

# Cosmic muon production for the endcaps, test samples

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Aim:

- to have more statistics of muon data for endcaps, for basic consistency checks
- to get an estimation, if the detectors see something

The geometry cut:

- the muons were generated from  $Z = -300$  m up to the maximal  $Z$ , which depends on cut on the angle
- the maximal "impact angle" was chosen for each sample. The angle is measured from vertical
- the "origin" around which should muons come was chosen on the bottom front edge of endcap cryo
- the radius around origin was chosen to be the endcap depth

- 1000 files were produced for each max. impact angle
- each file contains 1000 simulated muons, which correspond to real time showed in following table:

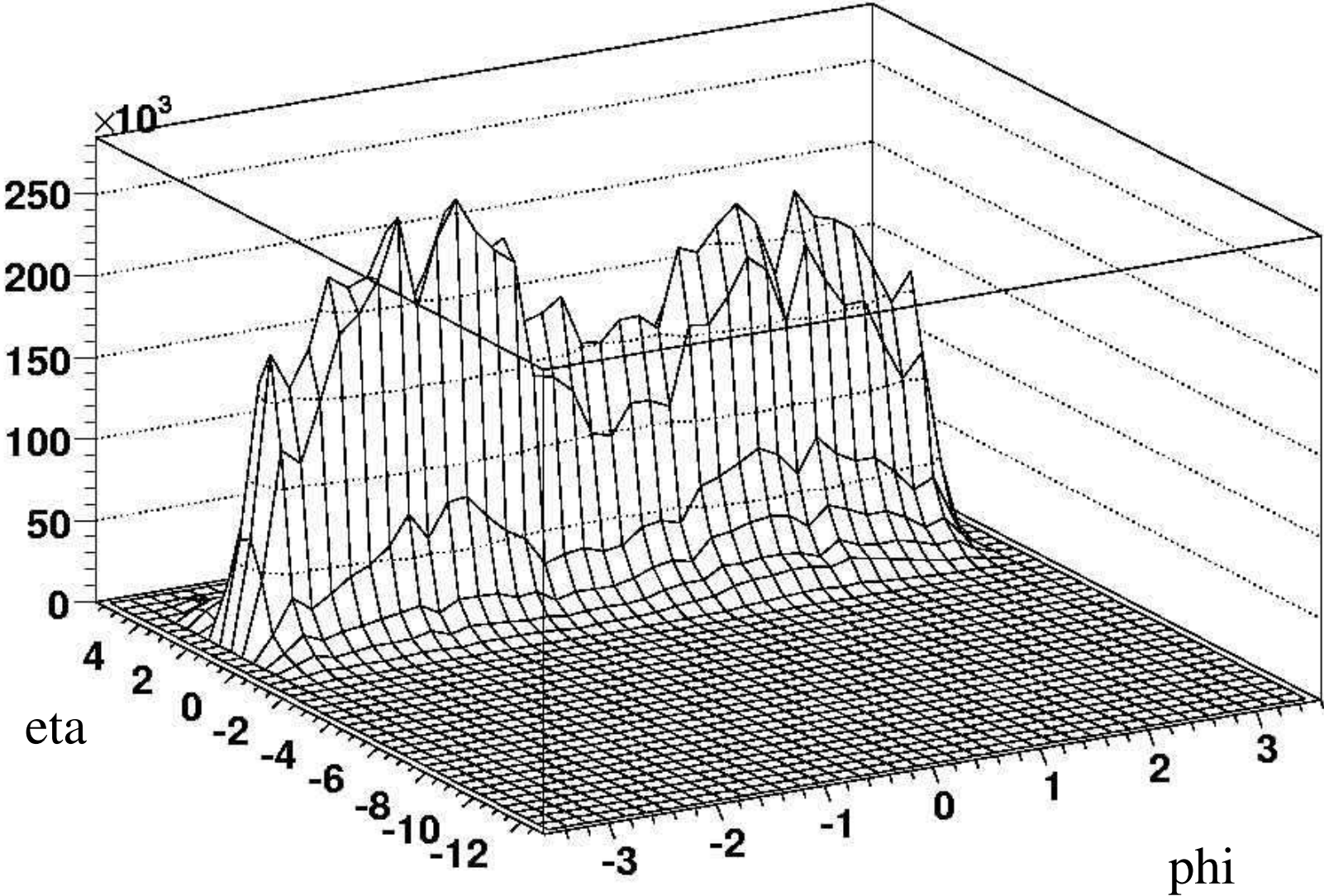
Max. impact angle	45 deg.	60 deg.	75 deg.
Real time per 1000 muons	19.2 s	15.8 s	15.2 s

- digitization is done without noise
- in reco CBNT also the CaloInfo block and Cells block was included (in addition to Clusters)

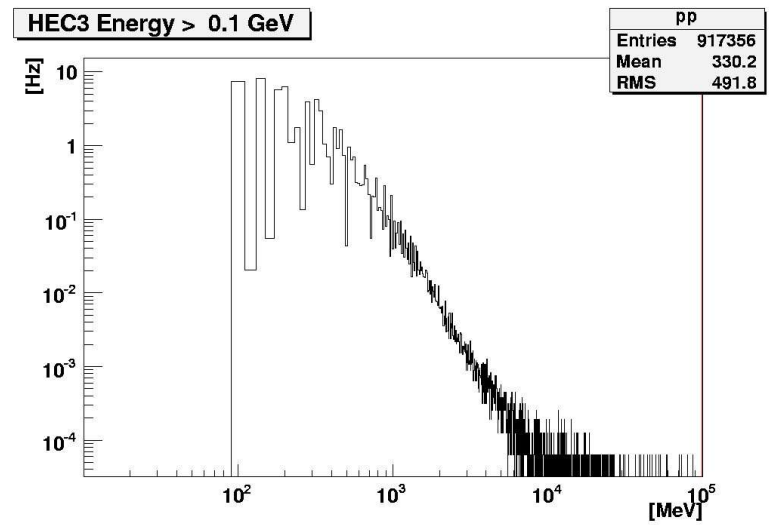
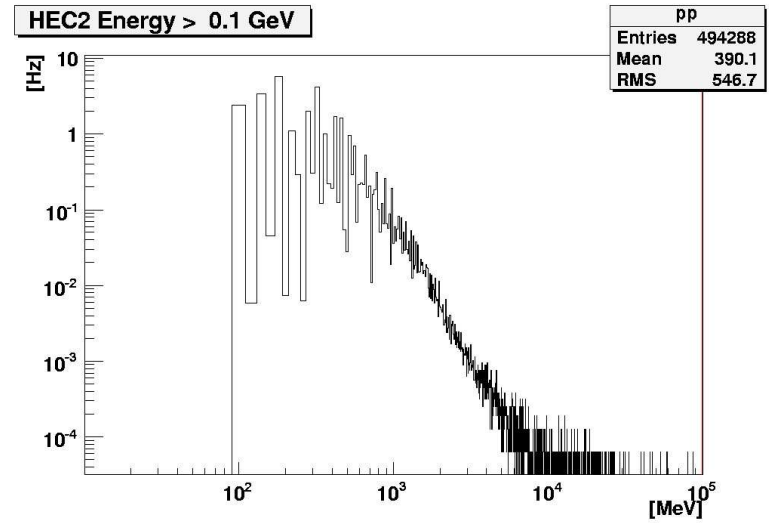
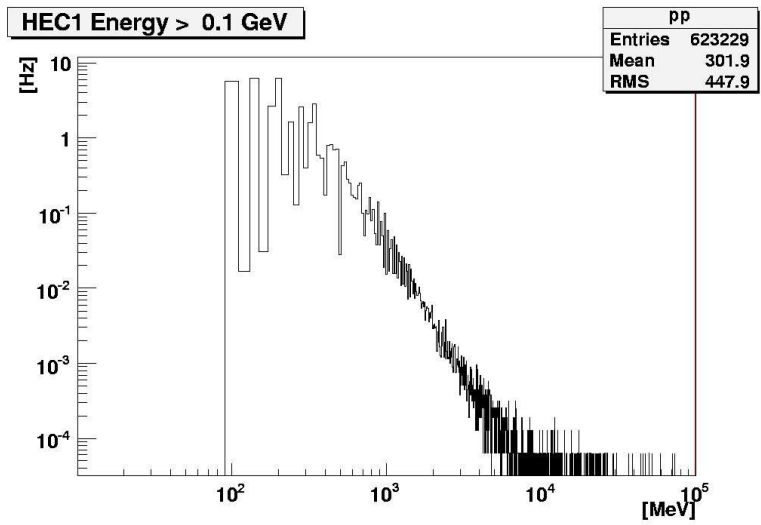
Max. impact angle	Simu. and digit. release	Simu. additional tags
45 deg.	10.4.1	CommissionUtils-00-00-05 CosmicGenerator-00-00-11
60 and 75 deg.	10.5.0	CommissionUtils-00-00-05 CosmicGenerator-00-00-11 CavernInfraGeoModel-00-00-10

Max. impact angle	Reco. release	Reco. additional tags
45 deg.	10.5.0	CaloRec-02-06-34
60 and 75 deg.	10.5.0	CaloRec-02-06-34

**EtaCellsLAr:PhiCellsLAr**

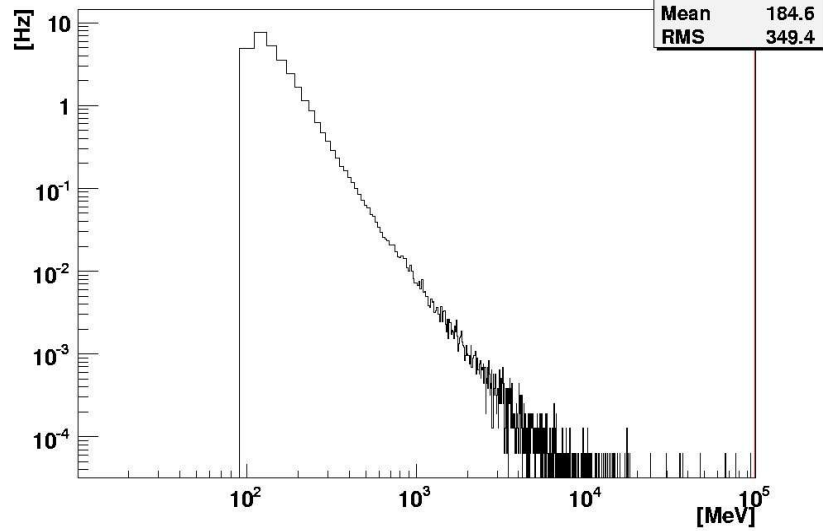


# 60 deg. HEC

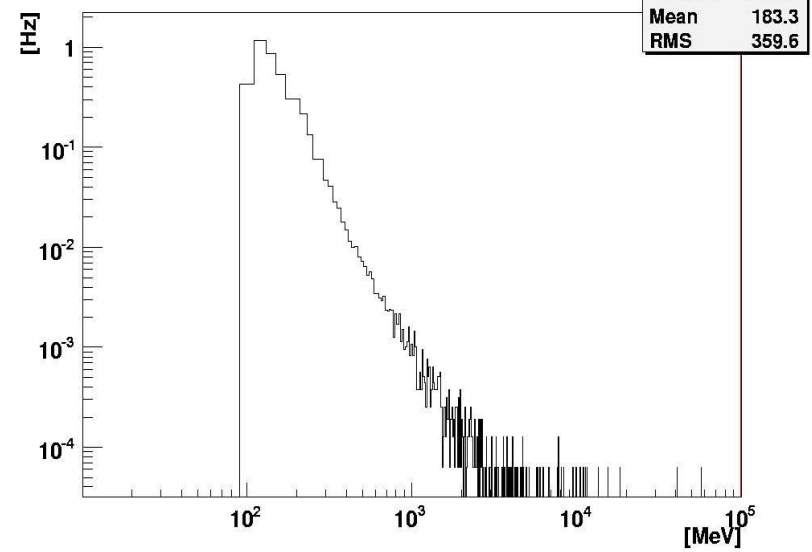


# 60 deg. FCAL

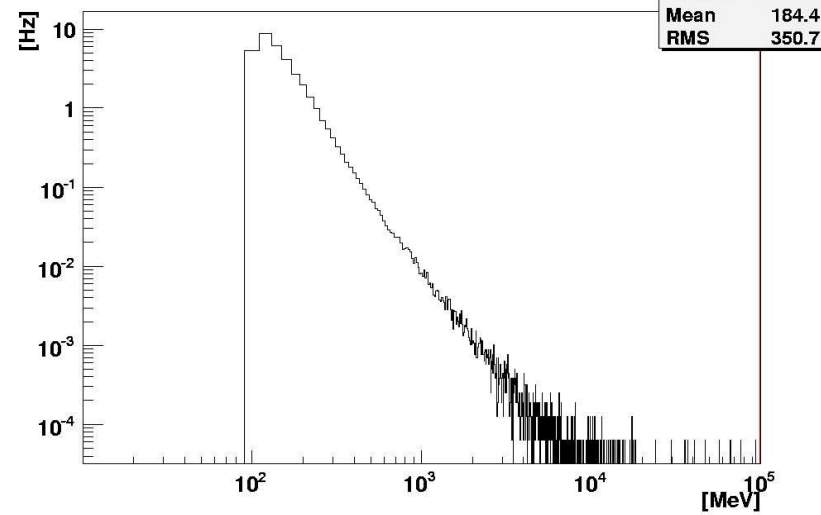
FCAL HAD1 module Energy > 0.1 GeV



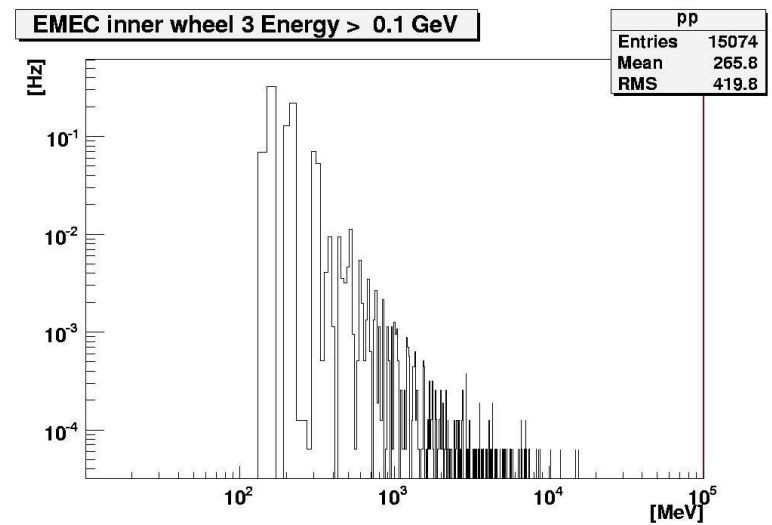
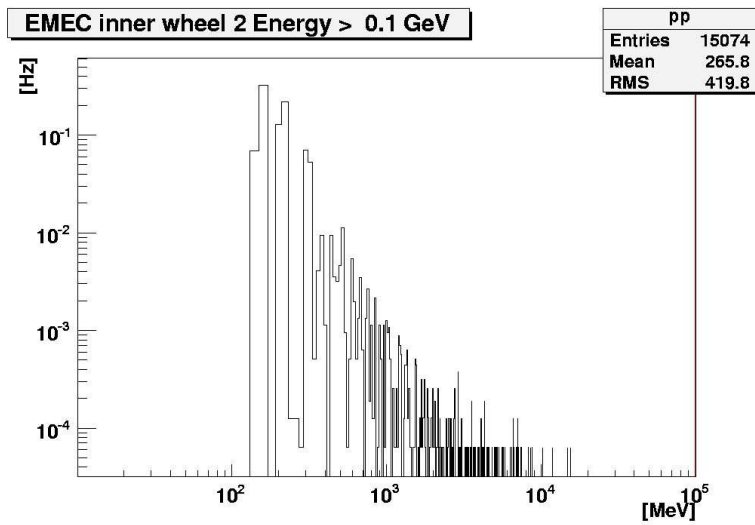
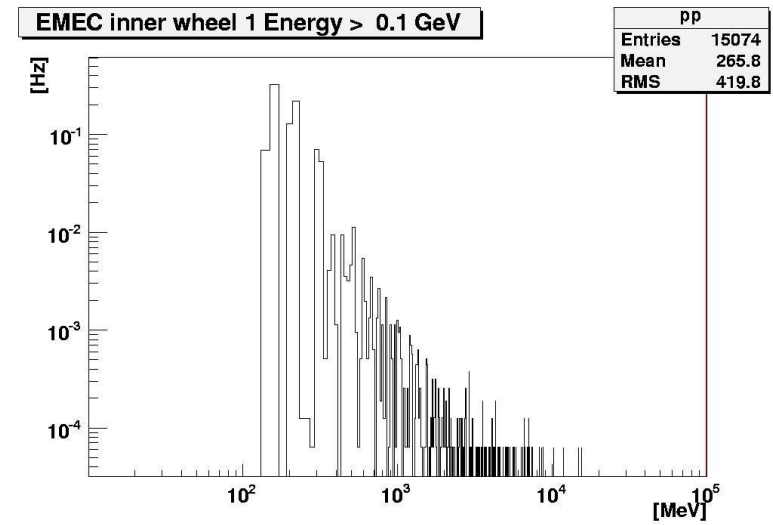
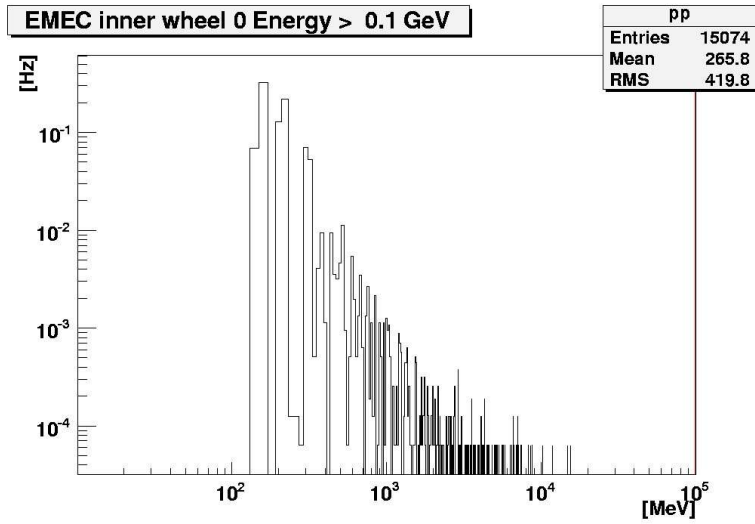
FCAL EM module Energy > 0.1 GeV



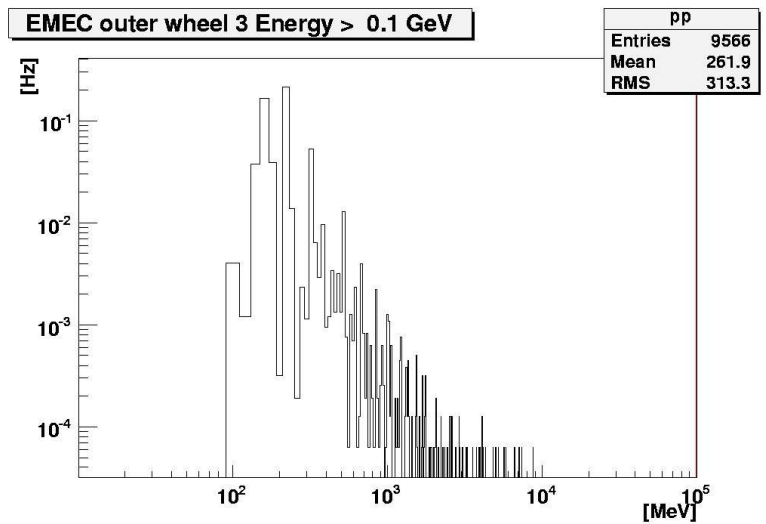
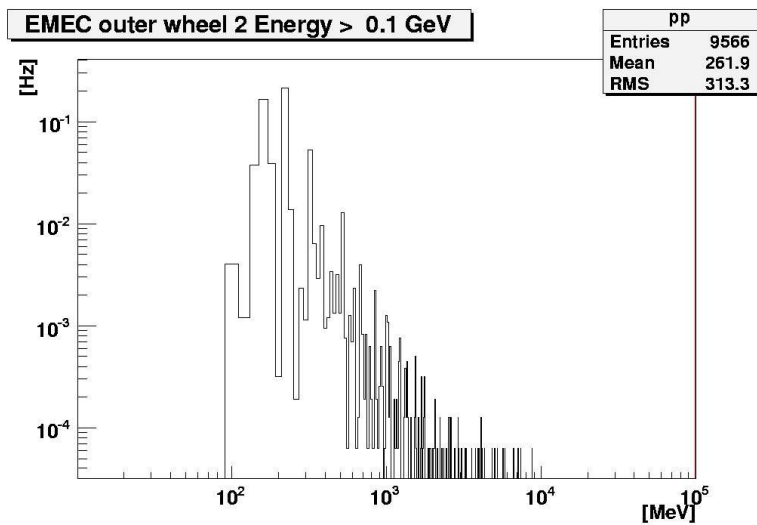
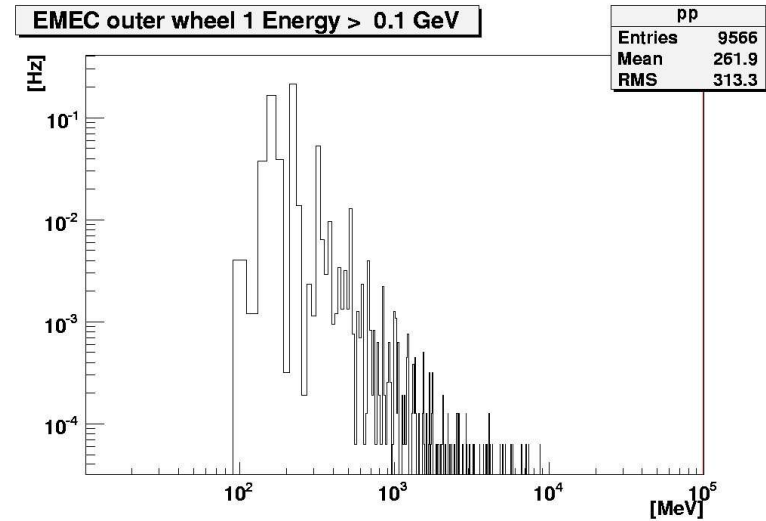
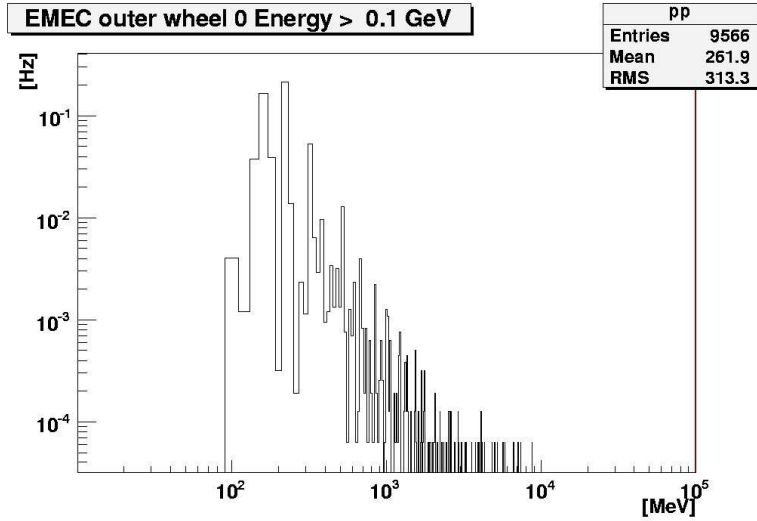
FCAL HAD2 module Energy > 0.1 GeV



# 60 deg. EMEC Inner wheel



# 60 deg. EMEC Outer wheel

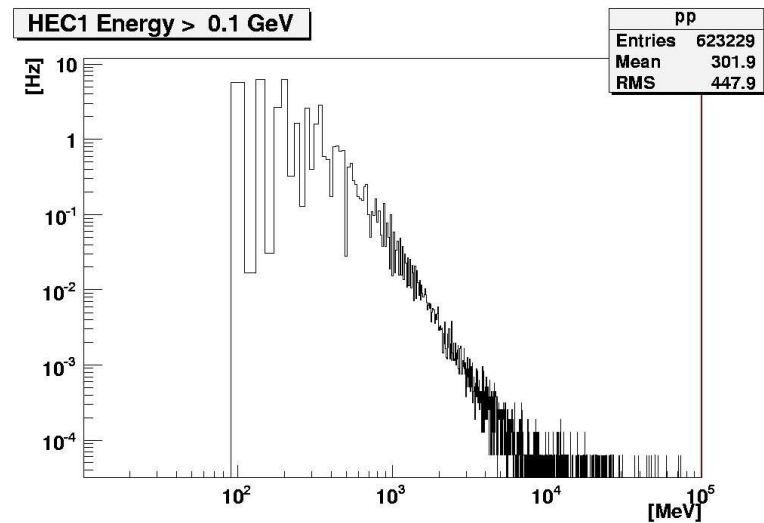
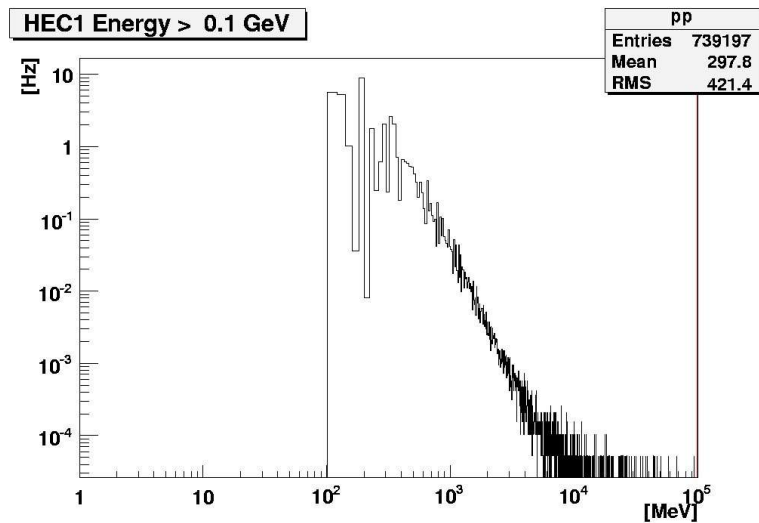




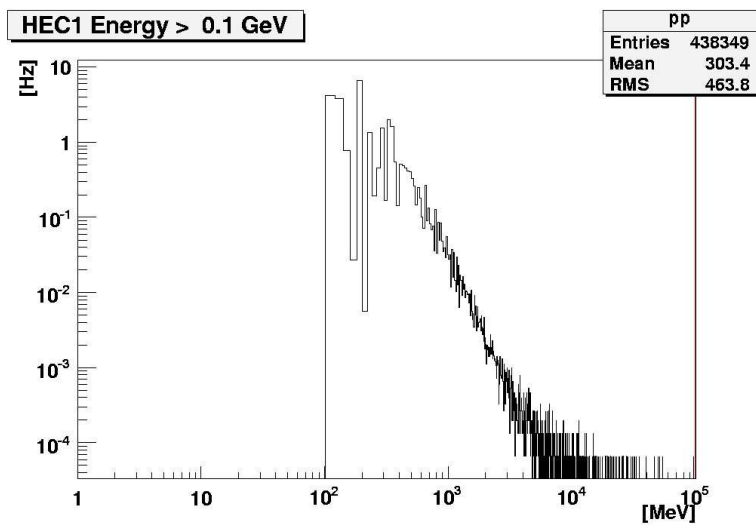
# HEC1

45 deg.

60 deg.



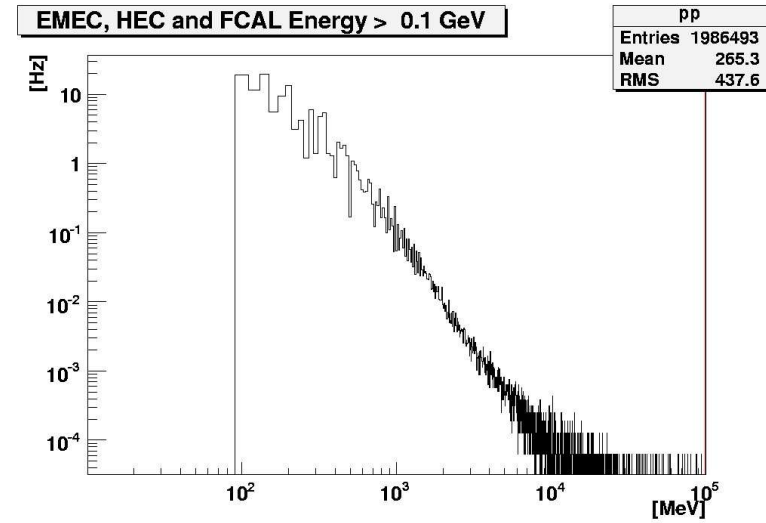
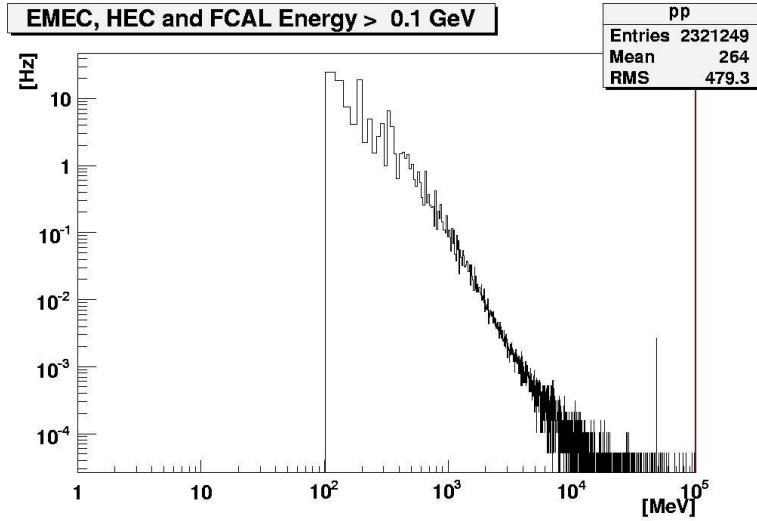
75 deg.



# EMEC, HEC and FCAL

45 deg.

60 deg.



75 deg.

