fix eventual installation problems during the first day of the course.

1-Virtual Machine

Work with a pre-configured Virtual Machine(VM), developed with the Virtual Box tool. In this VM a Linux operating system has been already pre-installed with an installation of the Geant4 toolkit. Additional graphical libraries (Qt and Xm) have been also installed in order to facilitate the

practical session of the course. To run the Virtual Machine, it is necessary to install Virtual Box (it is suggested to download and install it before the first lesson).

Download from the page:

https://www.virtualbox.org/wiki/Downloads

the virtual box program installer (Virtual Box platform packages) choosing the version compatible with your operating system, and the VirtualBox Extension Pack.

You can download the compressed version of the virtual machine directly going at the following link:

http://geant4.lngs.infn.it/INFN-Geant4-VM-2017.zip

Once you download that, you can uncompress VM_CentOS_INFN.zip with the following software:
• WinZip: a trial Version is available here at http://www.winzip.com/win/it/index.htm
(Only for Windows Operating system)
• 7-Zip Open source software: -It is possible to download it at http://7-zip.org/download.html for both the Linux operating system that Windows. or It is possible to install it directly via "Add/remove software" in your Linux packages administration.

The command line for to extract VM_CentOS_INFN.zip by terminal Linux is:

unzip INFN-Geant4-VM-2017.zip

 Once you have downloaded the VM, you can open that and login as:

Username: user Password: user

For the practical session of the Geant4 course we suggest to work with the preconfigured "user", avoiding to use "root". In case, for future modification of the VM,
you may need to login as "**root**" user, you can use the following password: **infn2017**.

3-SSH connection

- For Linux OS : No additional software has to be installed.
- For Windows OS:
work with SSH Secure Shell or PuTTY and Xming-mesa (both freeware), to connect remotely to computers where the Geant4 toolkit has already been installed.

Xming-mesa program installer is available at:

http://geant4.lngs.infn.it/corso_infn/Xming-mesa.exe

Additional fonts (necessary only if you want to use emacs as text editor) can be downloaded from here:
http://geant4.lngs.infn.it/corso_infn/Xming-fonts-7-5-0-8-setup.exe (documentation is at:
http://www.straightrunning.com/XmingNotes/).

SSH Secure Shell program is available at:

http://www2.ohlone.edu/downloads/SSHSecureShellClient-3.2.9.exe

PuTTY program is available at:

http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

Xming server must be launched before starting the SSH connection.
To configure the SSH connection with graphics windows, just open menu Edit->Settings->Tunneling SSH Secure Client
select "Tunnel X11 connections"
option and click OK.