

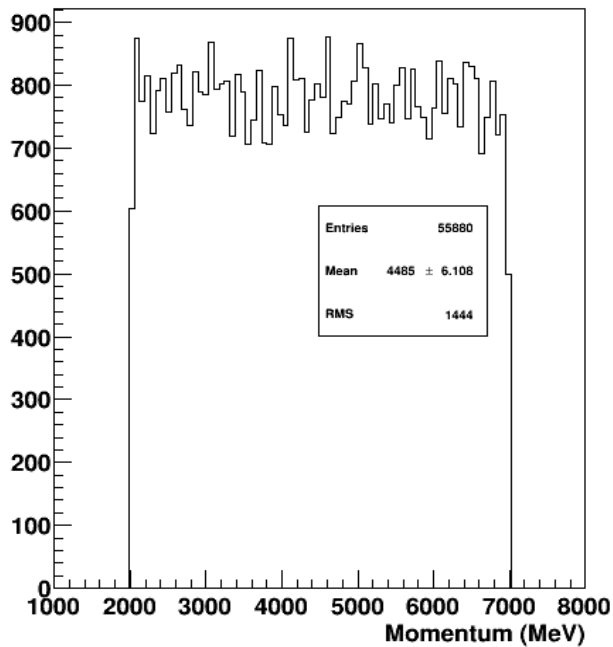
ECAL Update 4

Energy Resolution Simulation

- Input flat distribution : electrons
- No radiative effects in the target
- Setup only include ECAL and sensitive detector replacing last GEM in vacuum medium.
- Use ecal cluster energy and input momentum to get energy resolution for shower only and pre-shower + shower combination
- Previous simulation included target geometry, last 2 GEMs, and ECAL in air medium
- Energy deposit in the scintillator material is sum of ionization + non-ionization

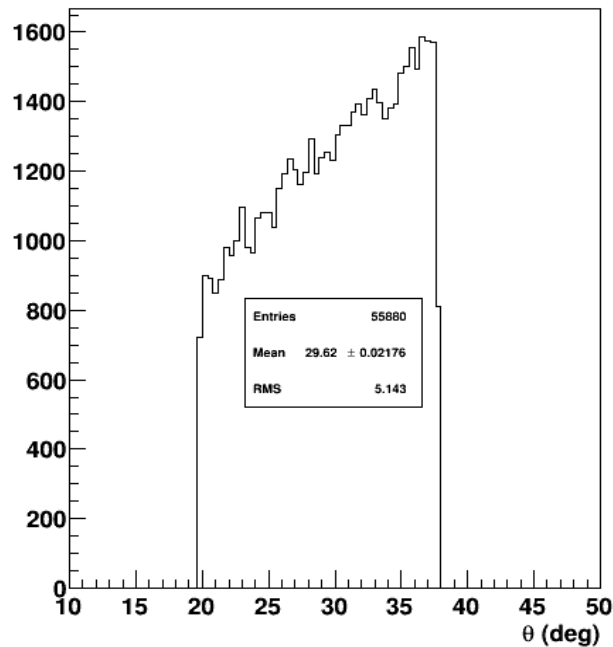
Input Flat Distribution at Last GEM

Last GEM Primary Track Momentum



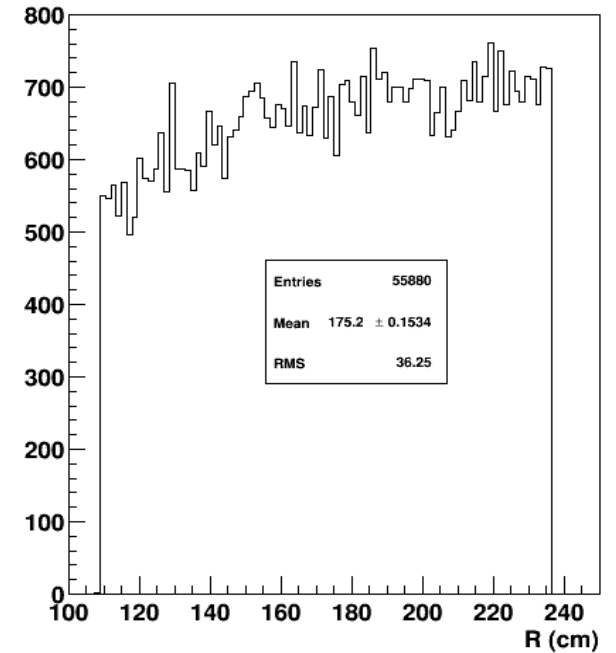
Input Momentum

Last GEM Primary Track Theta



Input Angle

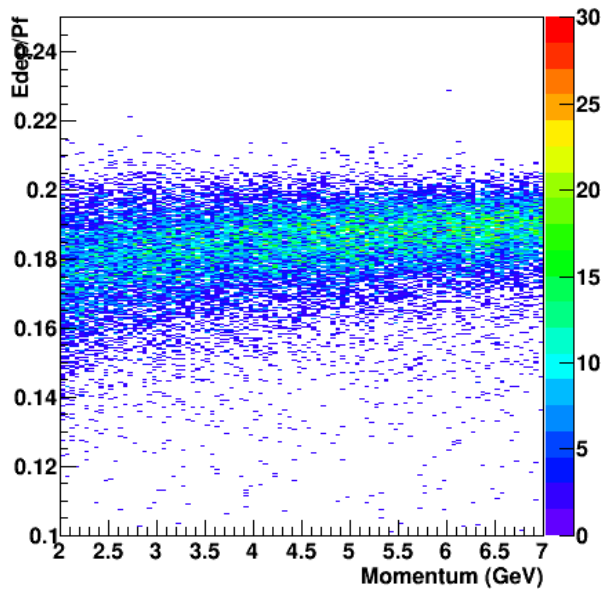
Last GEM Primary Track Hit Radius



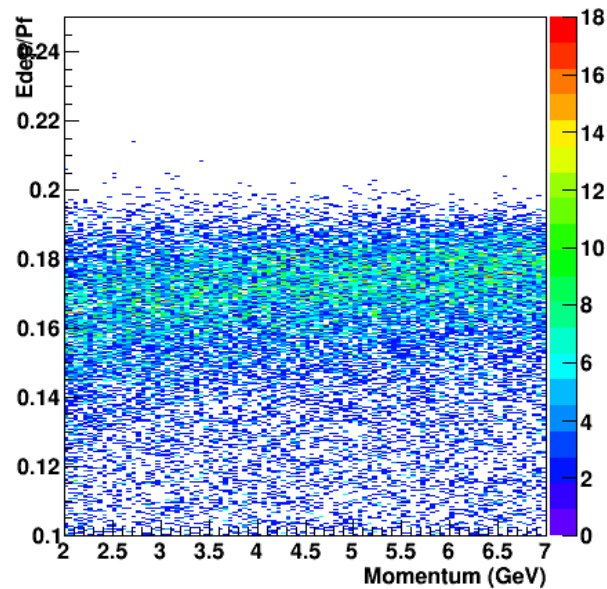
Input Radius

edep over P_f Ratio in Shower

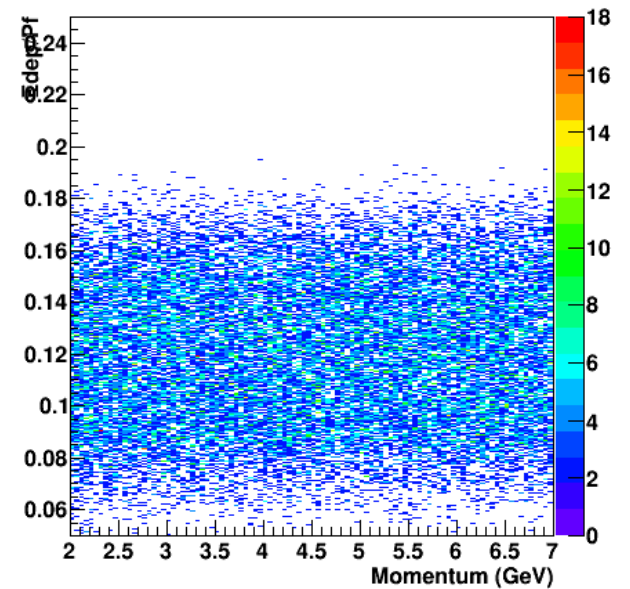
Total Shower Edep over Pf Ratio



6+1 Shower Edep over Pf Ratio



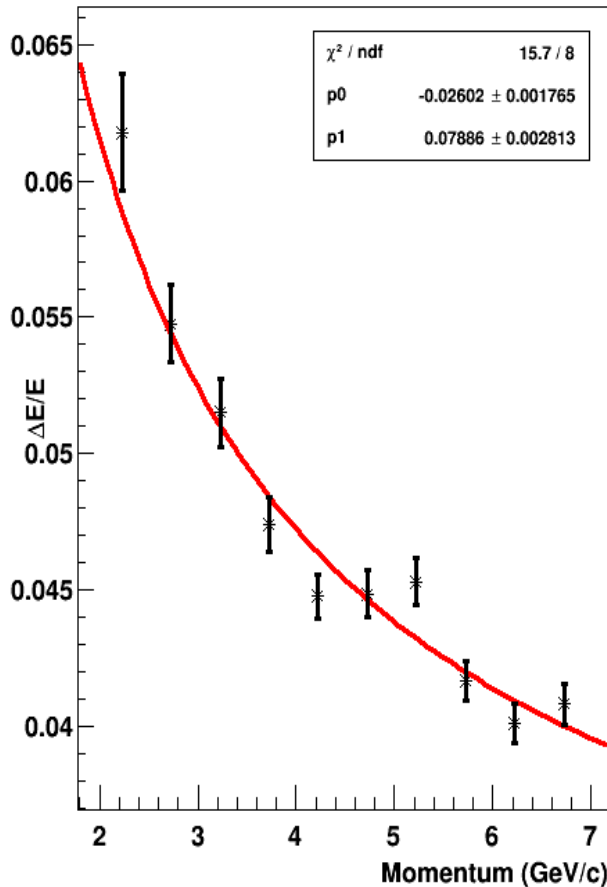
2+1 Shower Edep over Pf Ratio



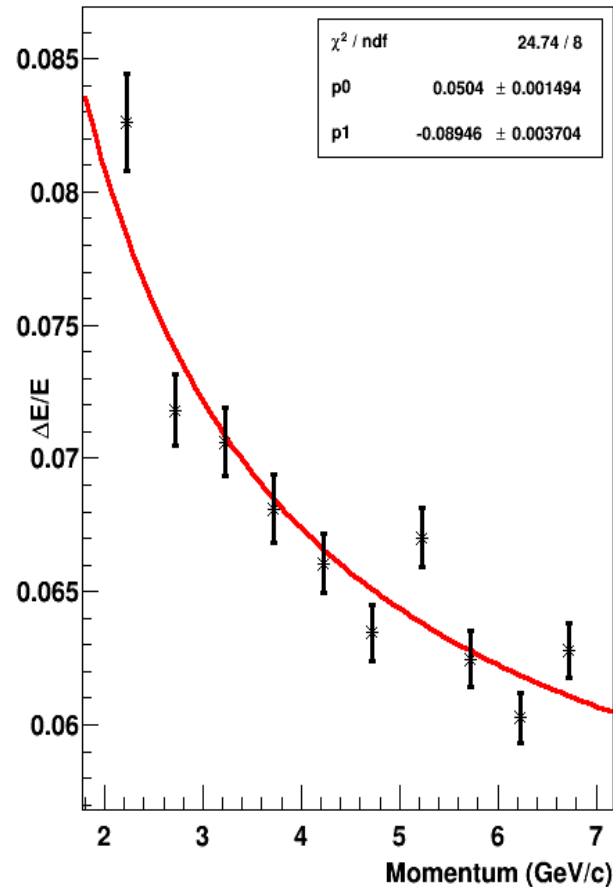
Pre-Shower lead and scintillator included in the simulation

Shower Energy Resolution

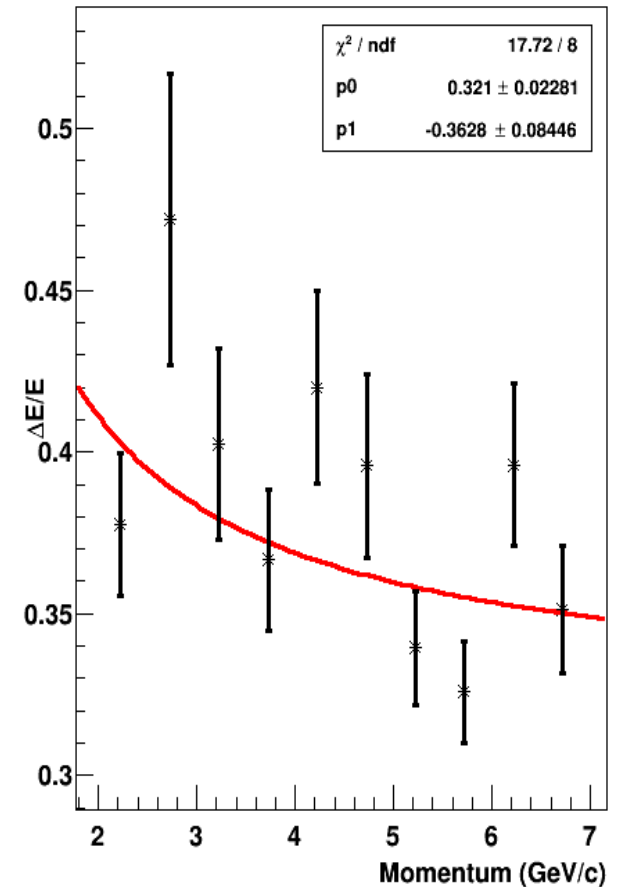
ECAL Shower Total Energy Resolution VS p



ECAL Shower 6+1 Energy Resolution VS p



ECAL Shower 2+1 Energy Resolution VS p

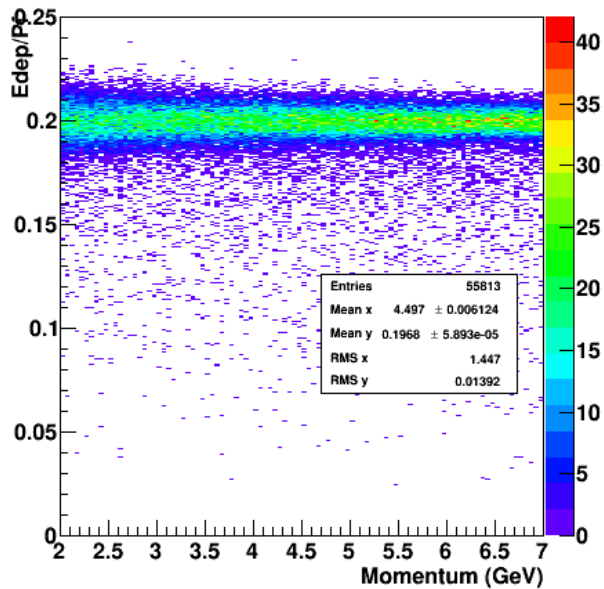


Based on total energy deposit in the Ecal

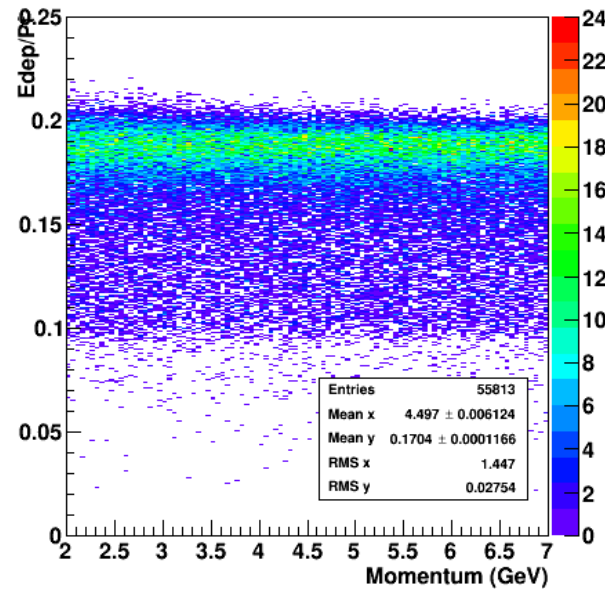
Pre-Shower lead and scintillator included in the simulation

edep over P_f Ratio in Shower

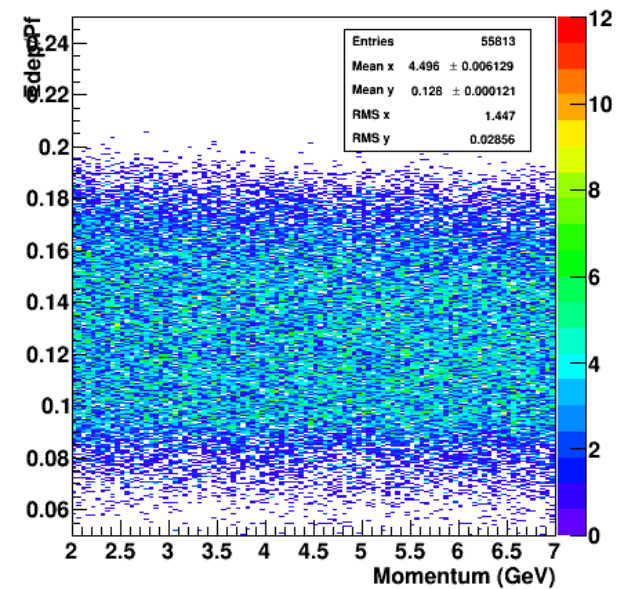
Total Shower Edep over Pf Ratio



6+1 Shower Edep over Pf Ratio



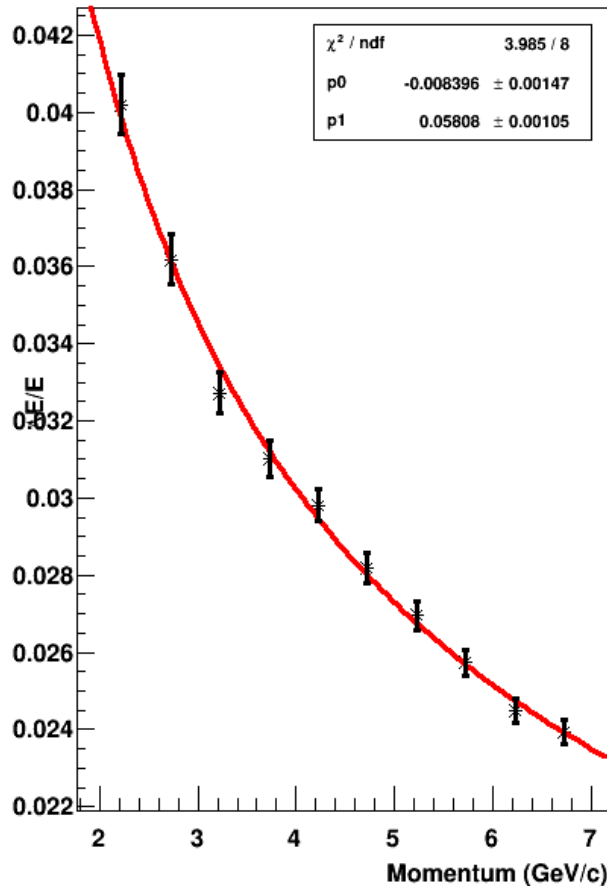
2+1 Shower Edep over Pf Ratio



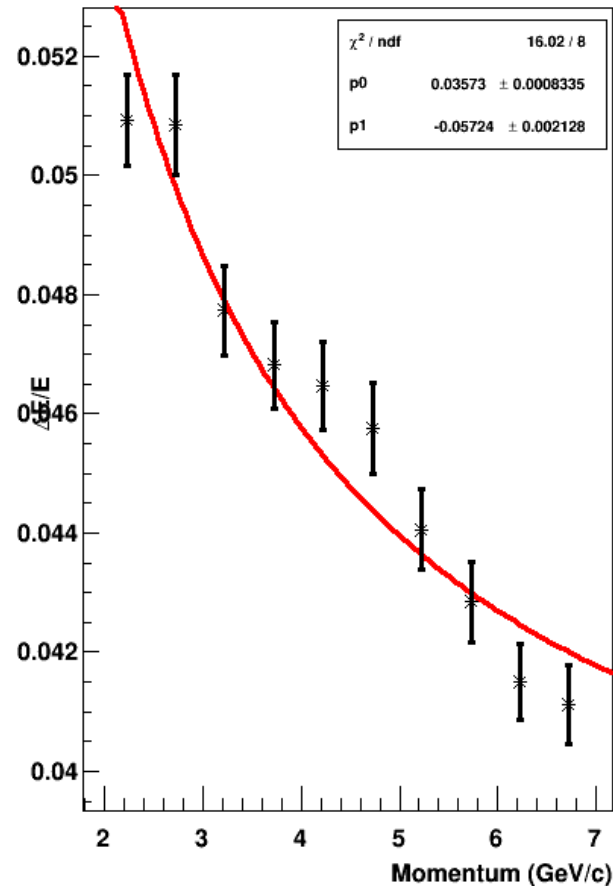
Pre-Shower lead and scintillator not included in the simulation

Pre Shower + Shower Energy Resolution

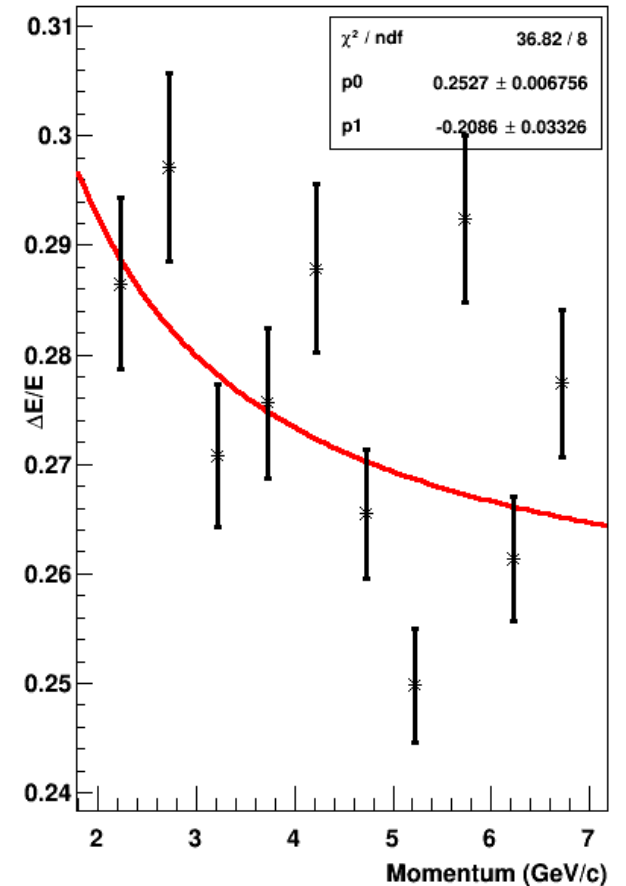
ECAL Shower Total Energy Resolution VS p



ECAL Shower 6+1 Energy Resolution VS p



ECAL Shower 2+1 Energy Resolution VS p

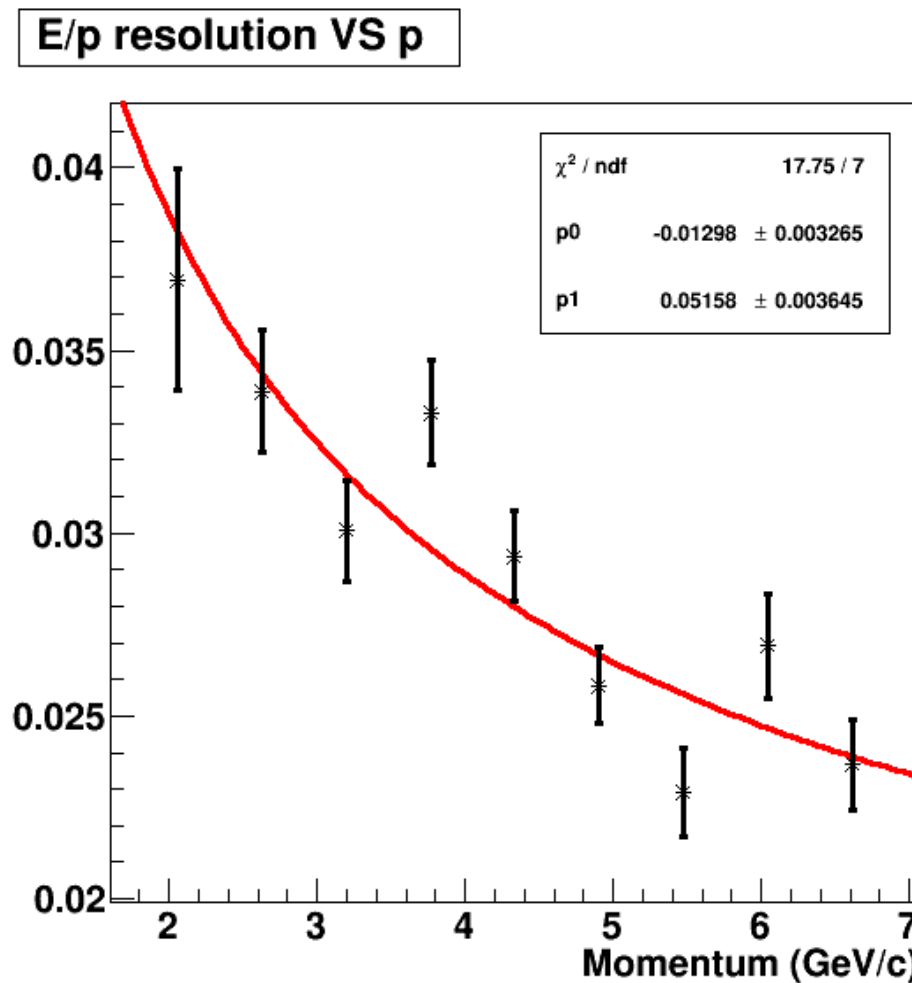


Using total energy deposit in the pre-shower and shower

Pre-Shower lead and scintillator not included in the simulation

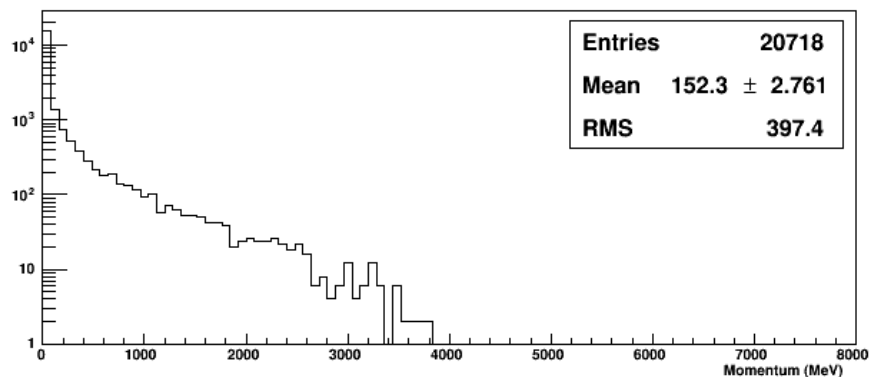
Jin's Energy Resolution (with No Phot. Elec.)

- Jin's estimation was based on ecal (ps+sh) energy deposition
 - No Photo-Electron (PE) contributions

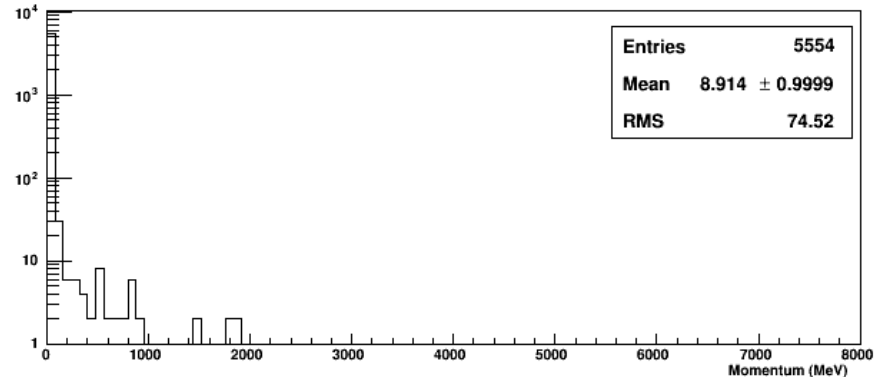


Background due to Radiative Effects

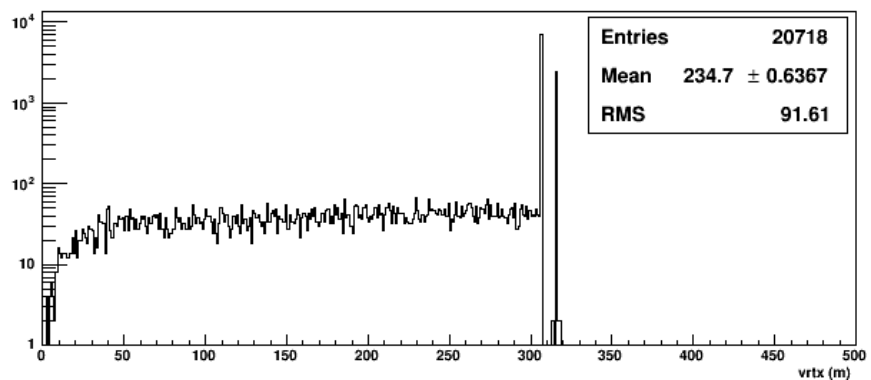
Last GEM Background γ Momentum



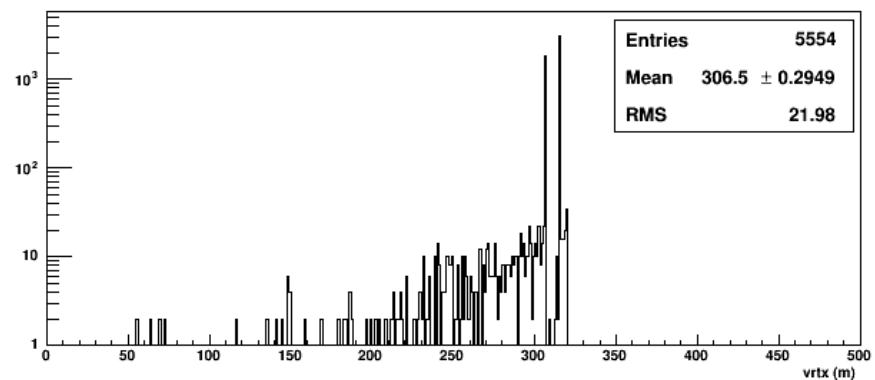
Last GEM Background e^\pm Momentum



Last GEM Background γ vtx



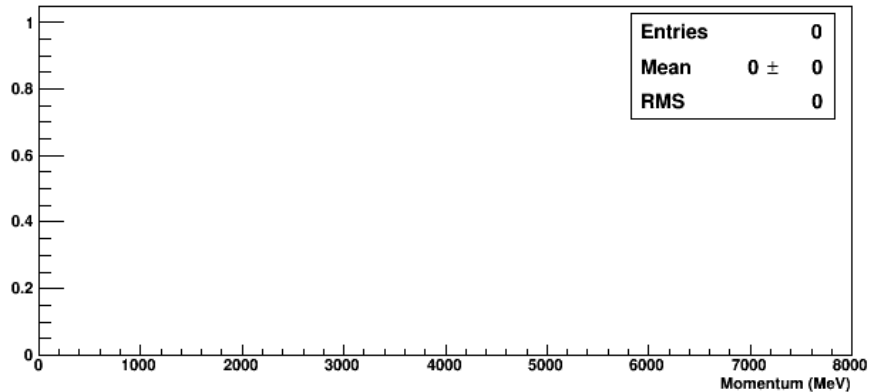
Last GEM Background e^\pm vtx



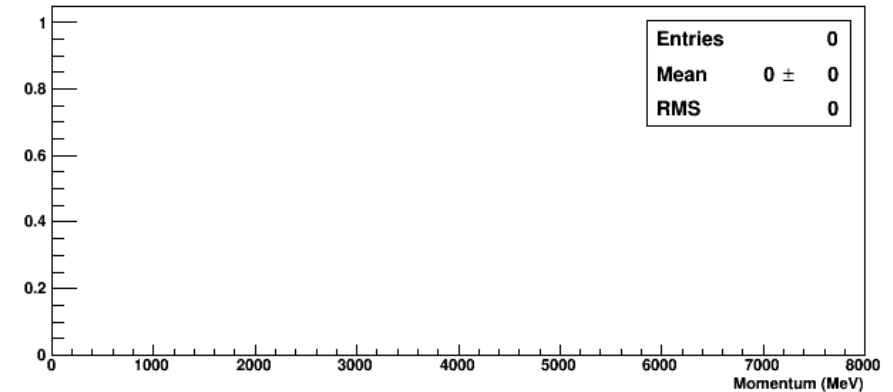
Simulation included empty target geometry, last 2 GEMs, and ECAL in air medium

Background due to Radiative Effects

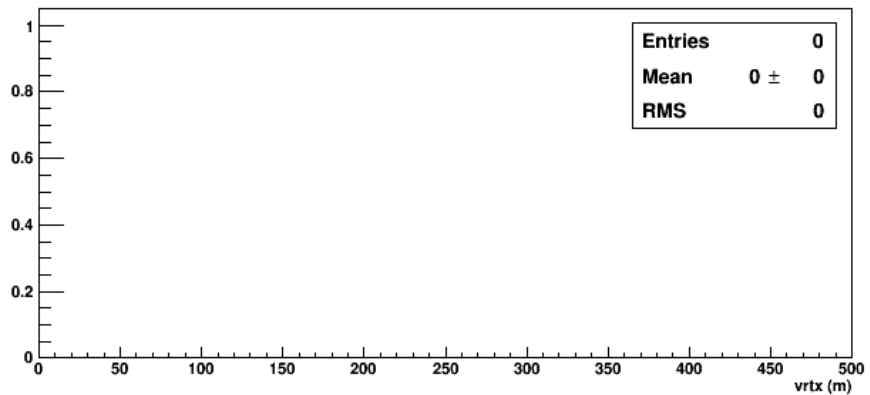
Last GEM Background γ Momentum



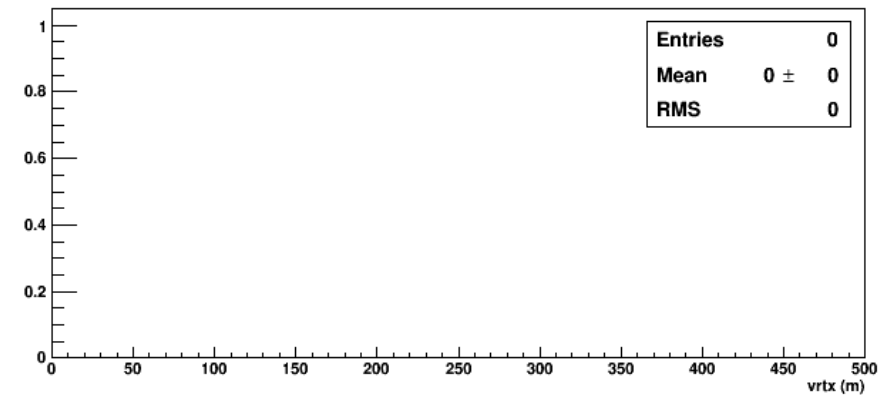
Last GEM Background e^\pm Momentum



Last GEM Background γ vtx



Last GEM Background e^\pm vtx



Simulation only include ECAL and sensitive detector replacing last GEM in vacuum medium