Hands-On Session 3

Code without Solution: hands-on-3.tar.gz

Code with Solution: hands-on-3-solution.tar.gz

Exercise 3

Part A

1. Change primary generator class with use of G4ParticleGun
   - See example basic/B2 README page and its B2PrimaryGenerator class
2. Update run.mac and add runs with following primaries:
   (a) proton
   (b) positron
   (c) pion-
   (d) muon+
   - Run the macro from your interactive session (Qt).
   - Add randomizing the particle direction with theta in [0,2*deg], phi [0.,360*deg] .
   - See example basic/B3 README page and its B3PrimaryGenerator class

Part B

- Activate interactively storing of random generator status, run simulation with a retrieved status and check results
  1. Start application and run command:

     /random/setSavingFlag true
  2. Select a particle type and run 3 events:

     /gun/particle proton

     /run/beamOn 3
  3. Copy **currentRun.rndm** in **Run0.rndm** (by hand) and save a scene with 3 events.
  4. Run more events with varying the primary particle, *e.g.* run your run.mac .
  5. Restore random status from the Run0.rndm file: **/random/resetEngineFrom Run0.rndm**
  6. Repeat commands in step 2) and compare the scene with the saved one.

Part C

- Visualization
  - Add axes at the middle of the EmCalorimeter
  - Add date on your scene
  - Add text in red near your tube with the tube label
  - Set background to gray
  - Make an 8000*6000 EPS file (with 100 events) and look at it
  - Complete vis.mac with these commands