GATE install at UMASS

Install directory

1. mkdir $HOME/MonteCarloSimulator
2. export MC=$HOME/MonteCarloSimulator

CLHEP libraries (1.8.0.2)

1. cd $MC
2. Download CLHEP libraries source file: *clhep-1.8.0.2.tgz*
   http://wwwasd.web.cern.ch/wwwasd/lhc++/clhep/DISTRIBUTION/clhep.html
3. tar –zxvf clhep-1.8.0.0.tgz
4. mv $MC/CLHEP $MC/clhep-1.8.0.0
5. ln –s $MC/clhep-1.8.0.0 $MC/CLHEP
6. cd $MC/CLHEP
7. ./configure
8. gmake install prefix=$MC/CLHEP
9. create $MC/CLHEP_env.sh

   export CLHEP_BASE_DIR=$MC/CLHEP
   export CLHEP_INCLUDE_DIR=$CLHEP_BASE_DIR/include
   export CLHEP_LIB_DIR=$CLHEP_BASE_DIR/lib
   export CLHEP_LIB=CLHEP
   export PATH=$PATH:$CLHEP_BASE_DIR:$CLHEP_INCLUDE_DIR:$CLHEP_LIB_DIR
   export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$CLHEP_LIB_DIR

GEANT4 5.2 (patch-02)

1. cd $MC
2. Download GEANT 4 source files: http://wwwasd.web.cern.ch/wwwasd/geant4/geant4.html
   In the section 'Useful information for users': Geant4 Source code.
   Previous Releases of Geant4 (since release 3.0) are kept in an archive.
   - GNU tar format, compressed using gzip (10.92 Mb, 11451747 bytes), gunzip, then unpack using GNU tar: *geant4.5.2.p02.tar.gz*
   - G4NDL version 3.7 neutron data files (26.04 Mb, 27307980 bytes) [version 0.2 (11.89 Mb, 12467113 bytes), if thermal cross-sections are not needed]: *G4NDL3.7.tar.gz*
   - data files (7.13 Mb, 7477118 bytes) for low energy electromagnetic processes (version 2.2): *G4EMLOW2.2.tar.gz*
   - data files (7.16 Mb, 7505478 bytes) for photon evaporation: *PhotonEvaporation.2.0.tar.gz*
   - data files (0.63 Mb, 661155 bytes) for radio-active decay hadronic processes: *RadioactiveDecay.3.0.tar.gz*
3. tar –zxvf geant4.5.2.p02.tar.gz
4. ln –s $MC/geant4.5.2.p02 $MC/geant4
5. export G4DIR=$MC/geant4
6. cd $G4DIR
7. mkdir data
8. cd data
9. cp ../G4NDL3.7.tar.gz .
10. tar –xzvf G4NDL3.7.tar.gz
11. cp ../G4EMLOW2.2.tar.gz .
12. tar –xzvf G4EMLOW2.2.tar.gz
13. cp ../PhotonEvaporation.2.0.tar.gz .
14. tar –xzvf PhotonEvaporation.2.0.tar.gz
15. cp ../RadioactiveDecay.3.0.tar.gz .

16. tar –xzvf RadioactiveDecay.3.0.tar.gz
17. cd $G4DIR
18. source $MC/CLHEP_env.sh
19. ./Configure -install
    - Would you like to see the instructions? [n] [Enter]
    - Keep the default compiler settings: [Enter]
    - Do you expect to run these scripts and binaries on multiple machines? [n] [Enter]
    - Where is Geant4 installed? [$G4DIR] [Enter]
    - Do you want to copy all Geant4 headers in one directory? [y] [Enter]
    - G4TMP and G4LIB directories: [Enter]
    - To modify default settings, select number above (e.g. 2) [3] [Enter]
    - Where is G4EMLOW1.1 data installed? [$G4DIR/data/G4EMLOW2.2] [Enter]
    - To modify default settings, select number above (e.g. 2) [4] [Enter]
    - Where is G4NDL3.7 data installed? [$G4DIR/data/G4NDL3.7] [Enter]
    - To modify default settings, select number above (e.g. 2) [Enter]
    - Please specify where CLHEP is installed: [$MC/CLHEP] [Enter]
    - To modify default settings, select number above (e.g. 2) [Enter]
    - Do you want to build ‘global’ compound libraries? [y] [Enter]
    - Do you want to build ‘granular’ libraries too? [n] [Enter]
    - Do you want to compile libraries in DEBUG mode? [n] [Enter]
    - Do you want to build ‘shared’ (.so) libraries? [n] [Enter]
    - G4UI_NONE [n] [Enter]
    - XAW [n] [Enter]
    - XM [n] [Enter]
    - WO [n] [Enter]
    - G4VIS_NONE [n] [Enter]
    - OPENGL [y] [Enter]
    - OPENGLXM [n] [Enter]
    - DAWN [n] [Enter]
    - OIX [n] [Enter]
    - OPACS [n] [Enter]
    - VRML [n] [Enter]
    - G4LIB_BUILD_G3TOG4 [n] [Enter]
    - G4LIB_BUILD_STEP [n] [Enter]
    - G4ANALYSIS_USE [n] [Enter]
    - Press [Enter] to start installation or use a shell escape to edit config.sh: [Enter]
20. ln –s .config/bin/Linux-g++/env.sh .
21. source $G4DIR/env.sh
22. cd $G4DIR/examples/novice/N01
23. export G4WORKDIR=.
24. make
25. ./bin/ Linux-g++/exampleN01

ROOT

1. cd $MC
2. Download the set of binary files corresponding to your configuration into the $MC directory:
   http://root.cern.ch/
3. tar xvzf root_v4.00.03.Linux.linuxx8664gcc.tar.gz
4. mv $MC/root $MC/ root_v4.00.03
5. ln –s $MC/ root_v4.00.03 $MC/root
6. create $MC/env_root.sh

```
export ROOTSYS=$MC/root
export PATH=$PATH:$ROOTSYS/bin
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ROOTSYS/lib
export MANPATH=$MANPATH:$ROOTSYS/man
```

GATE

1. Download GATE from the website:
   http://www-lphe.epfl.ch/~PET/research/gate/GATEregisteredUsers/download_index.php
2. cd $MC
3. tar xvzf gate_v1.0.2.tar.gz
4. ln –s gate_v1.0.2 gate
5. source $MC/env_root.sh
6. cd $MC/gate
7. make clean
8. make

MISCELLANEOUS

1. To not forget to set the different environment variables, an easy tip is to add the following lines to the .bashrc file:

```
export MC=$HOME/MonteCarloSimulator
# ROOT
source $MC/env_root.sh
# CLHEP
source $MC/env_CLHEP.sh
# GEANT
source $MC/geant4/.config/bin/Linux-g++/env.quiet.sh
# GATE
export G4VERSION=5.2
export GATEHOME=${MC}/gate
source $MC/env_files/env_gate.quiet.sh
```

2. To be able to run GEANT4 and GATE on the cluster, the environment files have to be “quiet”, no echo command should be used.