# GEANT4 (click on title for log in information)

*Monday, 11 May 2020 12:00 (120)*

https://mcgill.zoom.us/j/5315899956?pwd=aTJoSmczUm1MTHhTYVFzMXYyUWVlQT09

The GEANT4 lecture will touch upon the following aspects:

• Why use Geant4
• How does Geant4 work
• How to create your own Geant4 simulation
• How to change things in the simulation (Geometry, materials, Physics, SteppingAction, output, PrimaryEventGenerator)
• Do we trust the output?
• Where to get Help?
• Concluding remarks/discussion

Parts of the lecture would be actually digging into the code, recompiling, re-running, and i will be doing it using a virtual machine.
So those of you who want to follow along (it can be both fun and educational), or have a chance to work on some of the things discussed after the lecture
it's best to have a similar enironment on your machine.
Due to variability in our native operating systems, versions of software and all that below is the information on how to install a Virtual Machine (an emulation that will run on your system (win/linux/mac)). It's the most painless way to create a uniform environment for all the participants.

* It is optional of course, but it is recommended to install this Virtual Machine and test it ahead of the lecture.

—–- HOW To INSTALL A Centos7 Virtual Machine—————
—–- with Geant, Root and a bunch of stuff—————————
System requirements for this:

• Windows or Linux users : desktop or laptop PC running Windows or Linux with a virtualization software installed. Software is free.
• Mac users : desktop or laptop Mac running Mac OS with a virtualization software installed (can be installed with a trial period).
• at least 4 Gb of RAM for the PC or Mac
• 20 Gb of free disk space available

Download the VM files:

The VirtualMachine itself can be downloaded here in either English or French (i tested only the english version).
It's a 4.5GB file!

ftp://ftp.cenbg.in2p3.fr/info/Vmware/Old-Versions/geant4.10.05/VmWare/

Get the required Virtual Machine software:

- VmWare Workstation Player for Windows/Linux (>=version 12.5.9), Vmware Fusion for MacOS (http://www.vmware.com)

** Installation

- Install Vmware Player (VmWare Fusion for mac) if needed | Mac software has a trial period
 - Decompress the (G4.10.5_CentOS7_us.7z) file you downloaded from a link above into a directory
 - At the end you can then delete the zipped (.7z) file

** How to use the virtual machine ?

• Execute Vmware Workstation Player (Fusion on mac) to open the virtual machine From VmWare Player, open the .vmx file,

When you power on the virtual machine, VMware Player displays a message asking whether you have moved or copied the virtual machine. You have to answer "I copied it". This will create a new uuid and a new mac address for the virtual machine necessary for network connection.

If VmWare Player ask to install or upgrade Vmware Tools, you have to do it because it is necessary for the use of shared folders between host and guest system.

Once your virtual machine is powered on, you have a real CentOS 7 system
- A default user account exists, the login account is:
local1 and the password is local1
root password is centos7

**\*\* Testing that you can run Geant4 examples:**

For example with the B1 example, do the following after you powered your machine

mkdir $HOME/buildB1 cd$HOME/buildB1
cmake -DGeant4_DIR=$G4COMP$G4EXAMPLES/basic/B1
make
./exampleB1

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