GEANT4 Simulation

Student : Xiandong Zhao
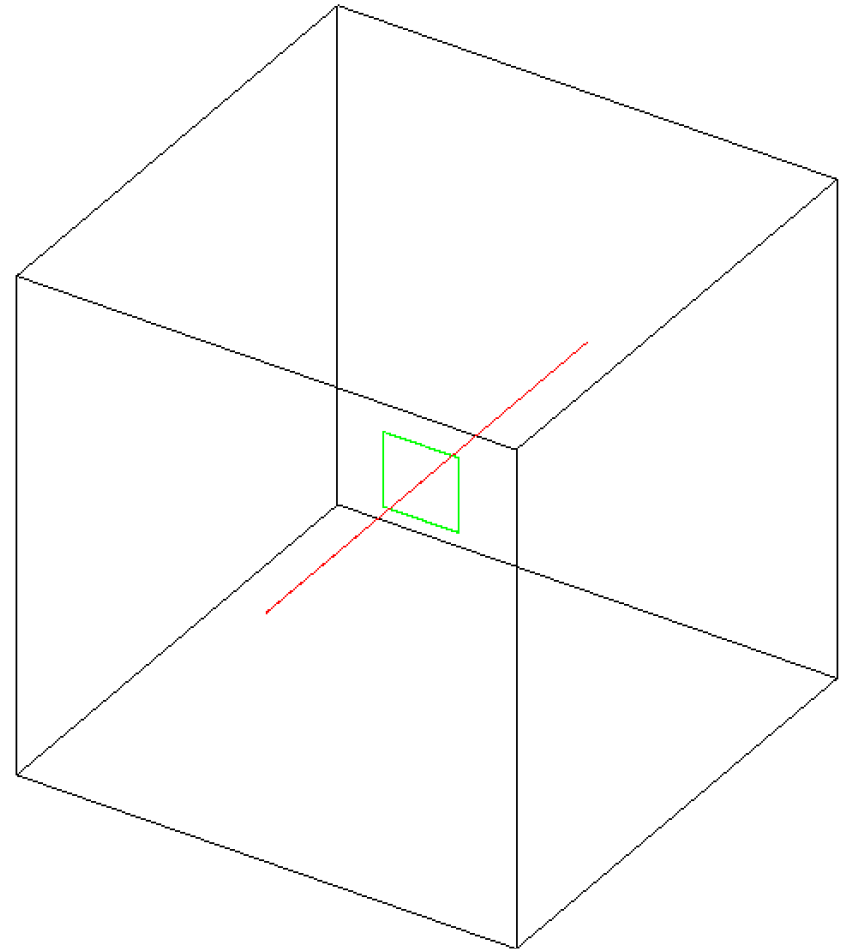ID: 37379502
September 2nd 2015

Energy Loss (Geant4 Simulation)

□ Simulation:

➢ Particle Gun:
  Gun➔SetParticle("muon")

➢ Runs: **1000 Events**

➢ Particle Initial State:
  SetParticleEnergy(Ek)
o Attention here, "SetParticleEnergy()" is used to set the initial kinematic energy.

➢ Target Matter:
1. Lead;
2. Thickness: 28 μm

Energy Loss (Geant4 Simulation)

After 1K events running, we can get the distribution of energy loss in the target material(Pb). The right plot shows the energy loss distribution when the muon's momentum is 50MeV. Then we get the peak value from this histogram:
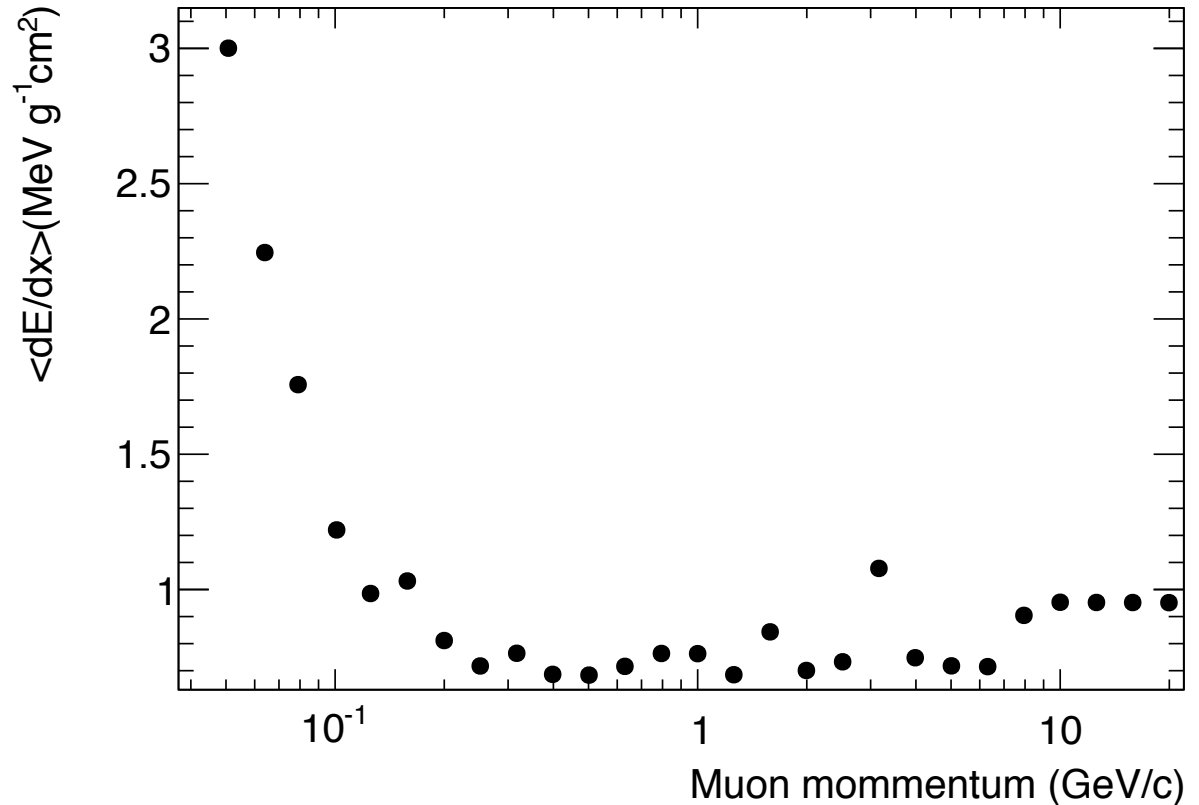
when Pt = 50MeV, $\Delta E \approx$ 0.1MeV.
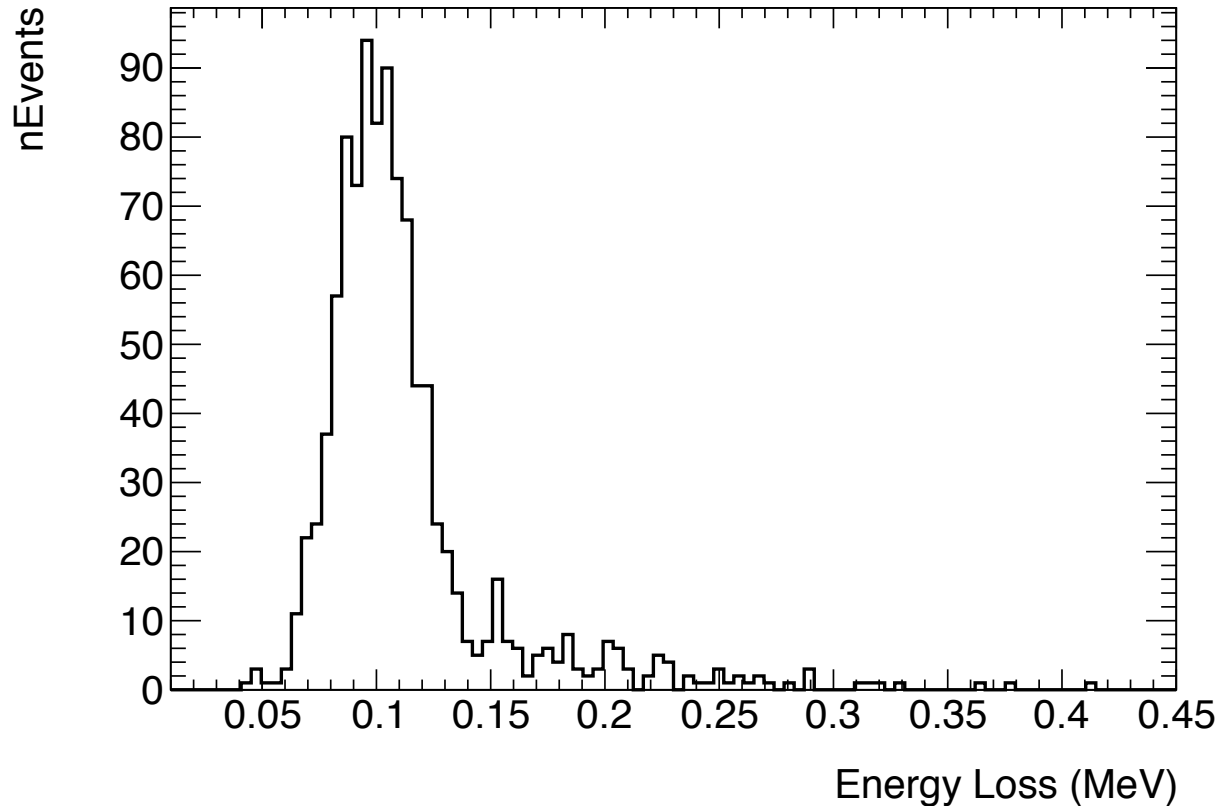
Energy Loss (Geant4 Simulation)

We choose different momentum for the muon, then we can get the curve (Fig 32.2) we want.

The statistics for each point is 1K. We can increase the run events to increase the accuracy.

Energy Loss (Geant4 Simulation)

- You can find the code in following path (in my smuhpc account):

/users/xiandong/EnergyLoss