UT – Arlington
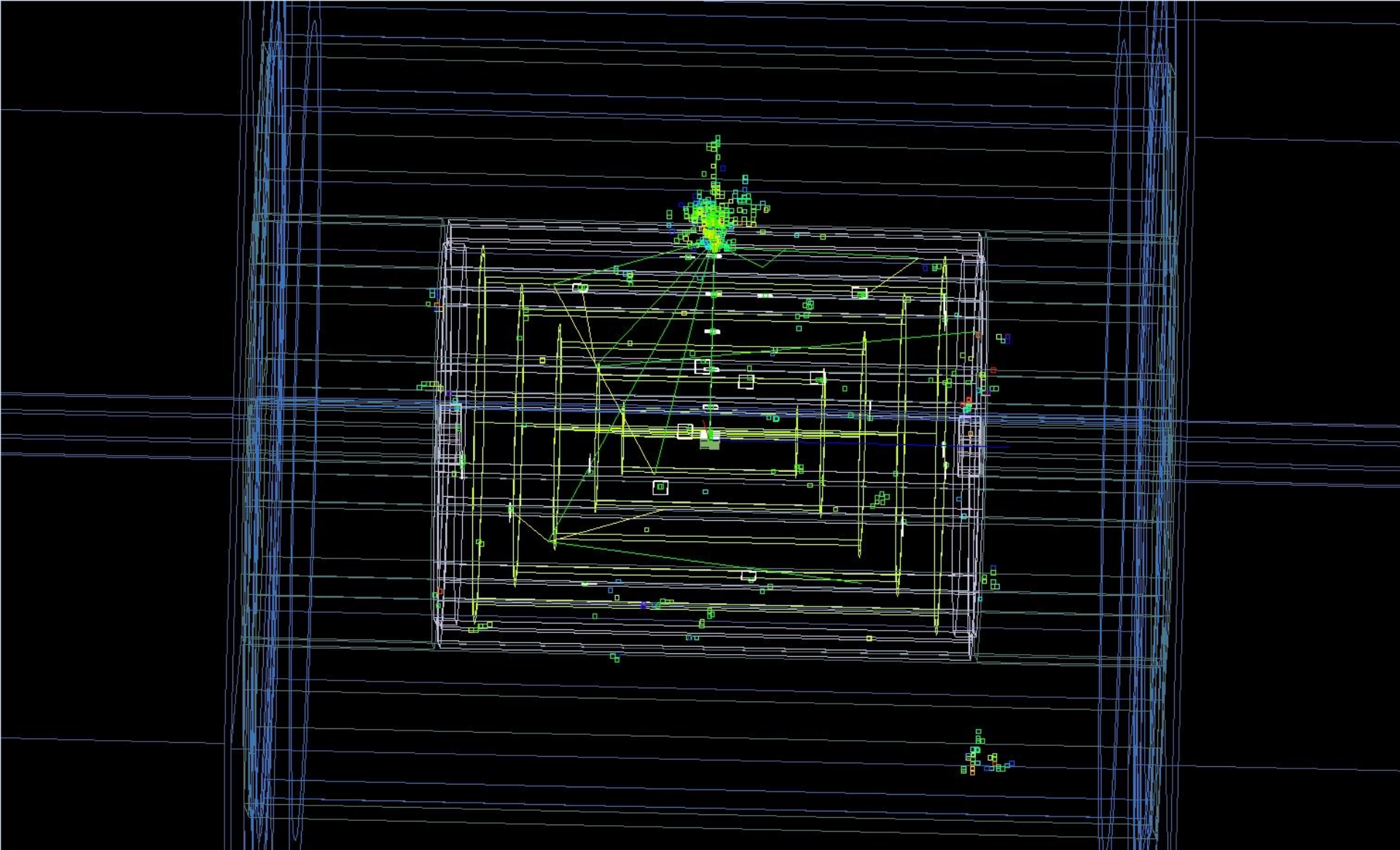# Single Particle SiD Simulations
Using sidloi3_scint3x3

Dr. Andrew White

Ross McCoy

Andrew Myers

10 GeV Pion inside sidloi3_scint3x3

Software Versions Used to Generate Data

- ilcInstall-v01-17-06 and ilcInstall-v01-17-08-sid
    - Detector model sidloi3_scint3x3 used
    - PandoraPFANew v00-16 due to using SLIC to generate events
        - Need to switch between v01-17-06 and v01-17-08-sid for running RECO, PFA, and Dr. Stanitzki's PFAnalyzer steering file
    - Marlin v01-05
    - MarlinPandora v00-14
    - PandoraAnalysis v00-06
    - SlicPandora v01-01-01
    - SLIC v04-00-00

# Difficulties Encountered in Generating Data

- Multiple and conflicting sources of documentation scattered across various websites
  - Dr. Strube has given us accounts with University of Bristol Confluence wiki
  - UTA has temporary Confluence set up but will focus on writing documentation for U. Bristol so there is a single up-to-date source of instructions for SiD
- ILCSoft v01-17-08-sid does not work for using SLIC to generate events
  - Downgraded to v01-17-06 and pieced together working process with Dr. Strube's help
  - Discontinued efforts to use ilcInstall-v01-17-09 as we will migrate to DD4HEP in near future and output format will remain unchanged
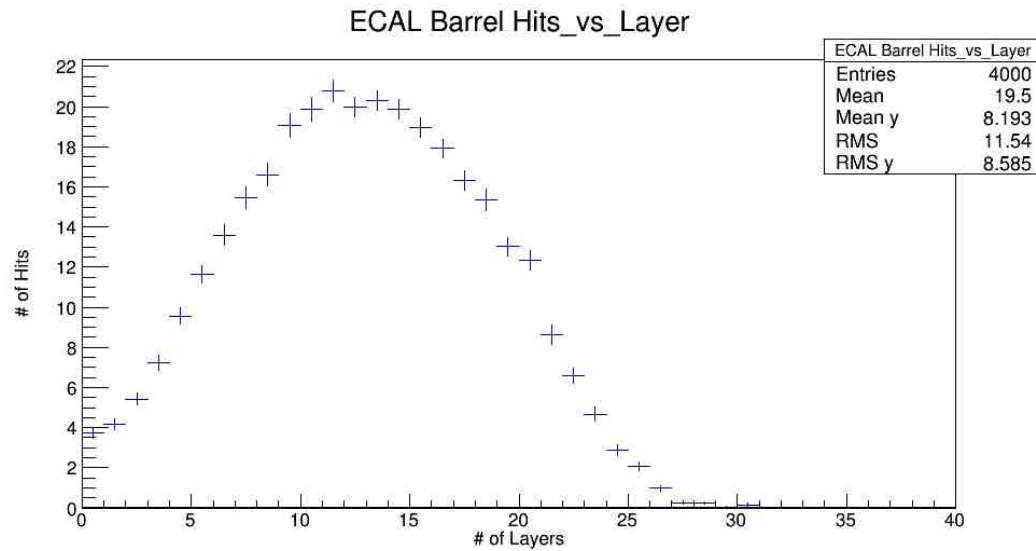
10 GeV Electrons
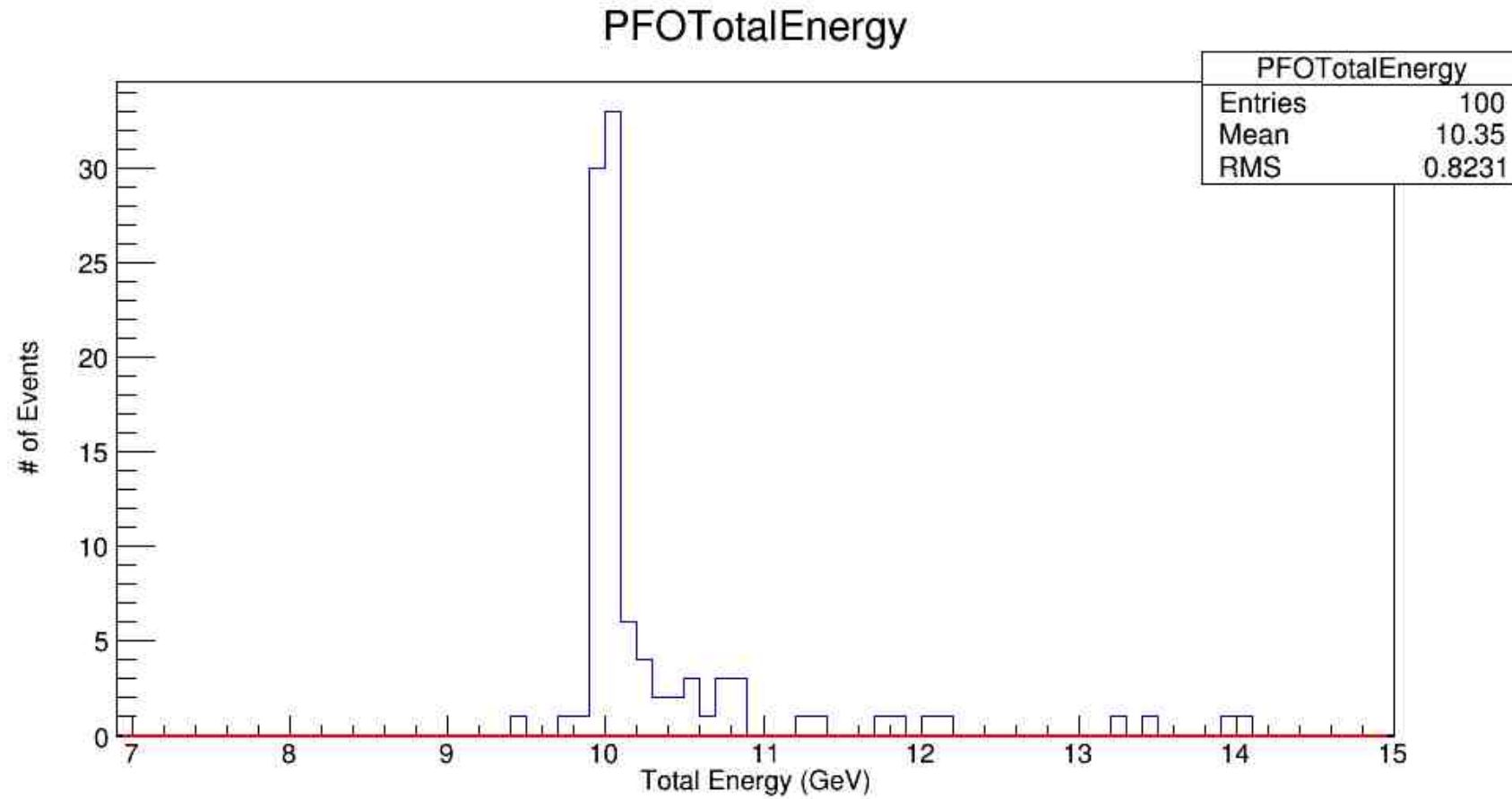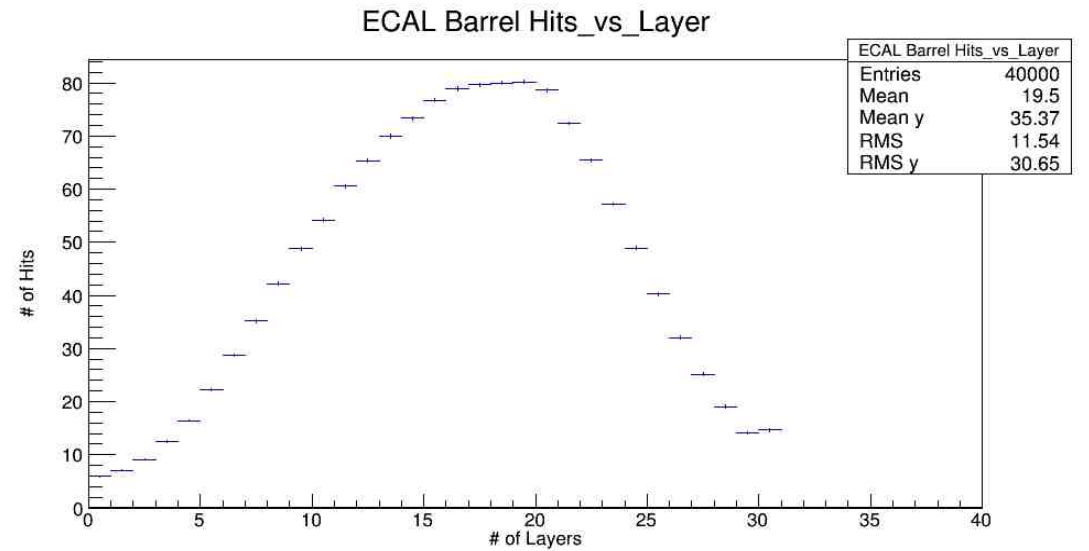

Fitting did not work. (?)
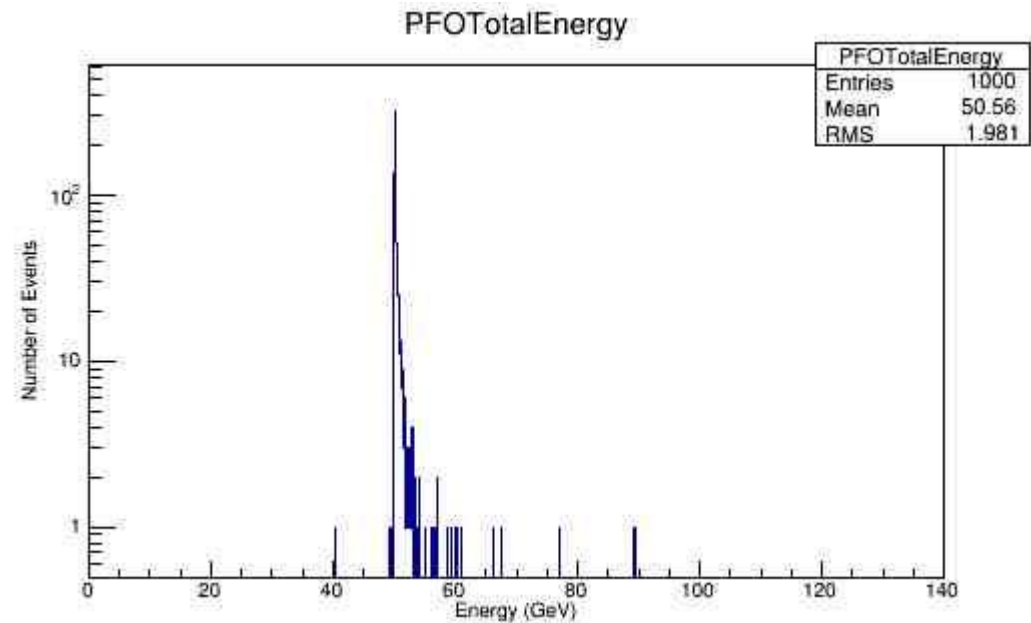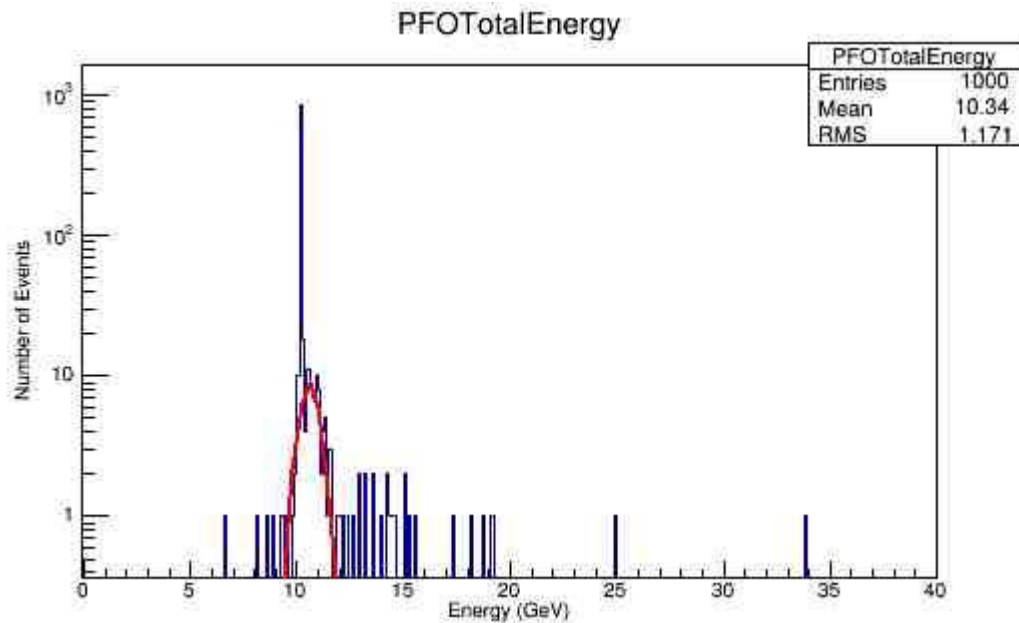
100 GeV Electrons
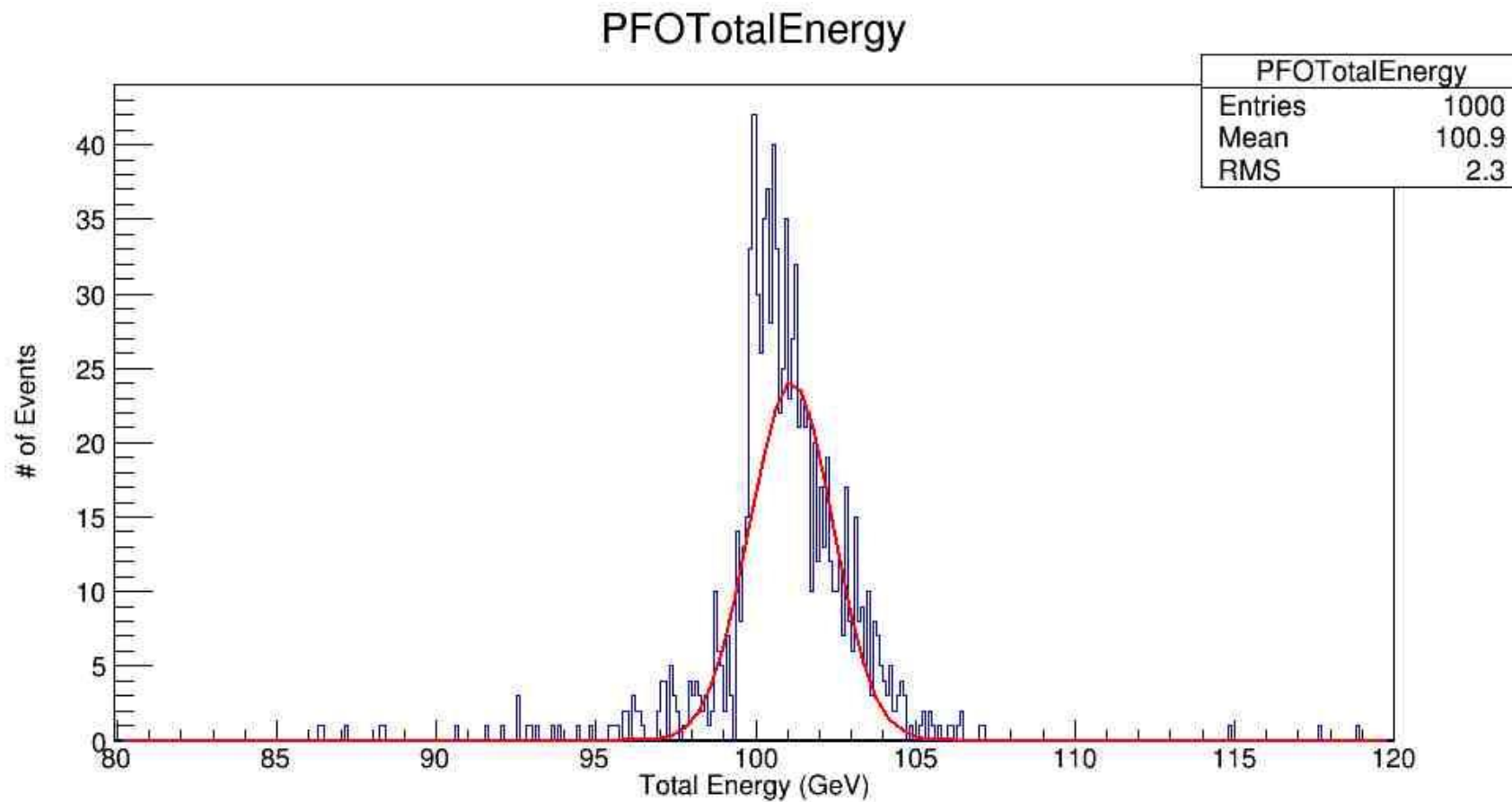
FWHM = 3.04881
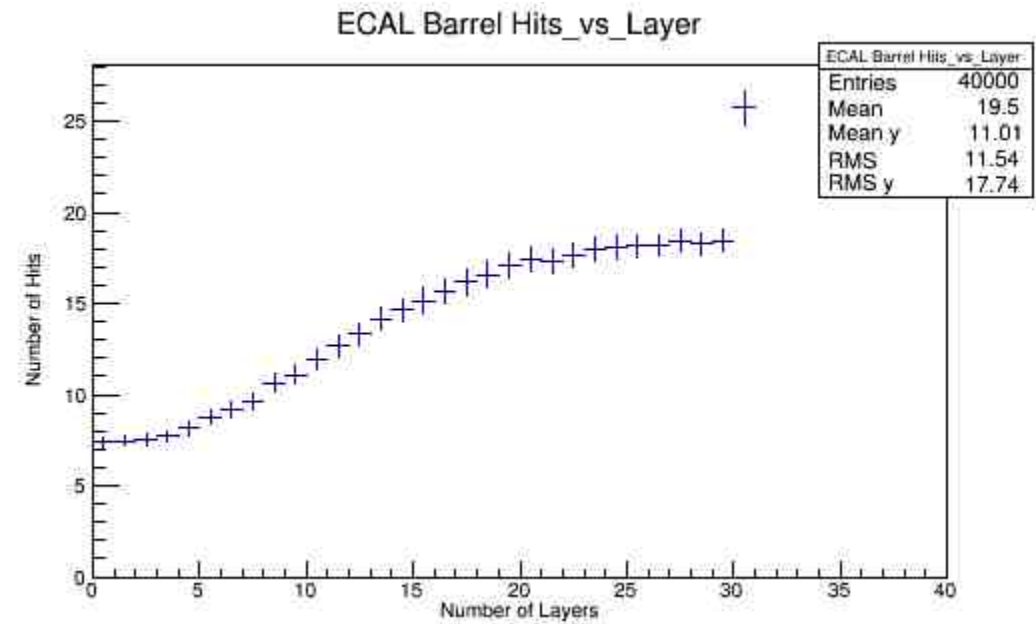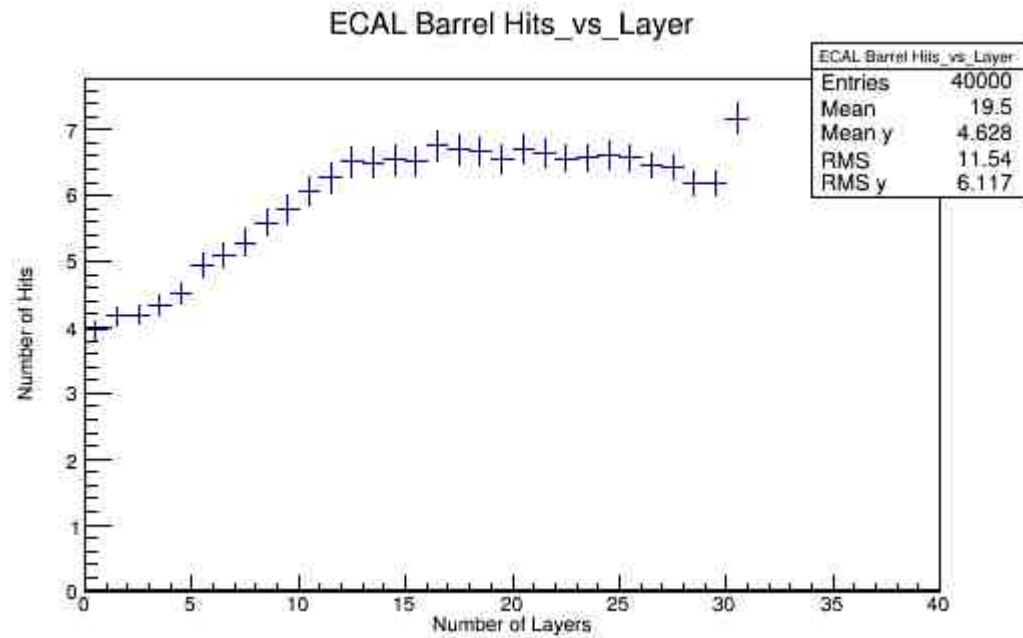
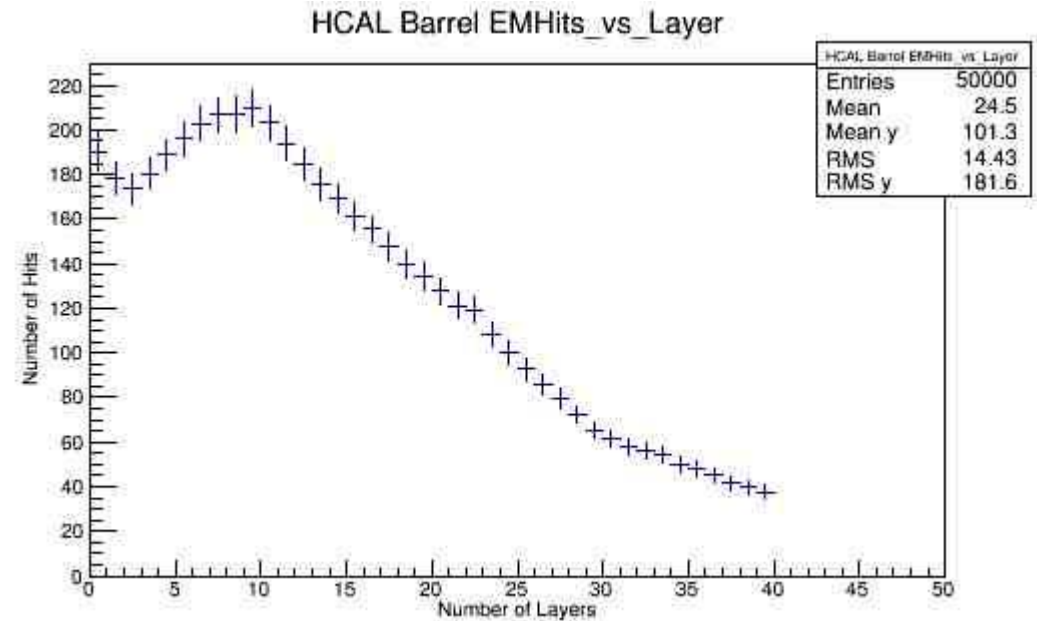# ECAL Barrel Hits vs Layer
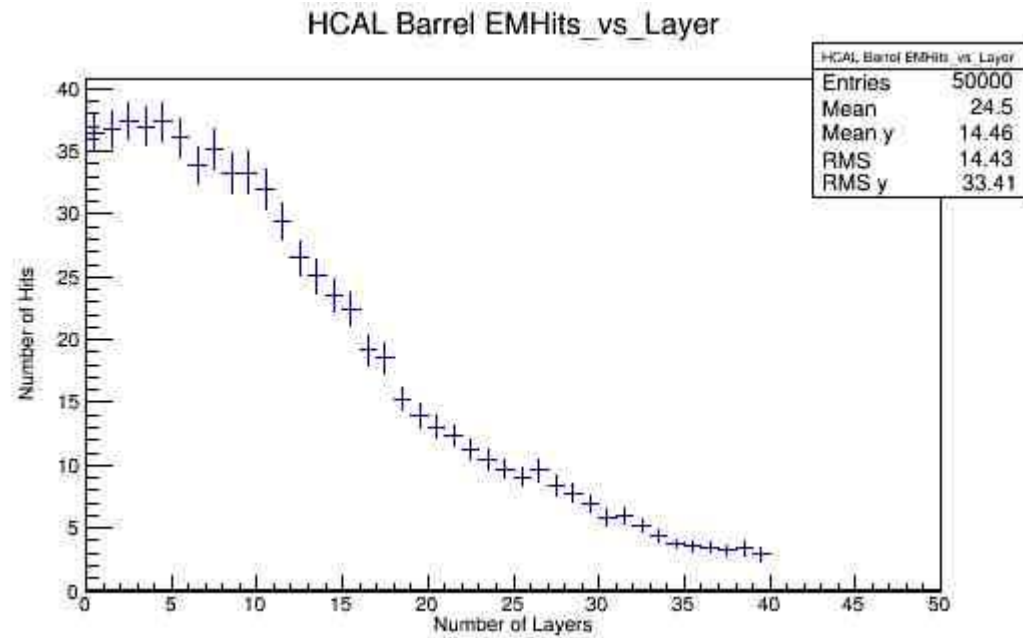
10 GeV

100 GeV

10 GeV and 50 GeV Pions
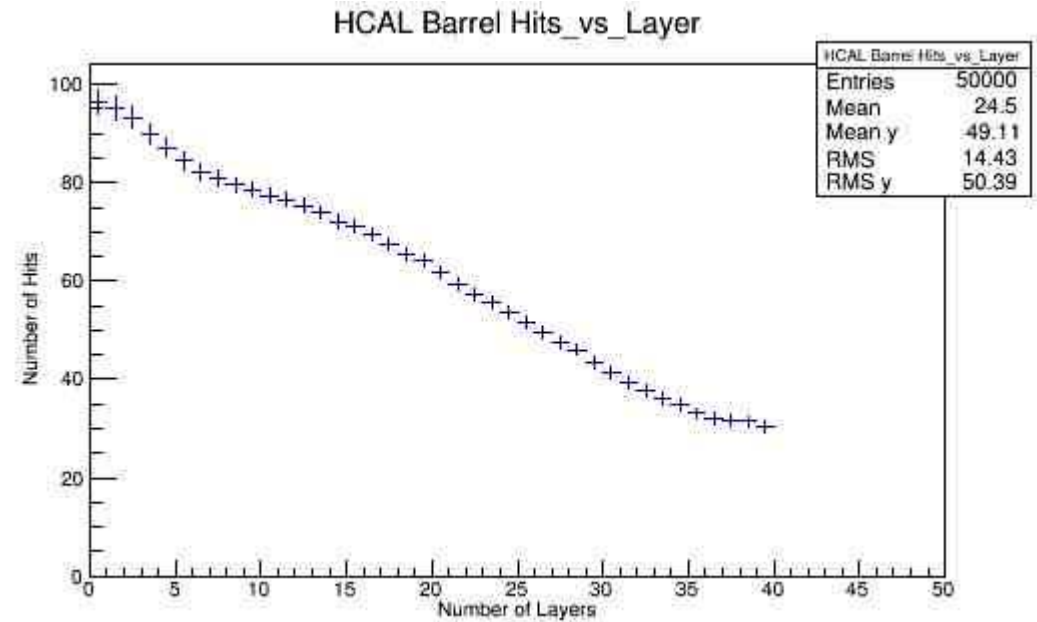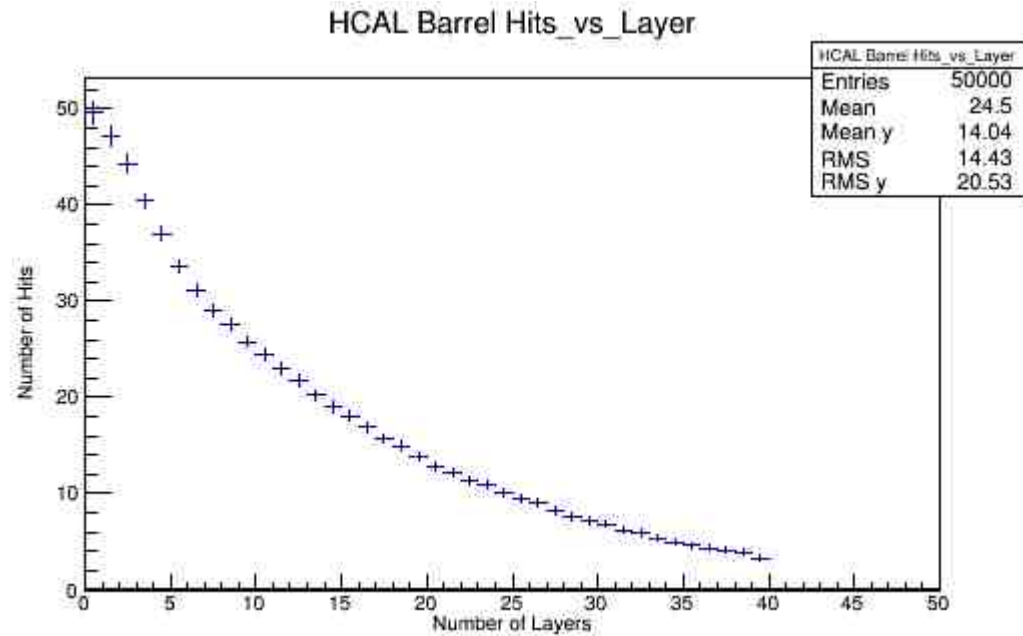

*Could not generate a Gaussian fitting for 50 GeV

10 GeV and 50 GeV Pions

10 GeV and 50 GeV Pions

HCAL Barrel EMHits_vs_Layer

HCAL Barrel EMHits_vs_Layer	
Entries	50000
Mean	24.5
Mean y	14.46
RMS	14.43
RMS y	33.41

HCAL Barrel EMHits_vs_Layer

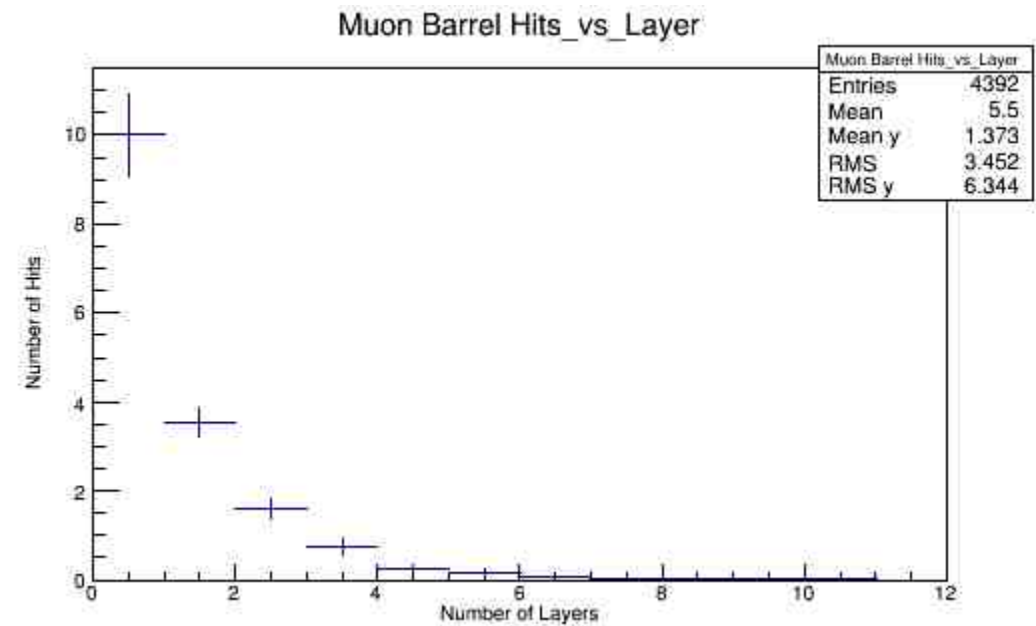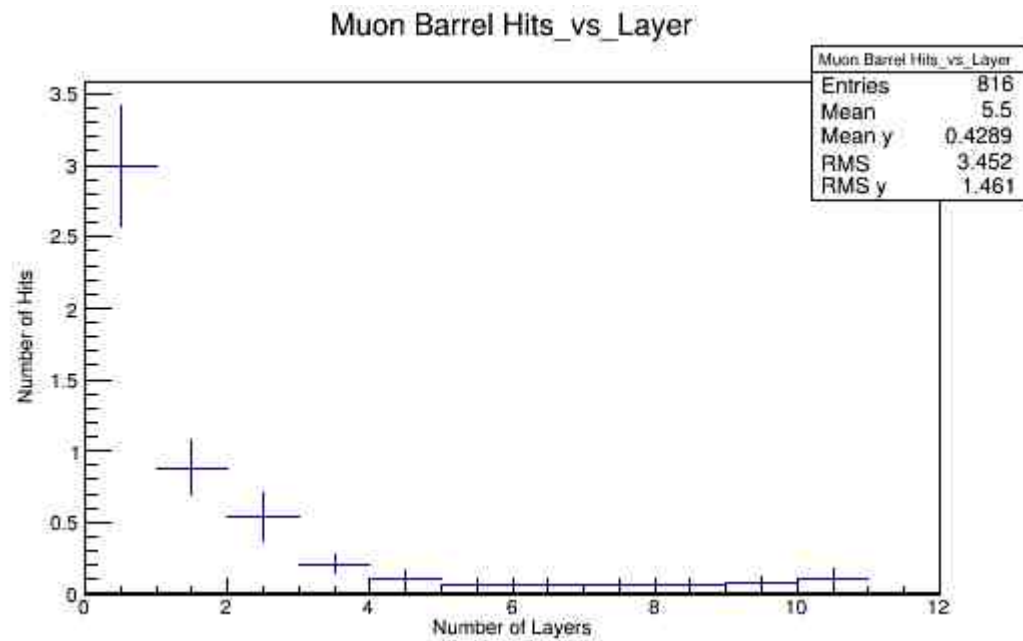| HCAL Barrel EMHits_vs_Layer	
Entries	50000
Mean	24.5
Mean y	101.3
RMS	14.43
RMS y	181.6

10 GeV and 50 GeV Pions

10 GeV and 50 GeV Pions

Conclusions and Plans

- After a struggle to get simulation working – now have initial single particle results

- Single electron and pion results – look ~OK, but some features to be understood

- Next: further single particle checks – e.g. energy resolution vs. energy

- Then: jet events…will need significantly more computing resources!