

# BigBite Simulation

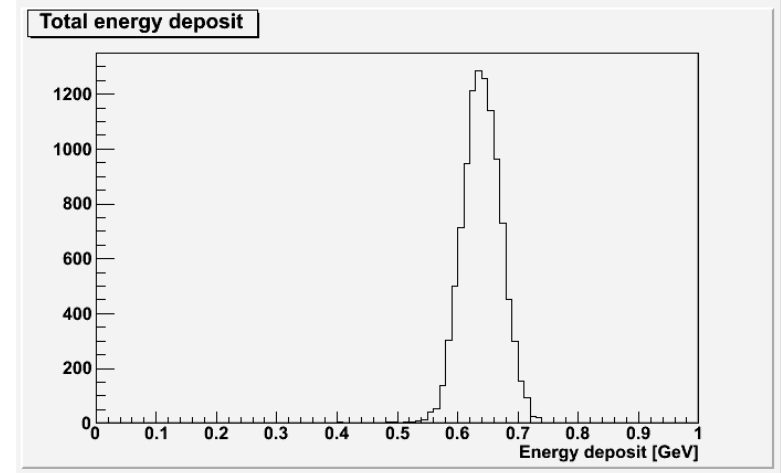
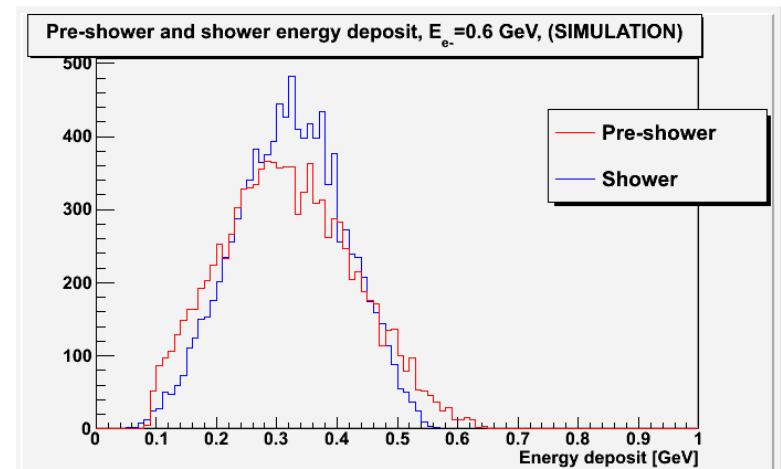
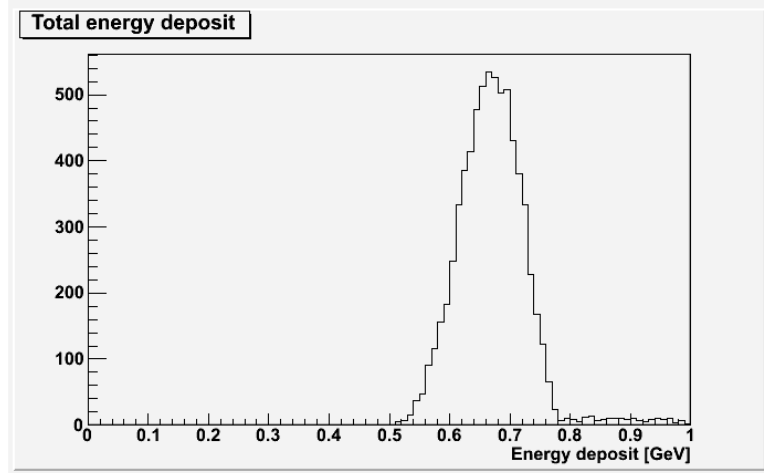
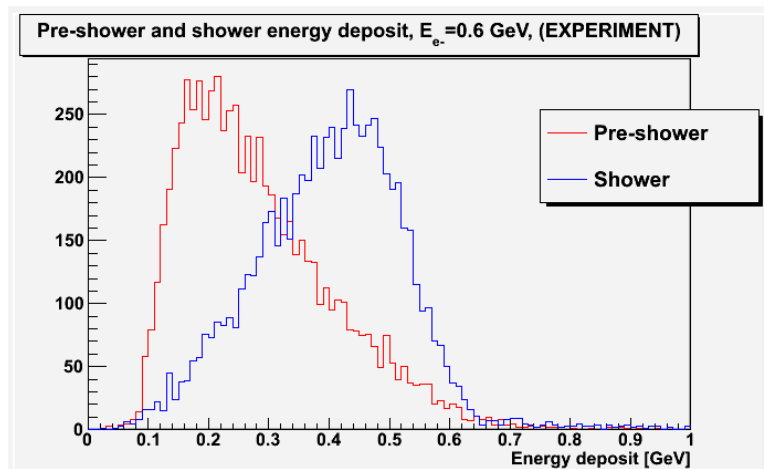
11/18/2011

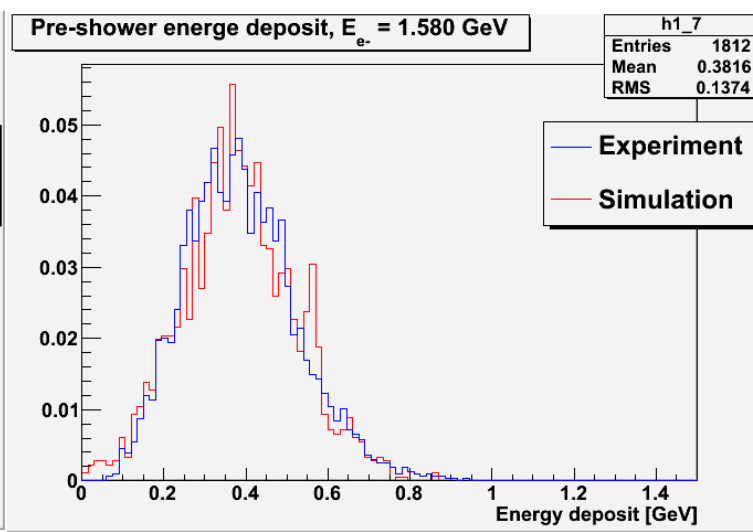
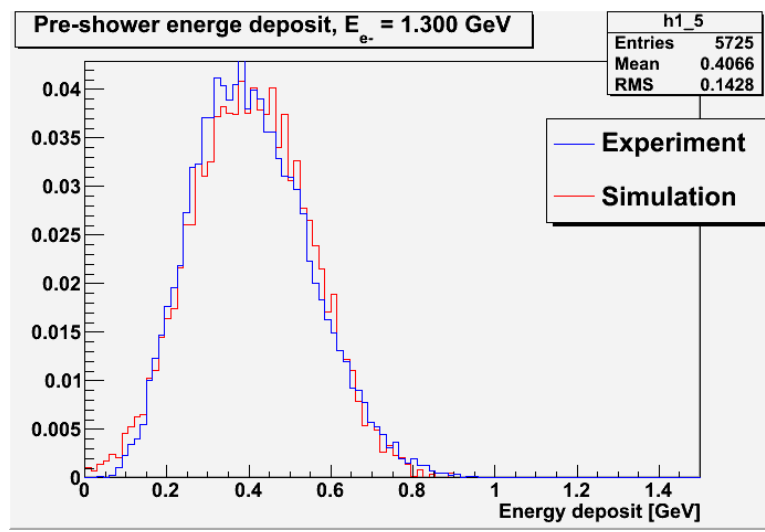
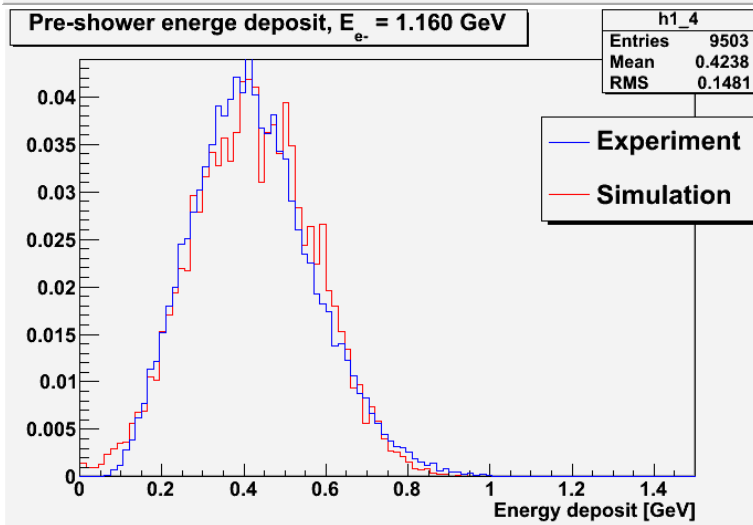
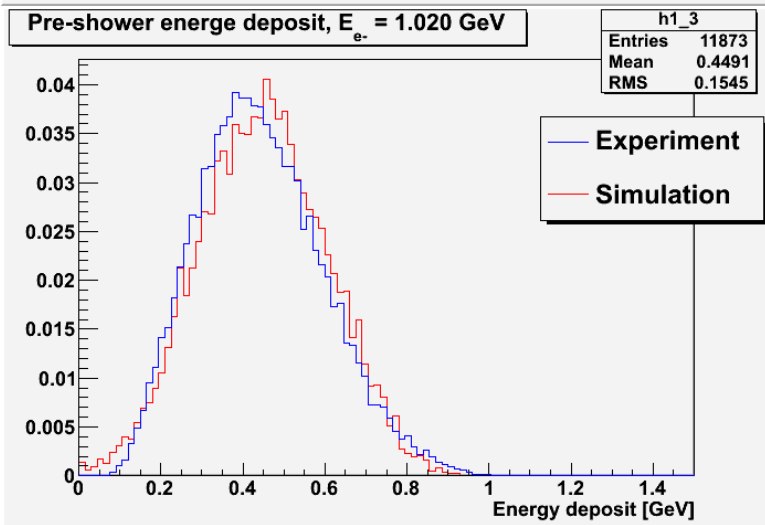
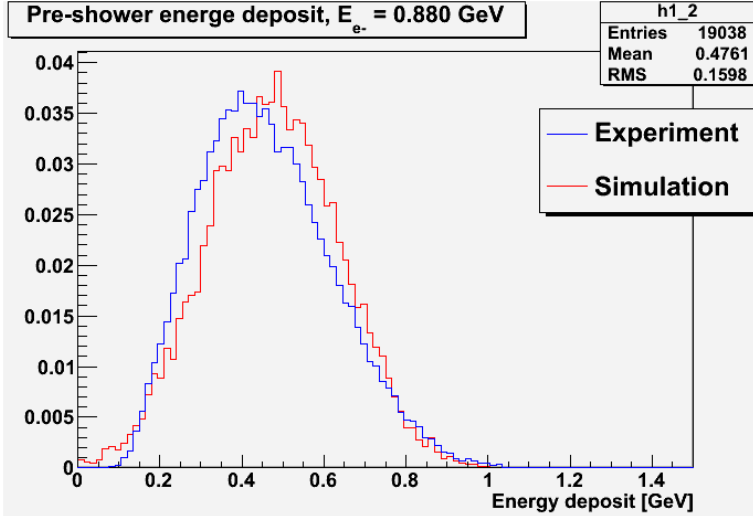
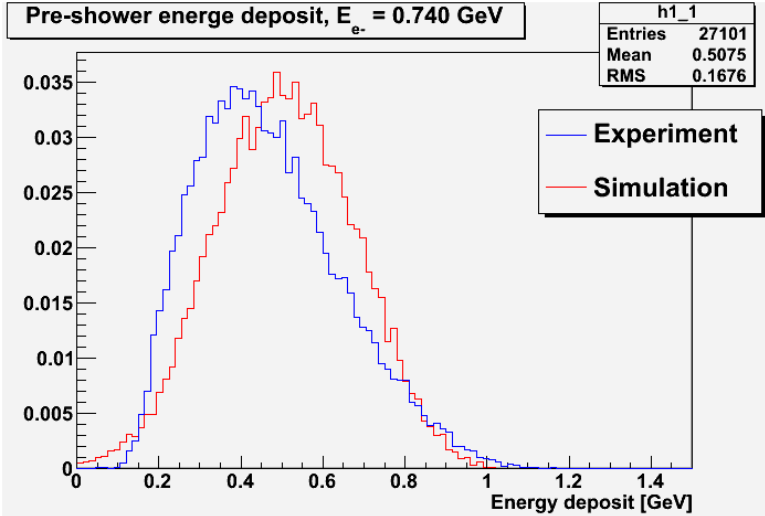
Vahe Mamyán

# Pre-shower energy spectrum

Energy deposition in pre-shower and shower are compared with geant4 simulation at  $E_{\text{beam}} = 0.6 \pm 0.01$  GeV range.

Shapes do not agree due to negative pions that pass all cuts including Cerenkov cut. The contribution of negative pions is present up to 1 GeV, see next page.





# Simulation of negative pions

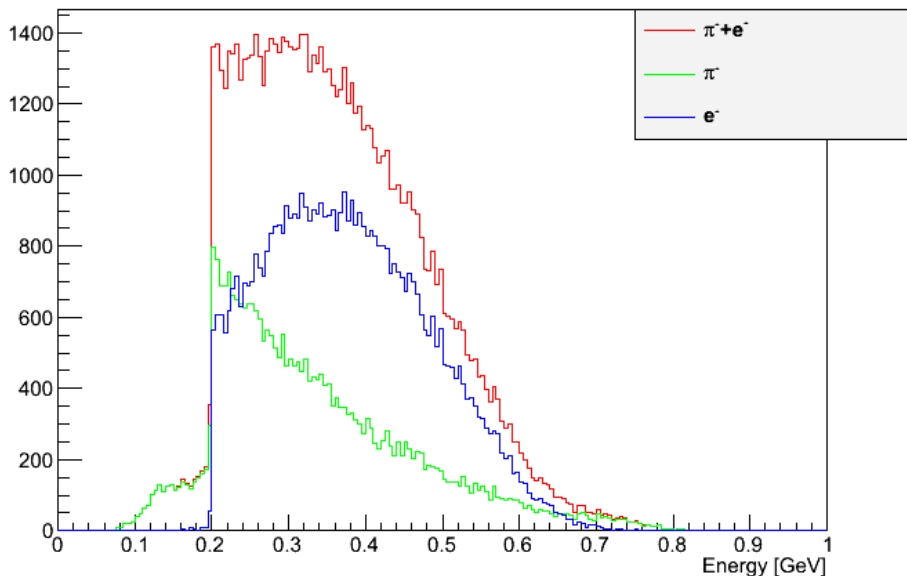
- ◆ Simulation is based on Wiser parametrization of pion cross section.
- ◆ Cross section is based on proton.

Right first plot is pion and electron pre-shower energy distributions without Cerenkov cut.

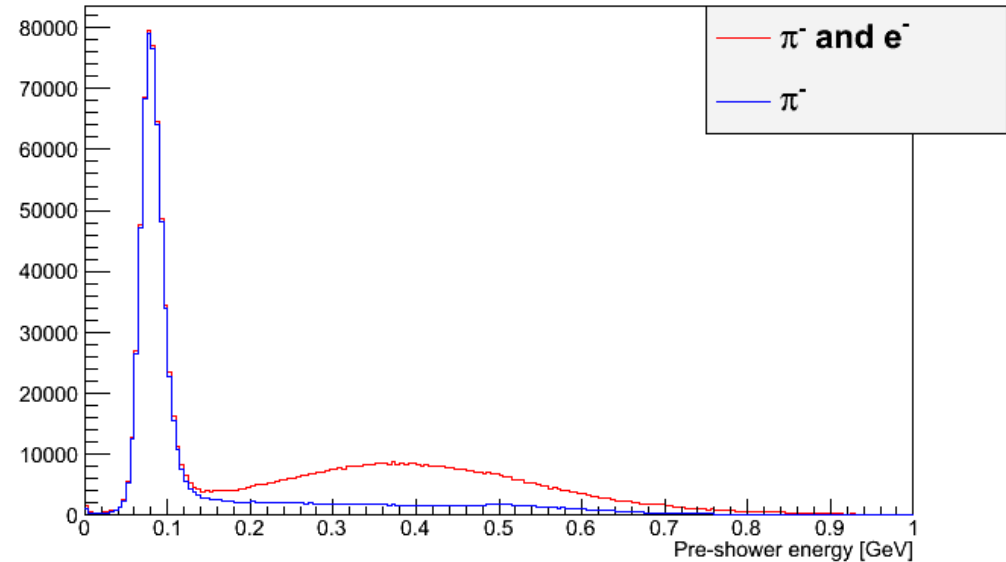
Right second plot is assuming Cerenkov has 1:10 rejection power. The long tail shows negative pion contamination.

Pre-shower energy distribution asymmetry due to pion contamination.

Pre-shower energy, BB\_P = 0.6 GeV



Negative pions and electrons



Cerenkov rejection power 1:10

