Upgrade on the noise study of TopoClustering Algorithm

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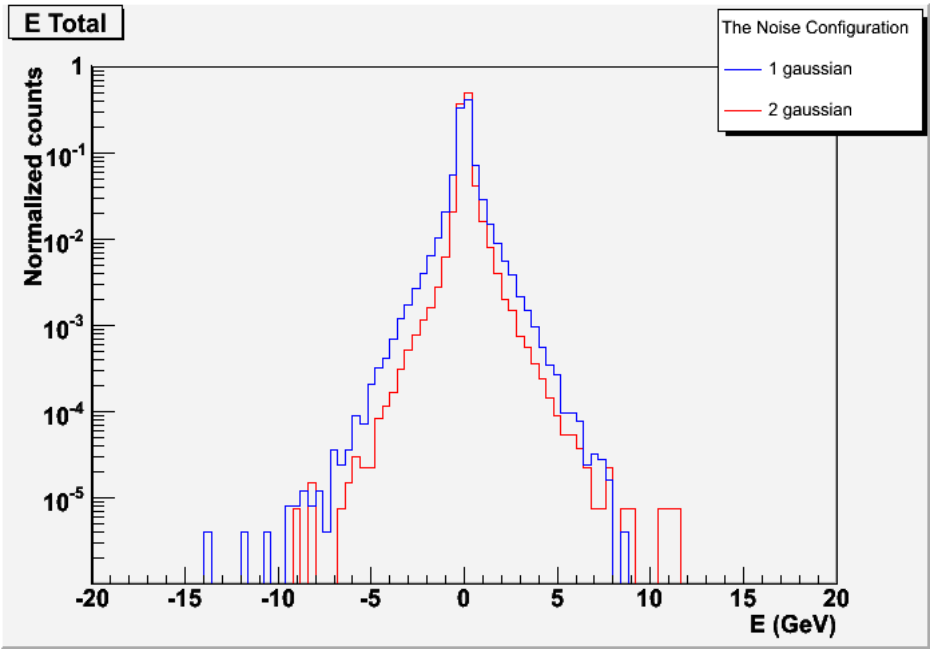
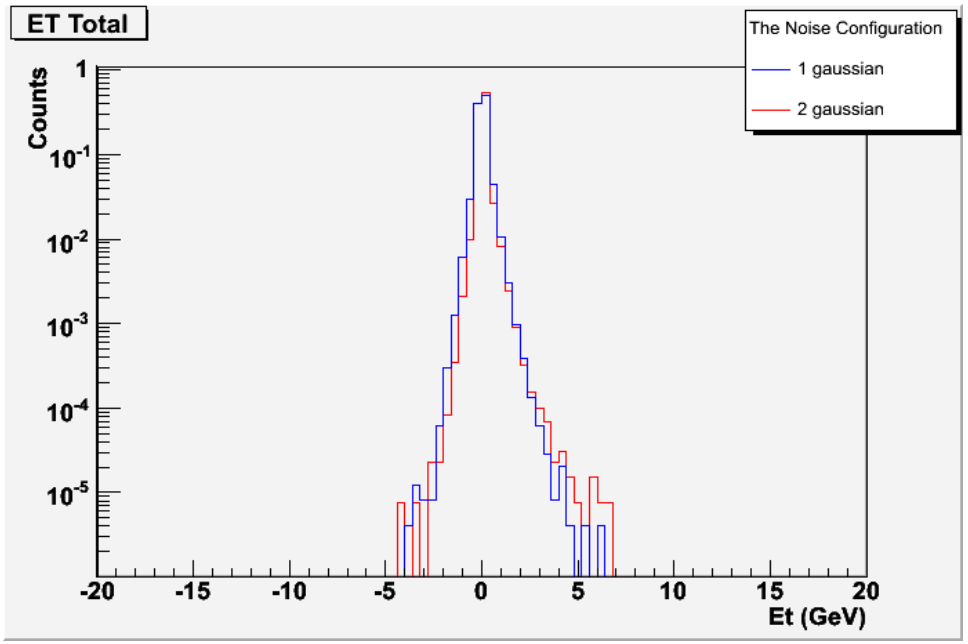
PART I
DESCRIPTION OF THE NOISE IN THE TILE WITH ONE GAUSSIAN VS TWO GAUSSIANS

Run 91890 (data 2008) RNDM 6000 ev processed with the (4, 2, 0) cofiguration

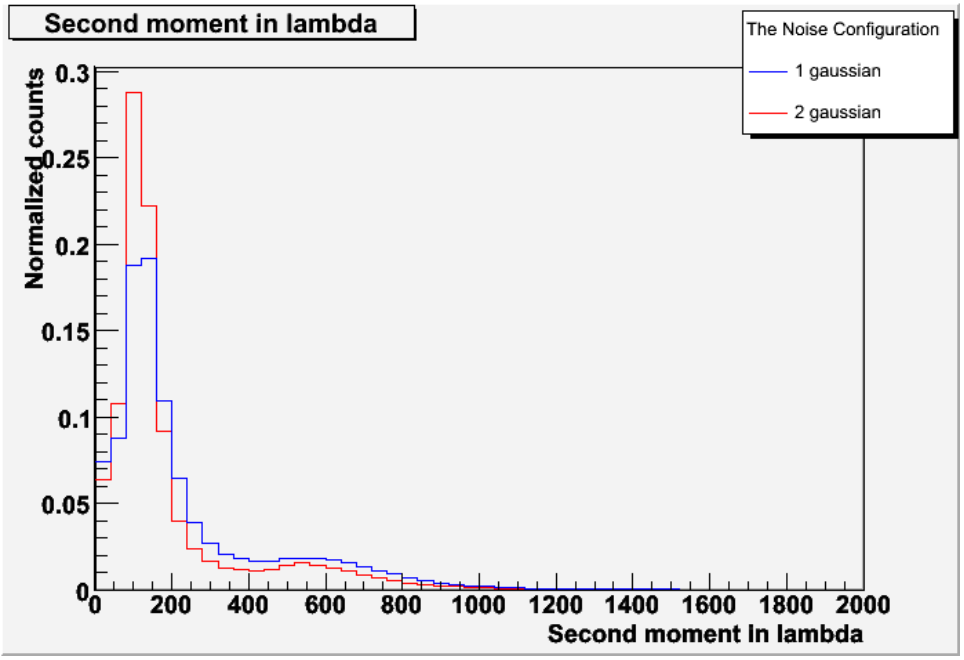
ENERGY AND TRANSVERSE ENERGY

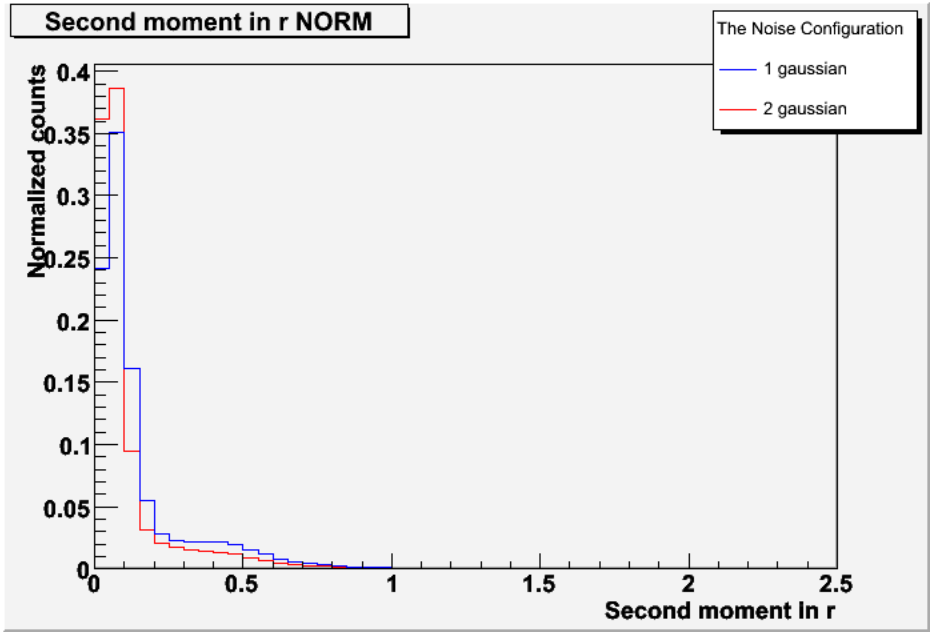




The energy distributions are better using TWO GAUSSIANS for the description of the noise in the Tile.

MOMENTS: COHERENT NOISE



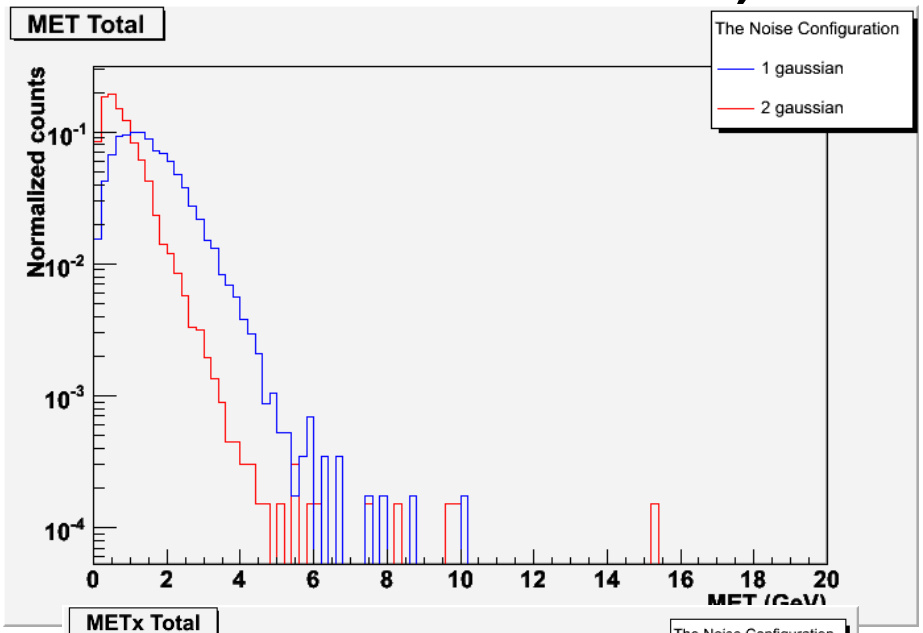


Lambda > 400: Large *Lambda < 400: Small*

Noise description	***Large Clusters / ev***	***Small clusters / ev***	***large / small***
1 gaussian	7.62	22.71	0.34
2 gaussians	2.42	11.22	0.22

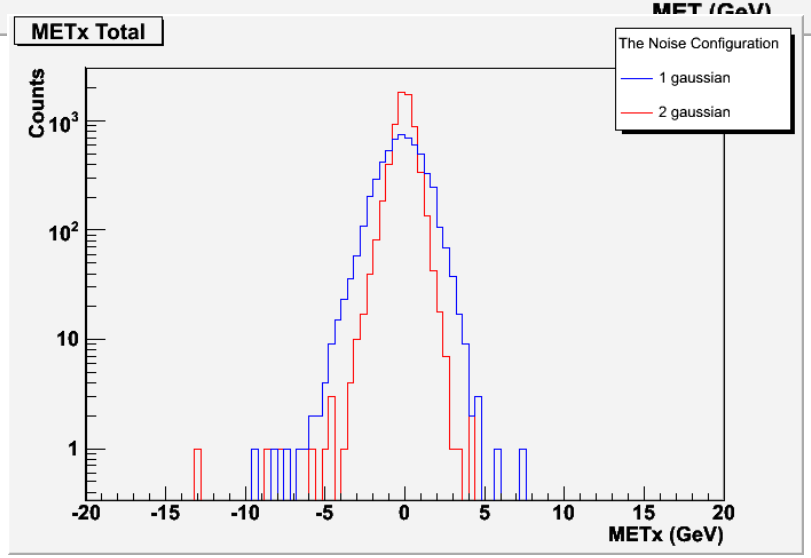
The large clusters contribution is reduced with two gaussians

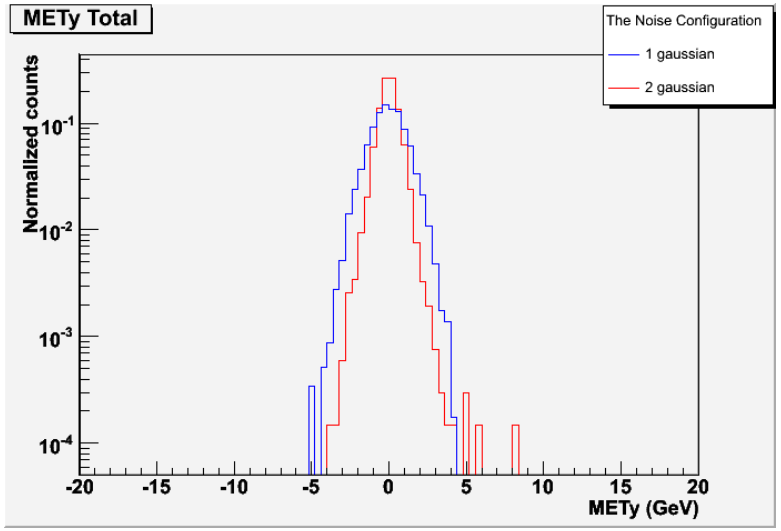
MET, METx AND METy



The energy distributions are better using TWO GAUSSIANS for the description of the noise in the Tile BUT :

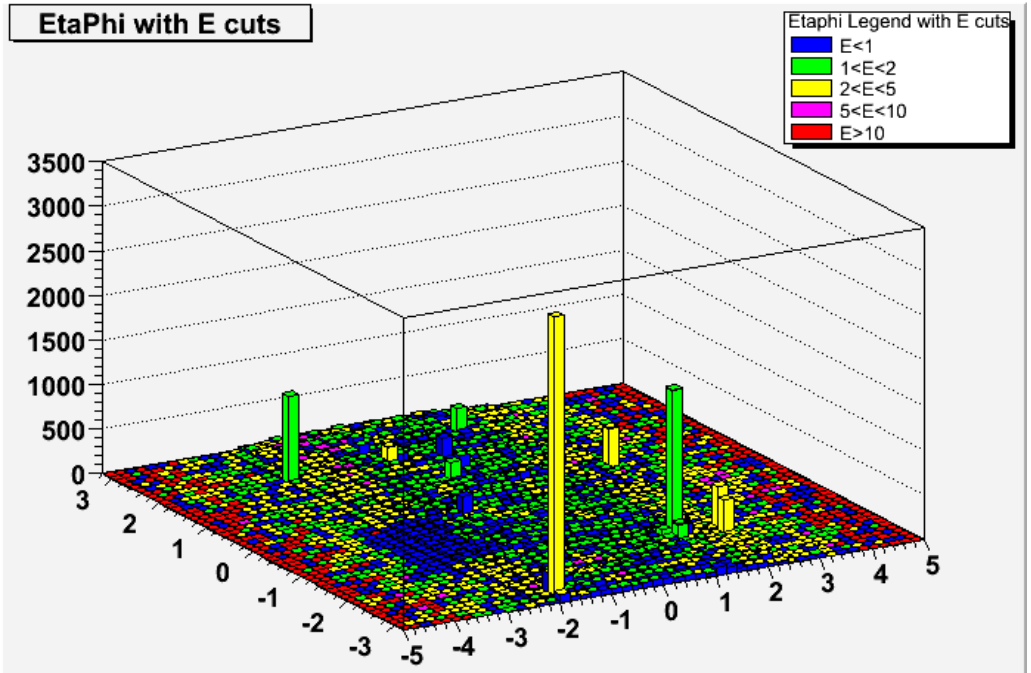
- **there are large clusters**
- **there are MET tails**





PART II
STUDY MET TAILS

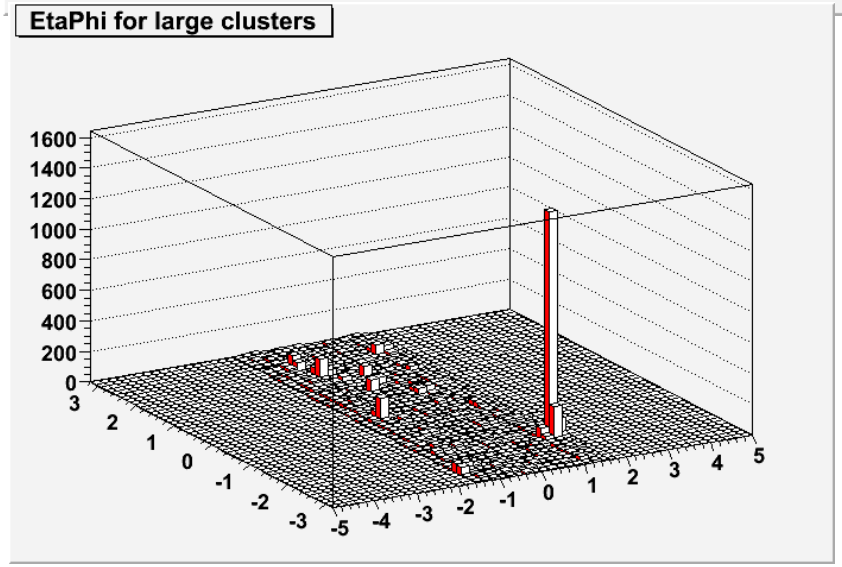
Run 91890 using the (4, 2, 0) configuration and two gaussians for the description of the noise in Tile

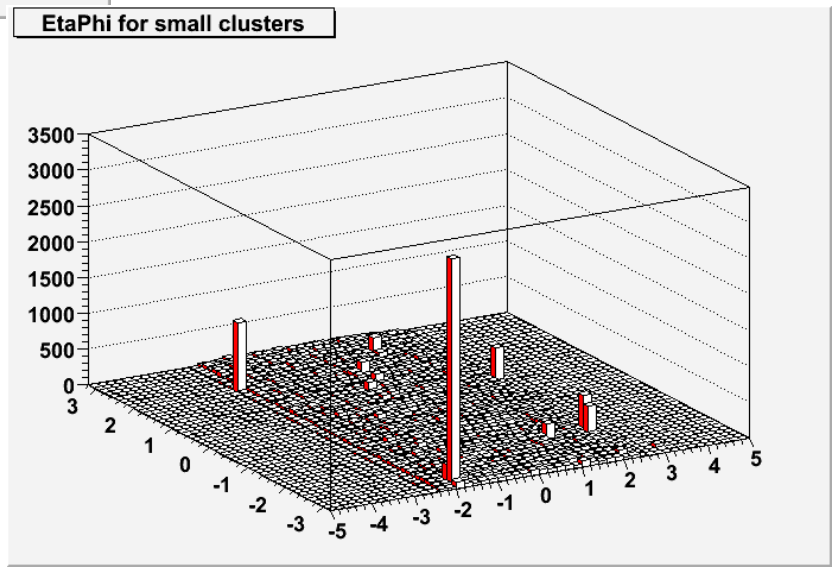


There are two kind of hot spots

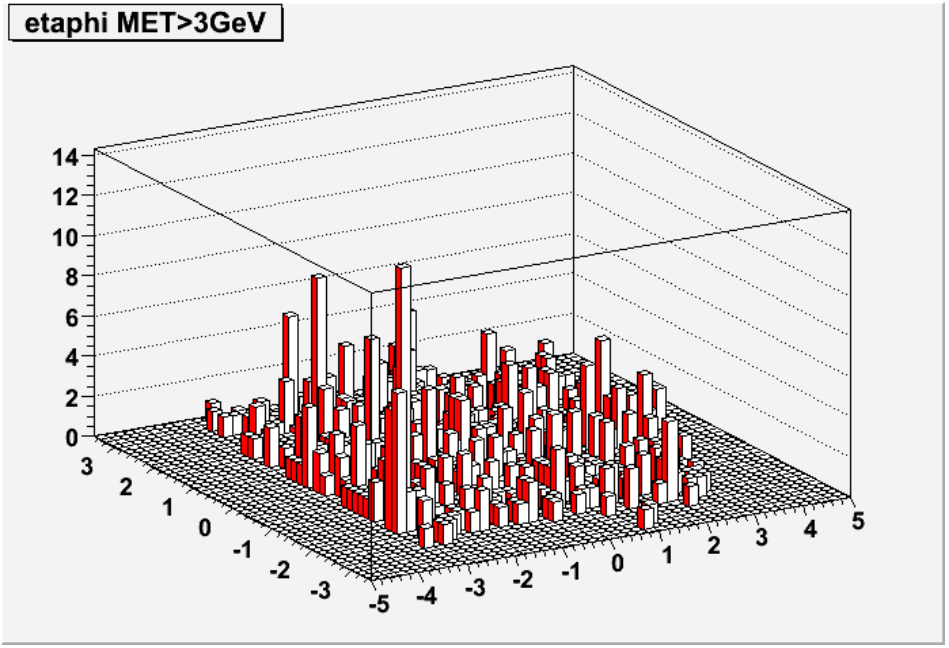
- **large**
- **small**

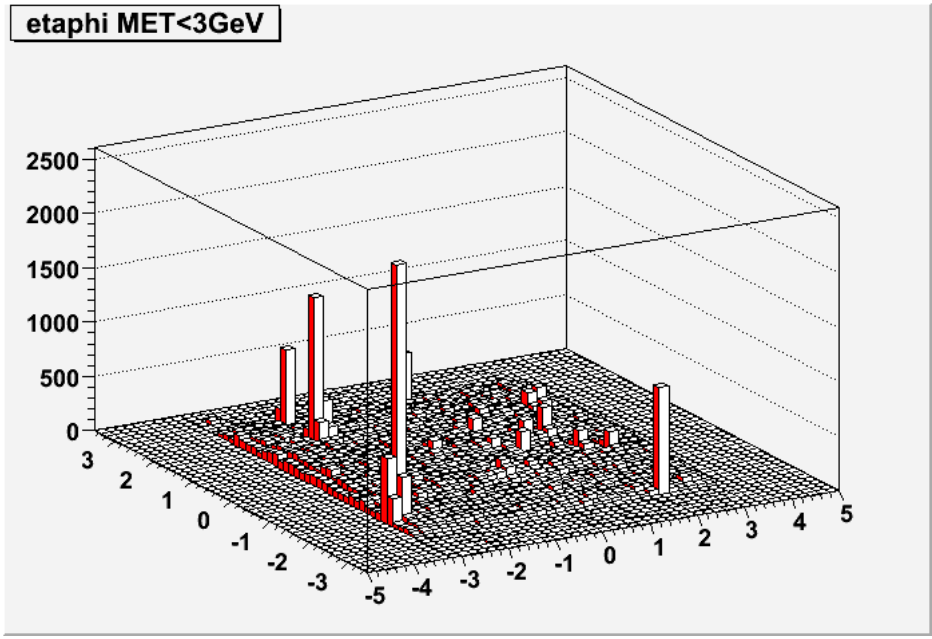
But there aren't muons in the run!





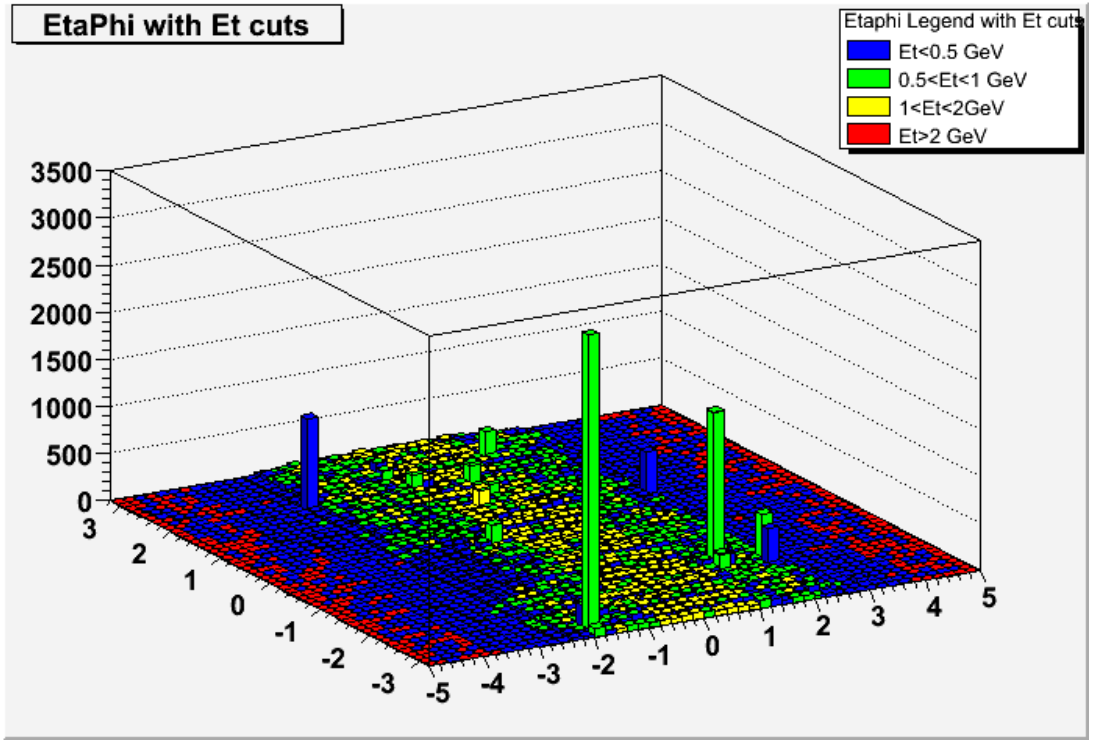
MET > 3 GeV and MET < 3 GeV





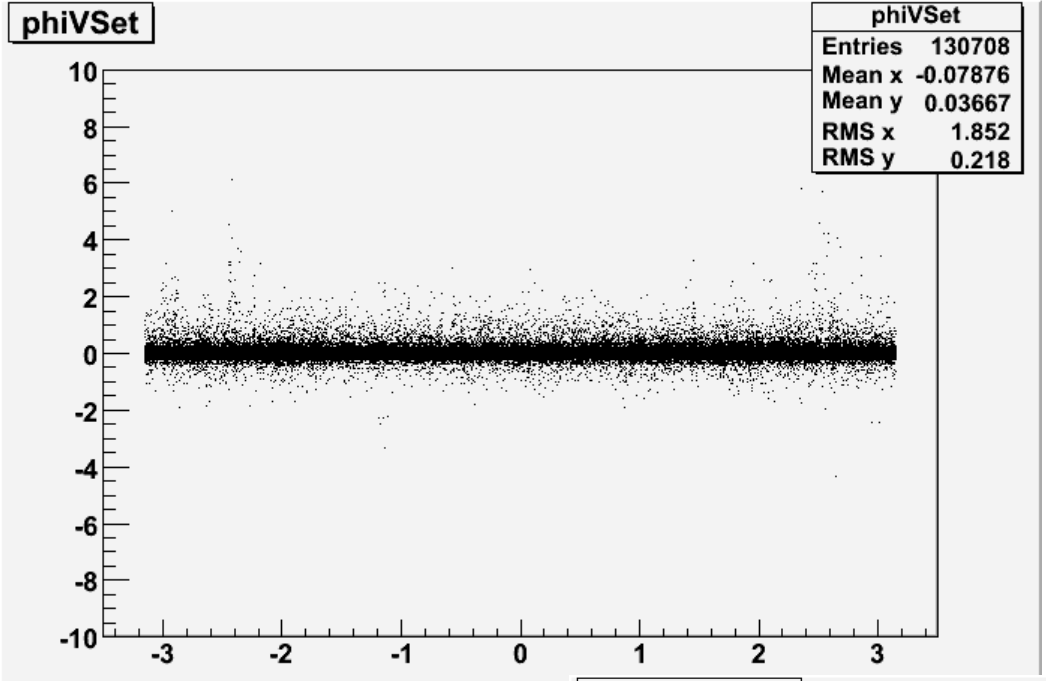
The hot spots don't produce events with MET > 3 GeV (MET tails).

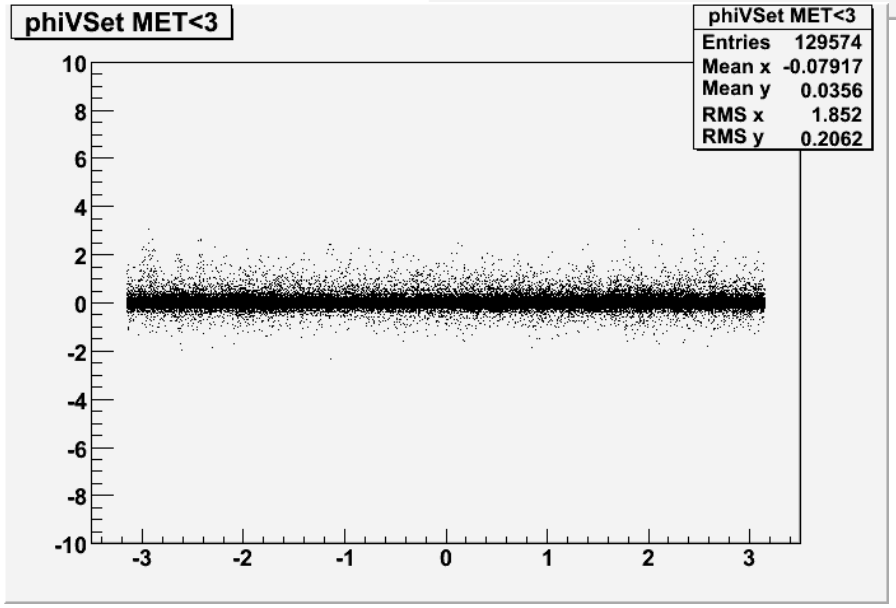
Eta-Phi with Et cuts

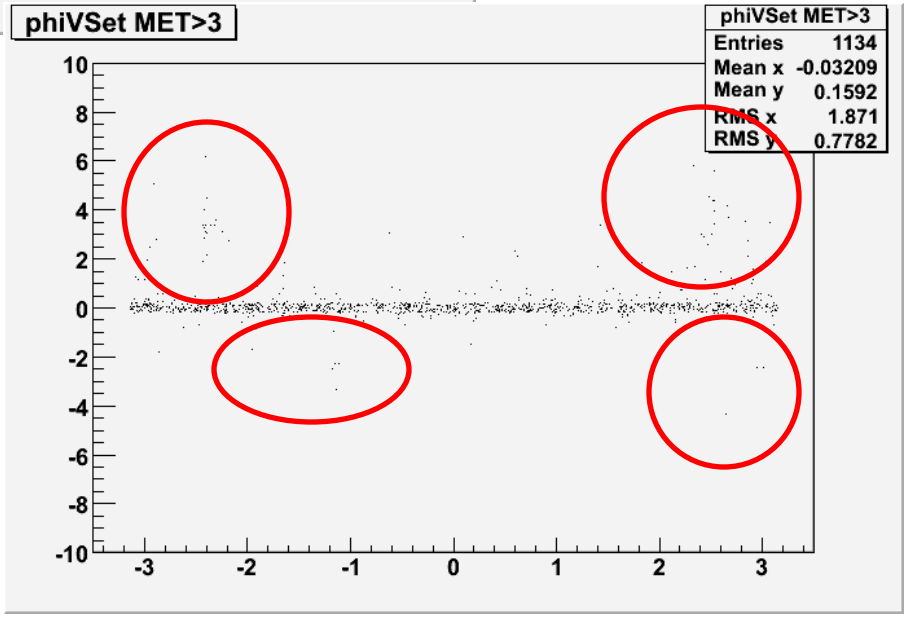


Can we know which clusters produce MET tails?

MET = f(Et, phi) so lets go to study these variables

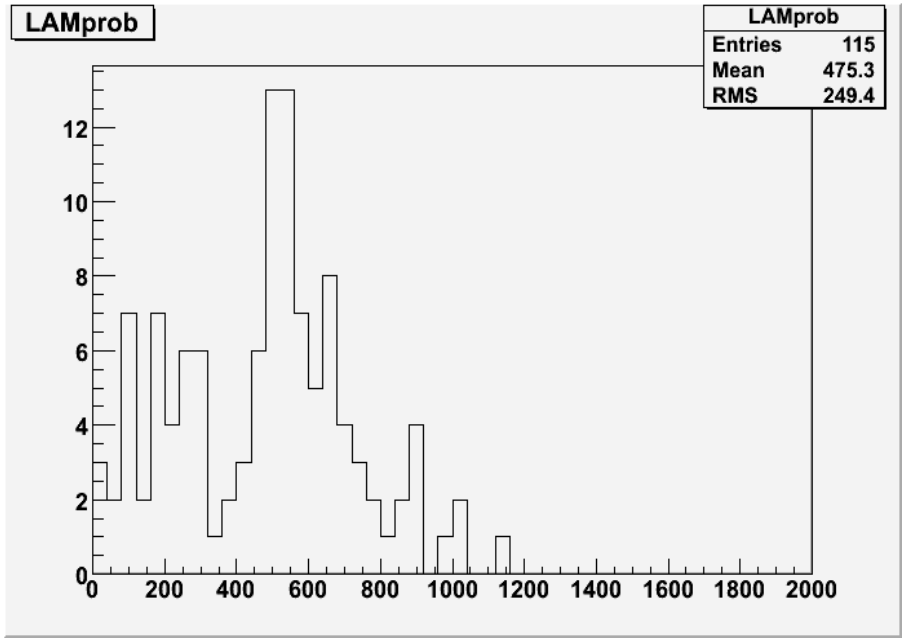

phiVSet
phiVSet
Entries 130708
Mean x -0.07876
Mean y 0.03667
RMS x 1.852
RMS y 0.218

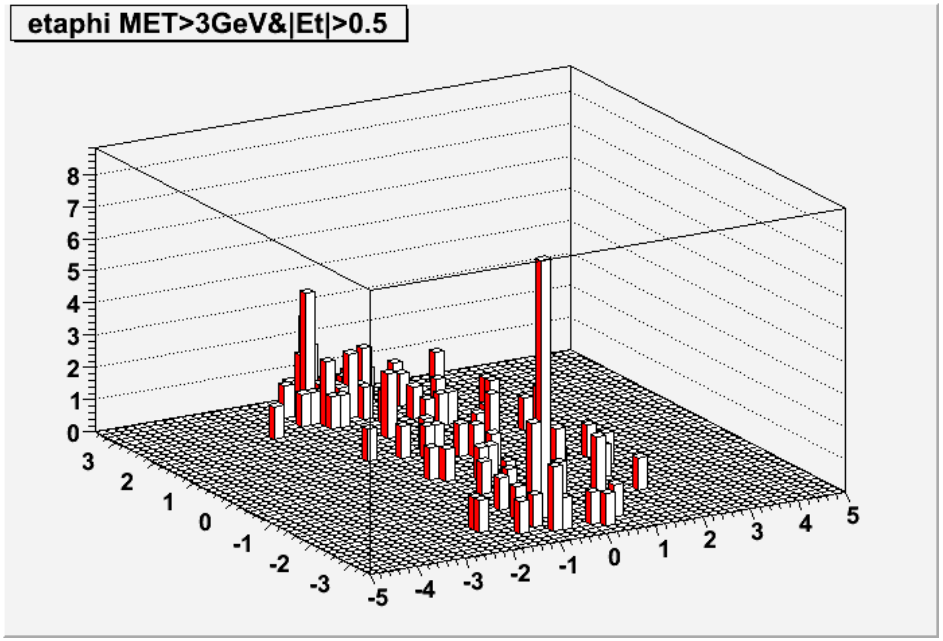

phiVSet MET<3
phiVSet MET<3
Entries 129574
Mean x -0.07917
Mean y 0.0356
RMS x 1.852
RMS y 0.2062


phiVSet MET>3
phiVSet MET>3
Entries 1134
Mean x -0.03209
Mean y 0.1592
RMS x 1.871
RMS y 0.7782

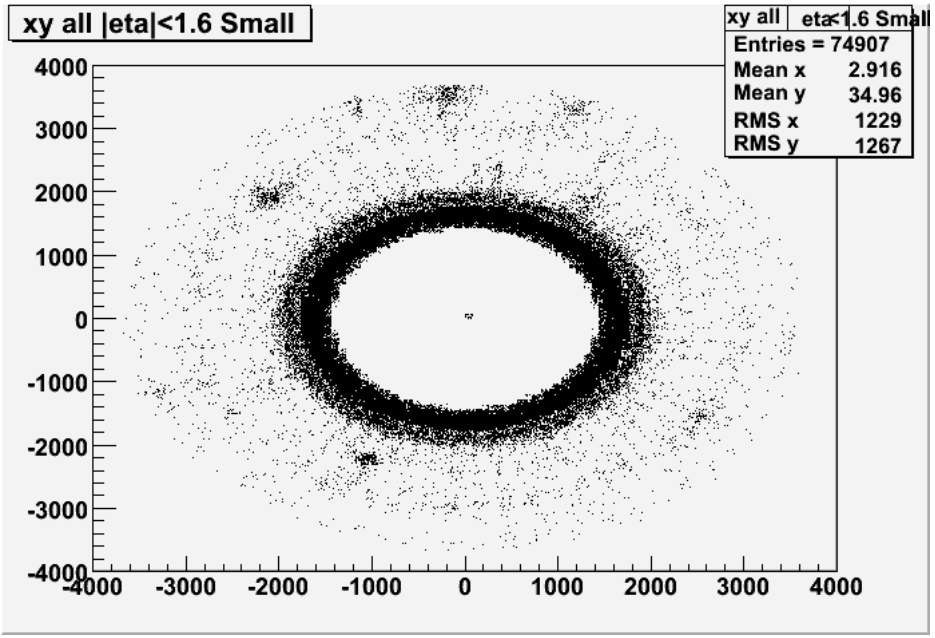
Events with MET > 3 GeV and topos with |Et| > 0.5 GeV

Second moment in lambda and Eta-Phi

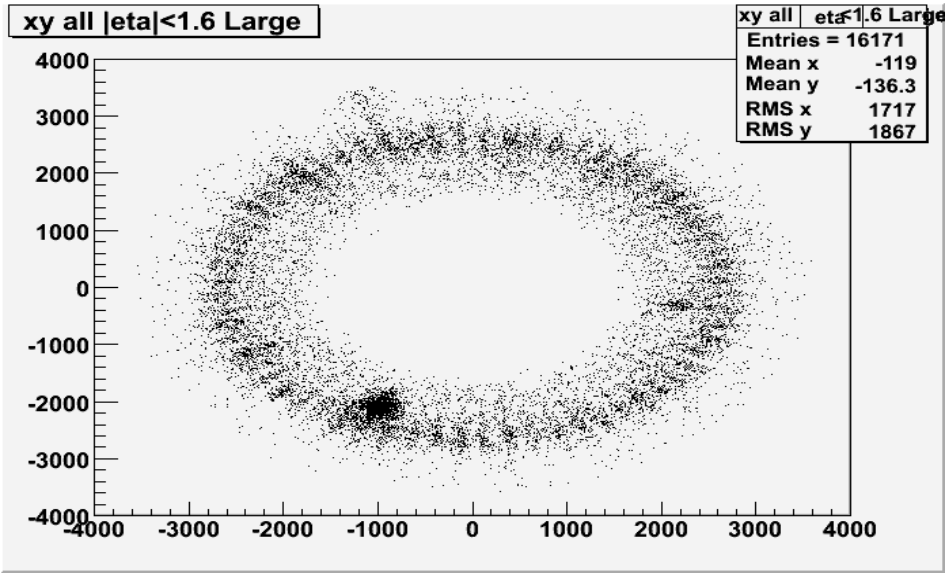


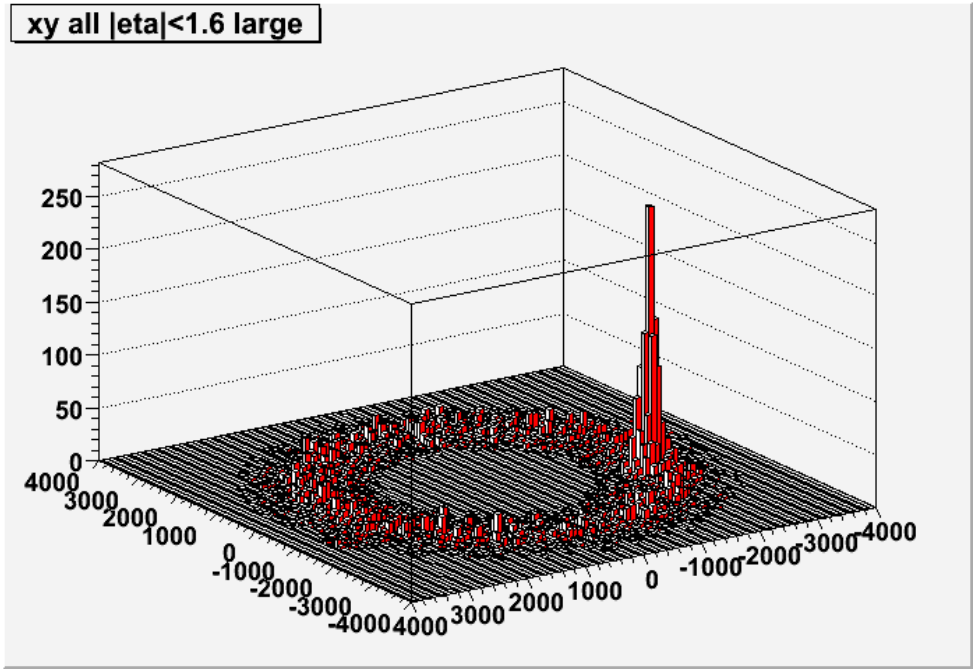


These topos are large clusters.
They are in the region |eta| < 1.6.

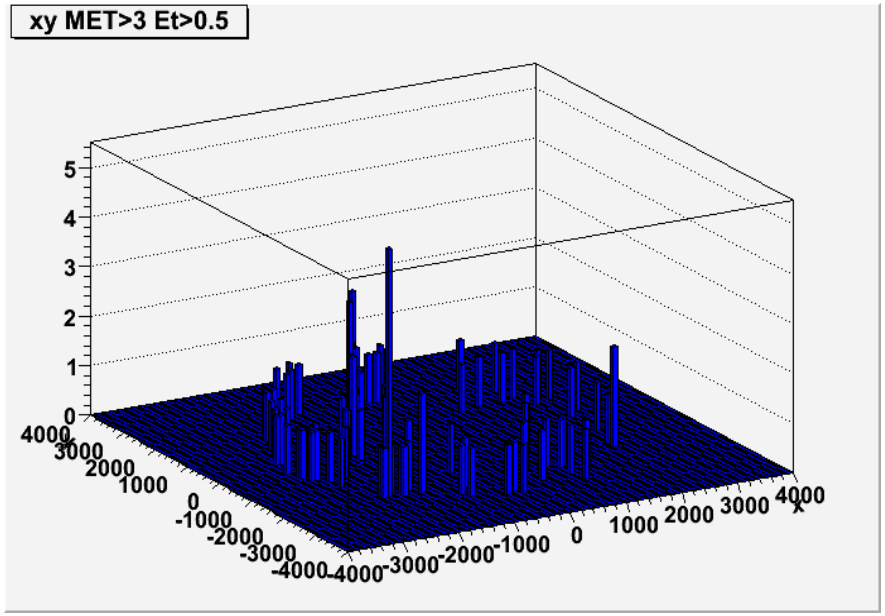


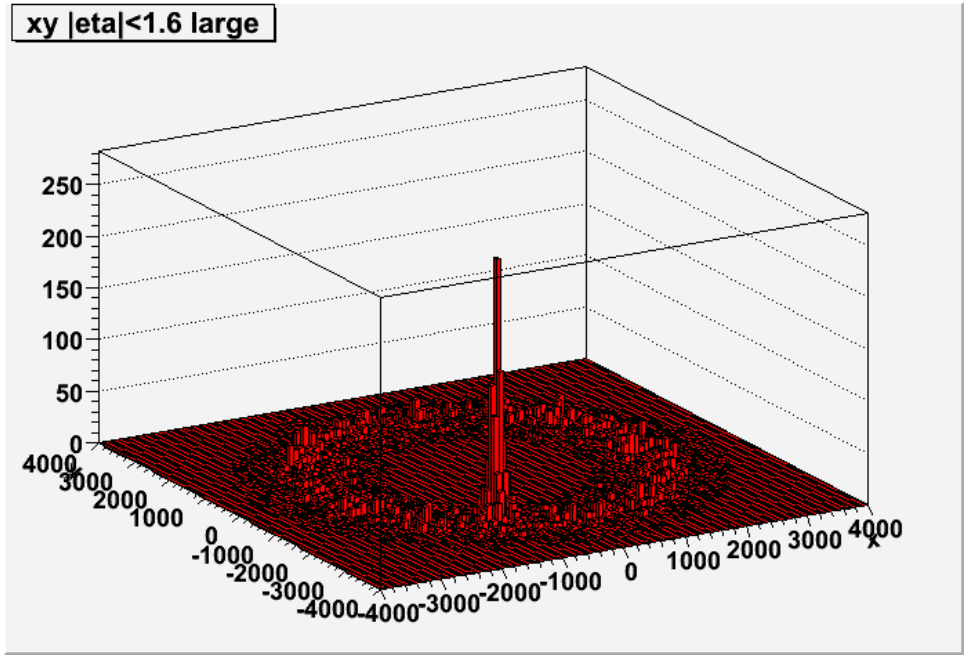
In the region |eta| < 1.6 are LAr and Tile so, in what subdetector are the problematic clusters?





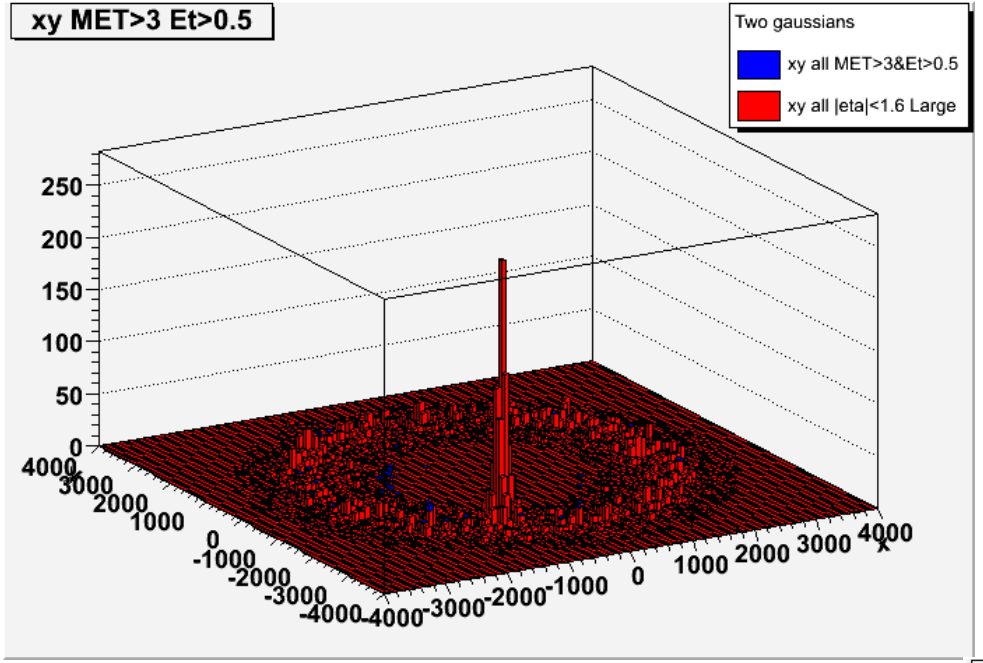
Where are these topos which produce MET > 3 GeV?



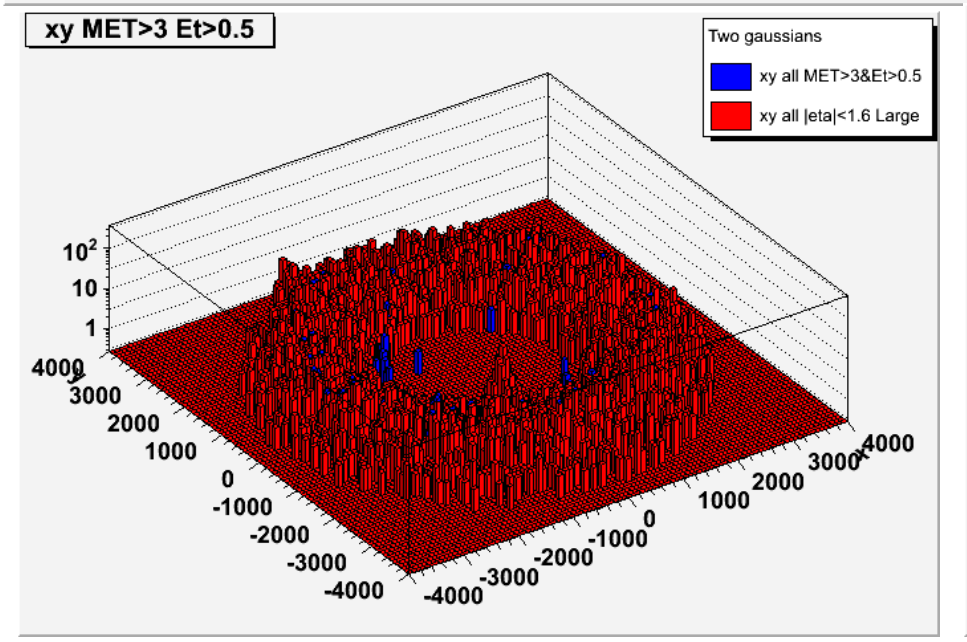


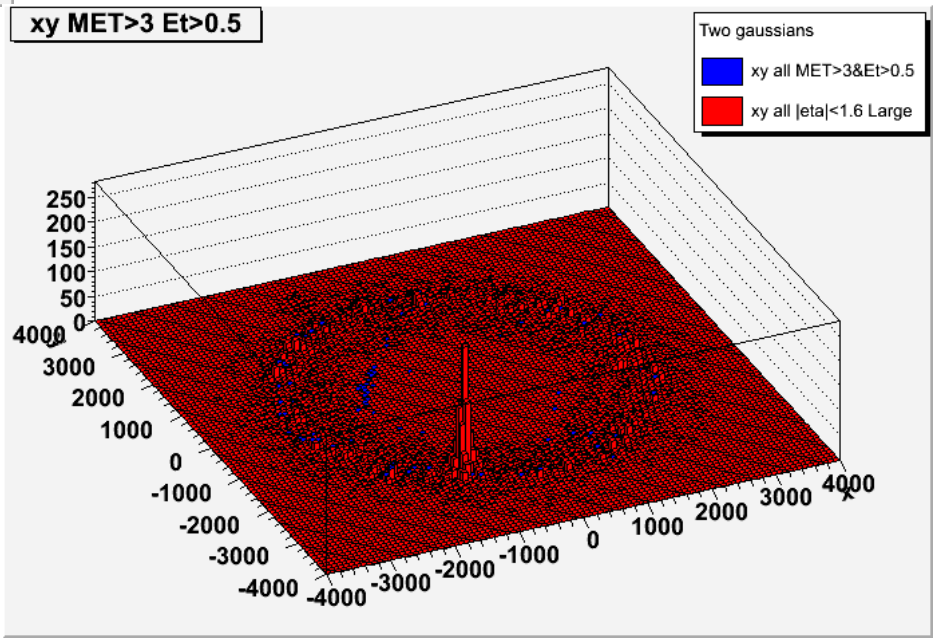
https://twiki.cern.ch/twiki/bin/view/Atlas/WorkBookAtlasExperiment

The Tile Calorimeter consists of a cylindrical structure with an inner radius of 2280 mm and an outer radius of 4230 mm



The most of them are in the region:
x, y € [+-2000, +-3000] mm --> **Tile**





FUTURE TASKS

For the next JetEtmiss meeting (04/11/09):

- Run 2009
- ATLANTIS

New task:

- Timing offline