Upgrade on the noise study of TopoClustering Algorithm

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Group meeting

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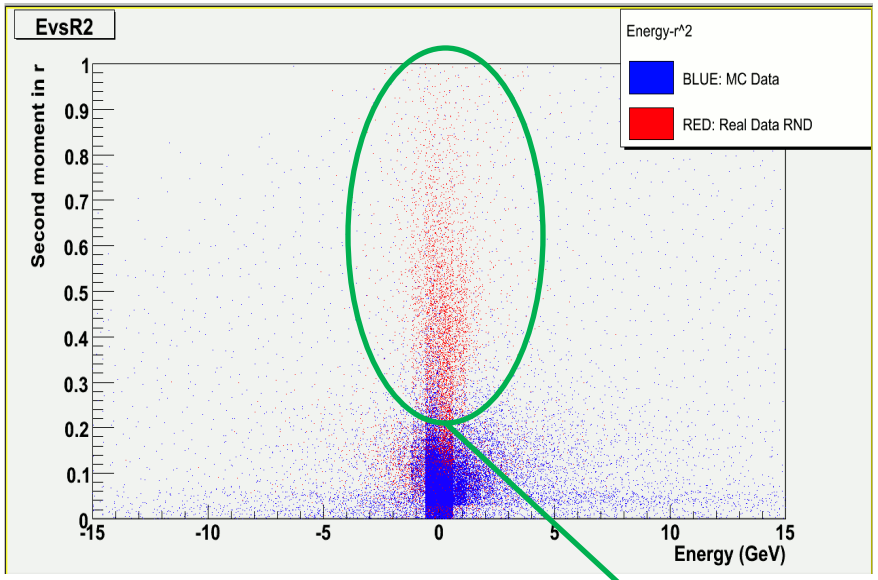
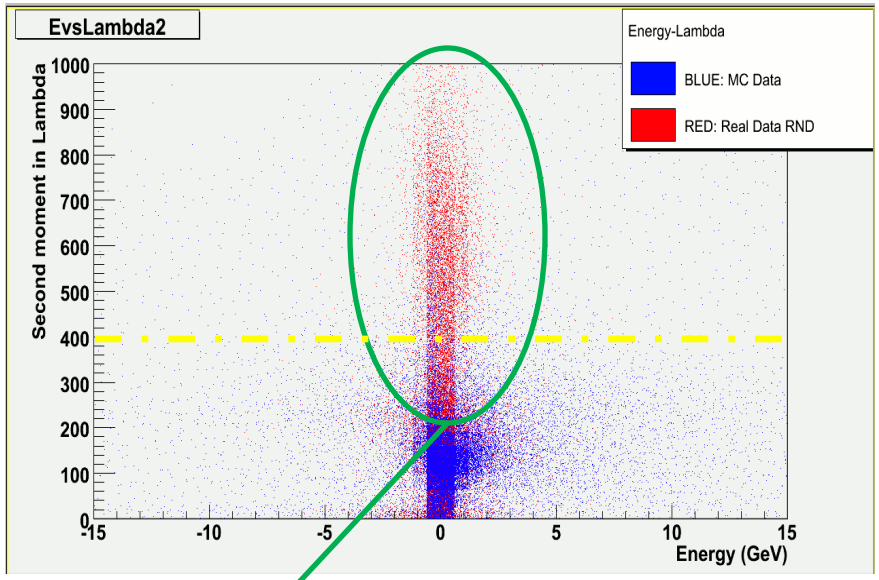
Run 106020MC vs Run 91890RND

Configuration (4,2,0): Energy-Moments

Energy-r^2



Energy-λ^2



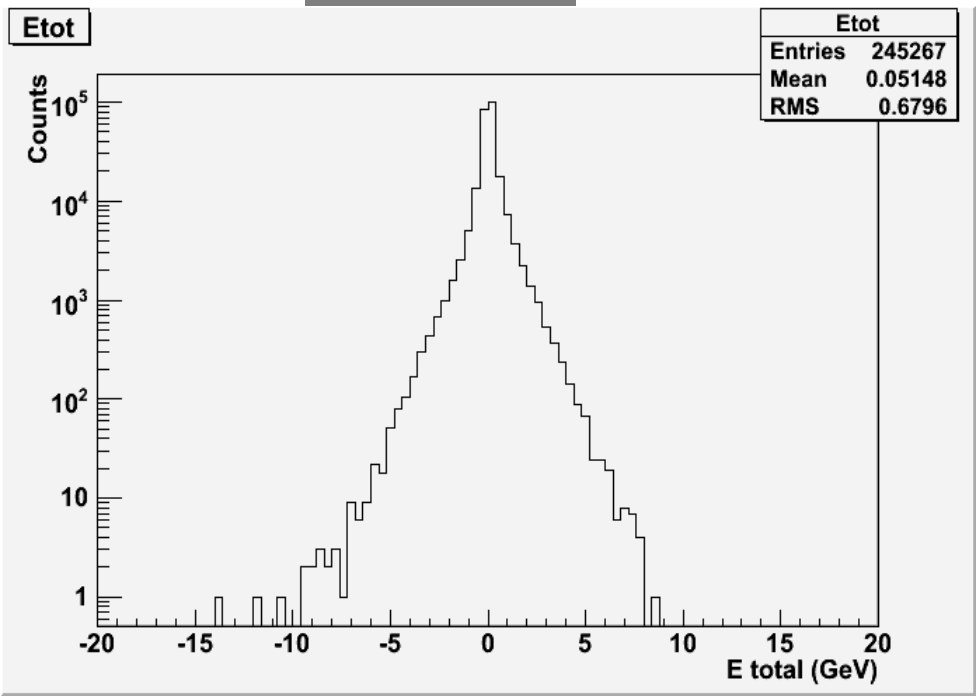
The two moments in real data are greater than in MC data for same configuration of topoclusters: (4,2,0)

Let's go to study the distributions of the topos with large moments:

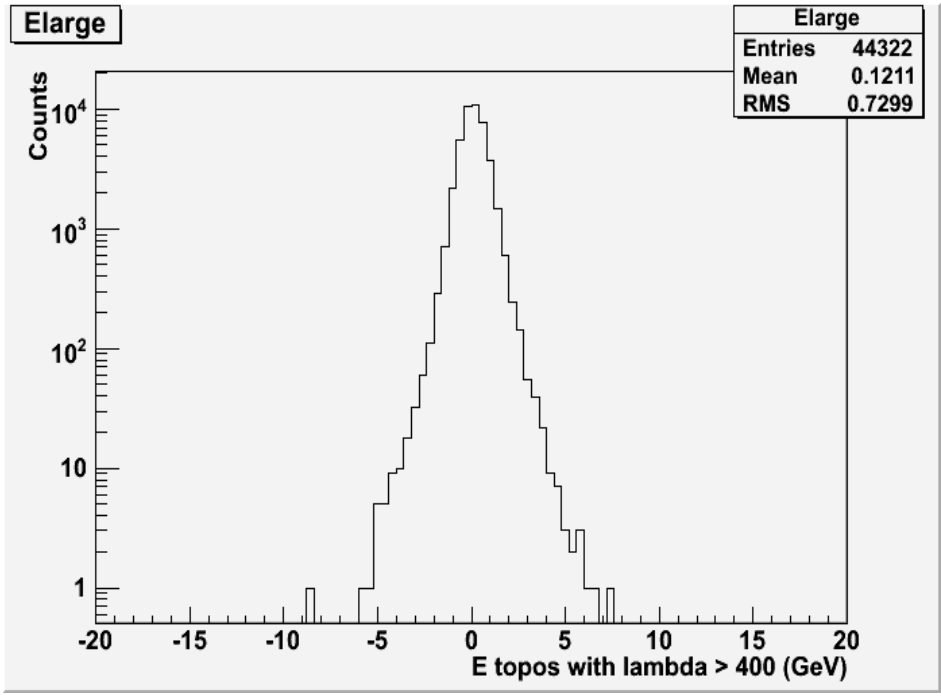
CUT IN THE SECOND MOMENT IN LAMBDA: λ > 400

CLUSTERS WITH LAMBDA > 400

Total energy



Energy of the topos with lambda > 400

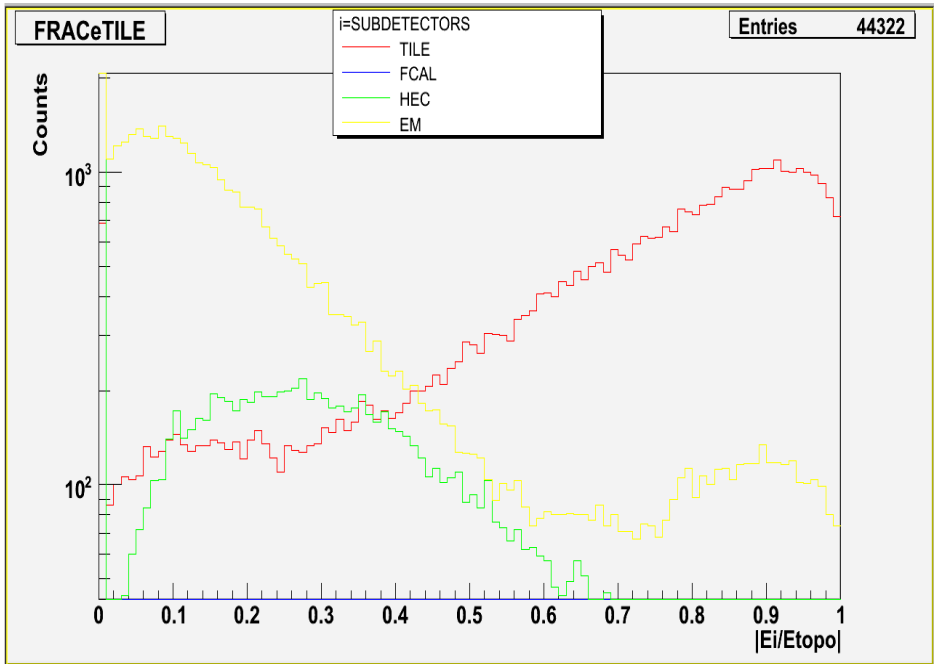


The clusters with lambda > 400 have a little contribution in the total energy

CLUSTERS WITH LAMBDA > 400

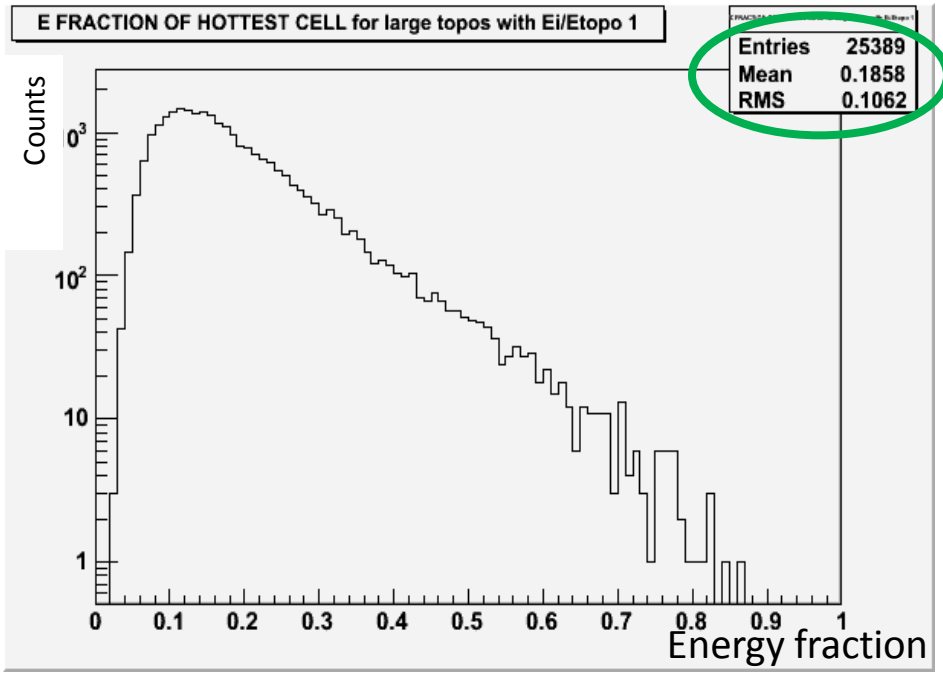
Clusters with second moment in lambda > 400

Energy fraction of each part



Clusters with second moment in lambda > 400 && Etile/Etopo > 85 %

Energy fractionof the hottest cell of the cluster



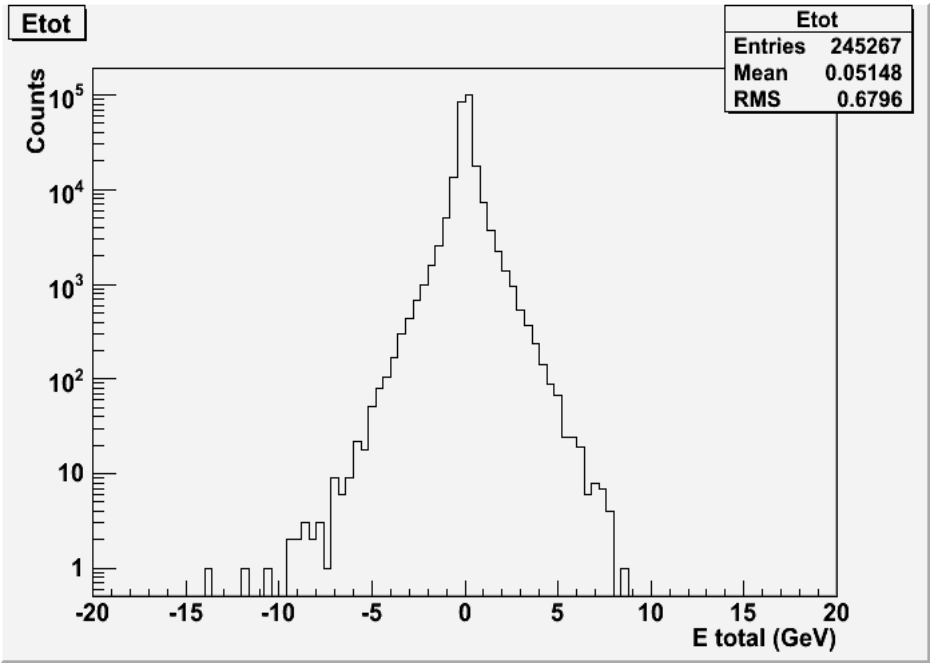
The most energy fraction is from the TileCal 70 %

The **most energetic cell has ONLY 20 % of total energy of the cluster.**

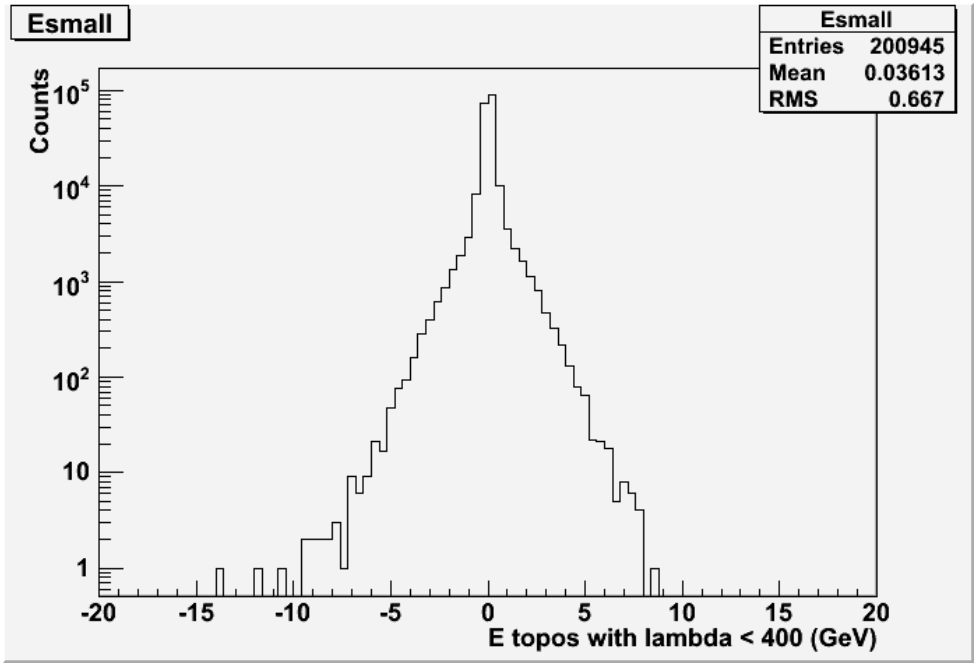
The noise is coherent.

CLUSTERS WITH LAMBDA < 400

Total energy



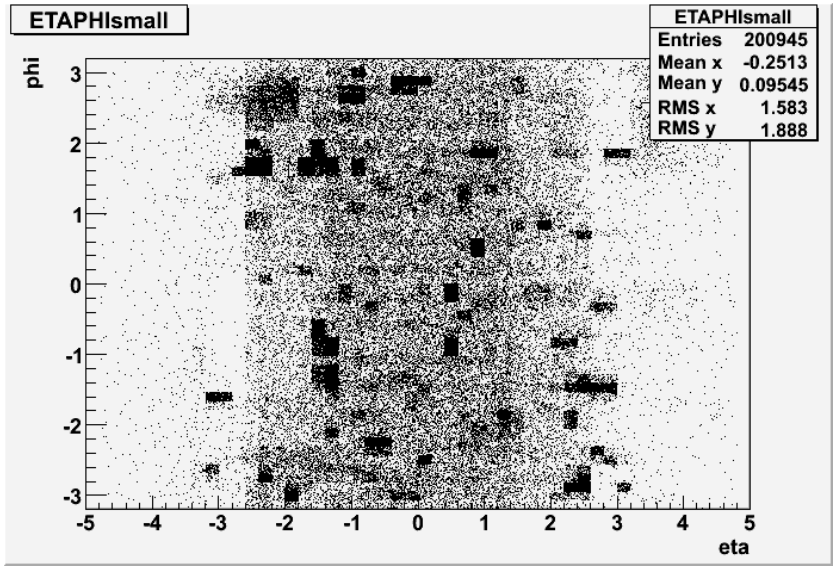
Energy of the topos with lambda < 400

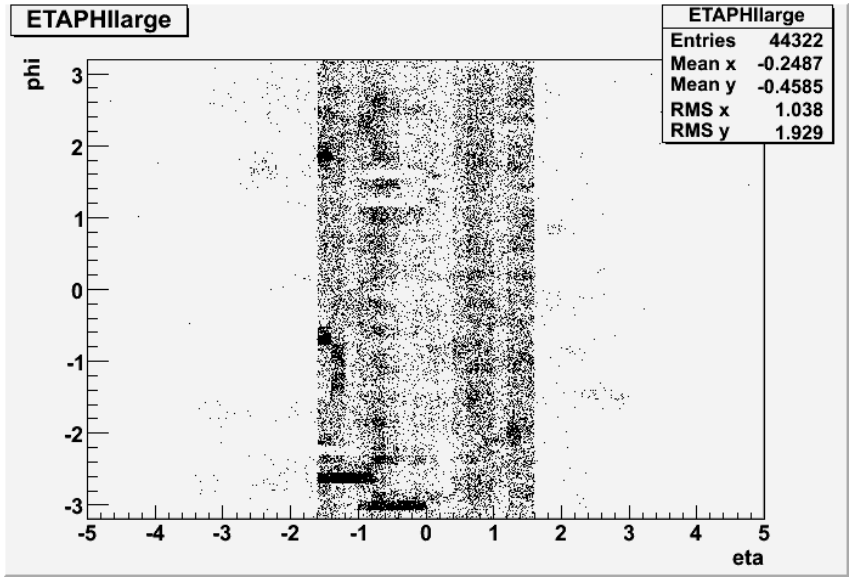


The clusters with lambda < 400 have a large contribution in the total energy and they are more energetic than the clusters with lambda > 400.

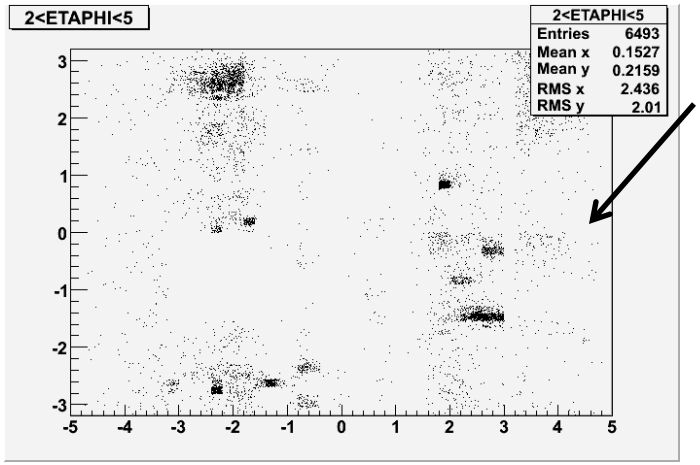
The most energetic topos are not in the TileCal, but…

CLUSTERS WITH LAMBDA < 400 vs CLUSTERS WITH LAMBDA > 400



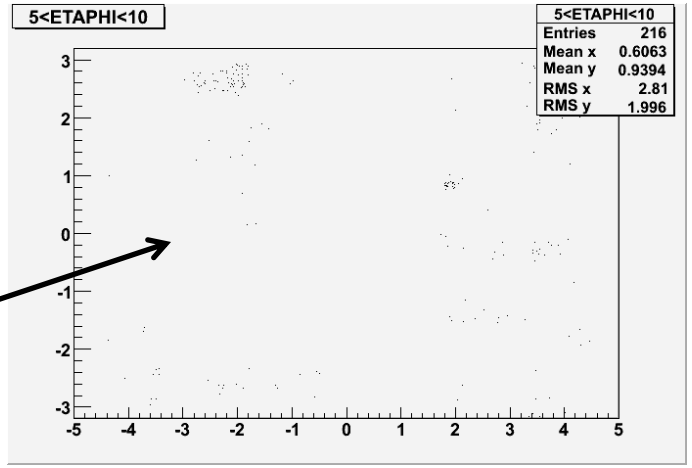


Where are the hot spots and which king of clusters has hot spots?



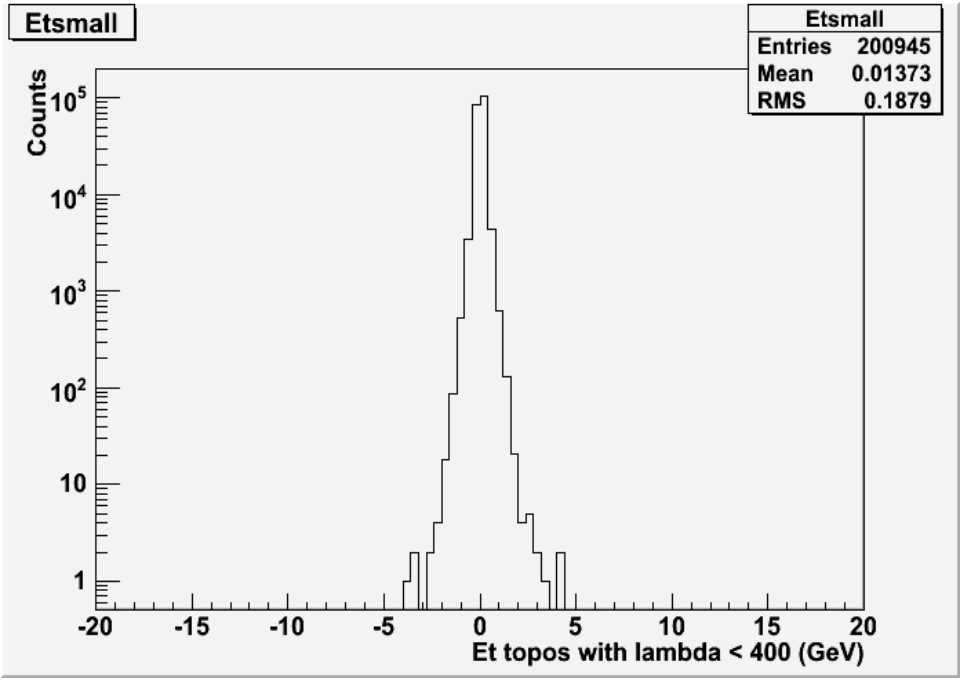
Topos with:
2 < |E| < 5 GeV

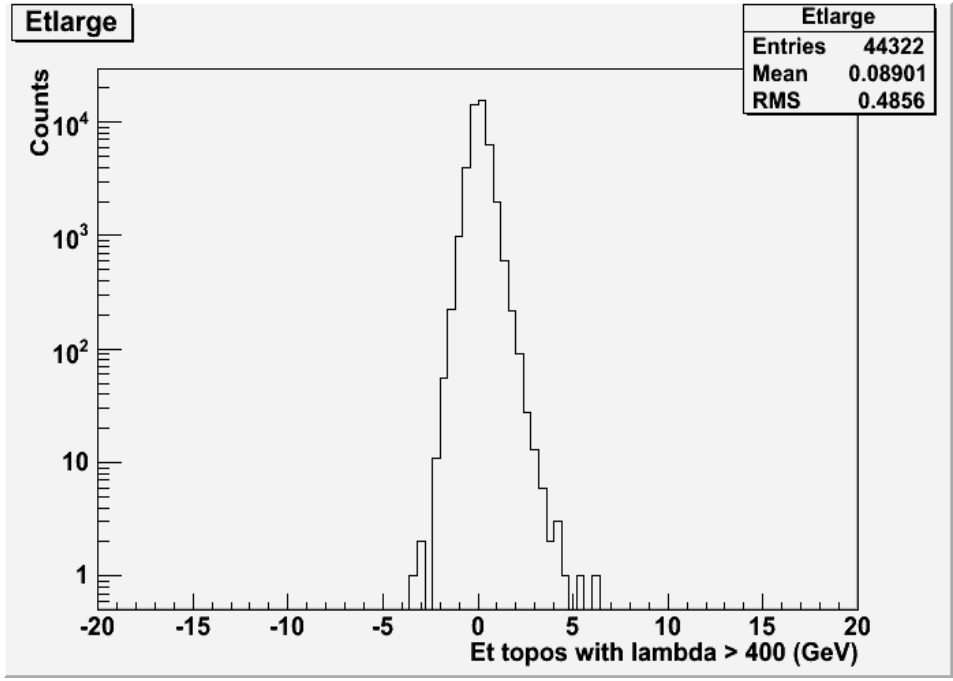
Topos with:
5 < |E| < 10 GeV



CLUSTERS WITH LAMBDA < 400 vs CLUSTERS WITH LAMBDA > 400

Transverse energy



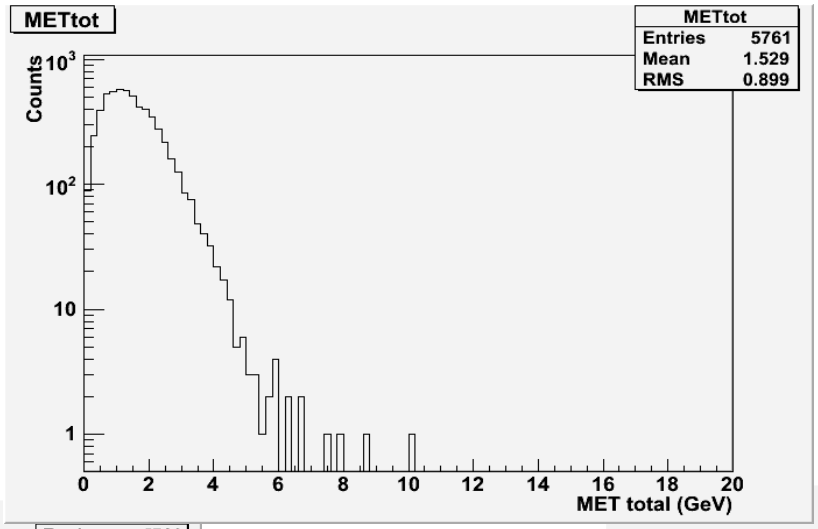


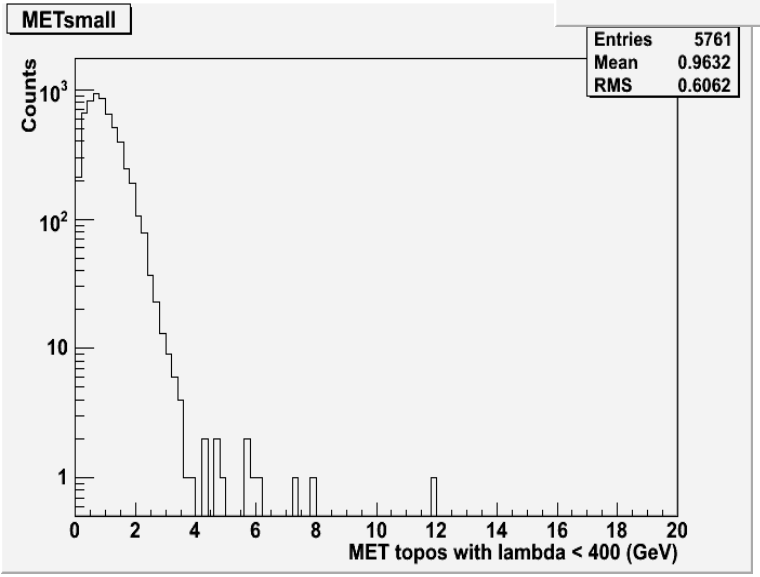
The clusters with lambda > 400 have a larger contribution in the transverse energy than the clusters with lambda < 400

$$E_T = E \sin\theta$$

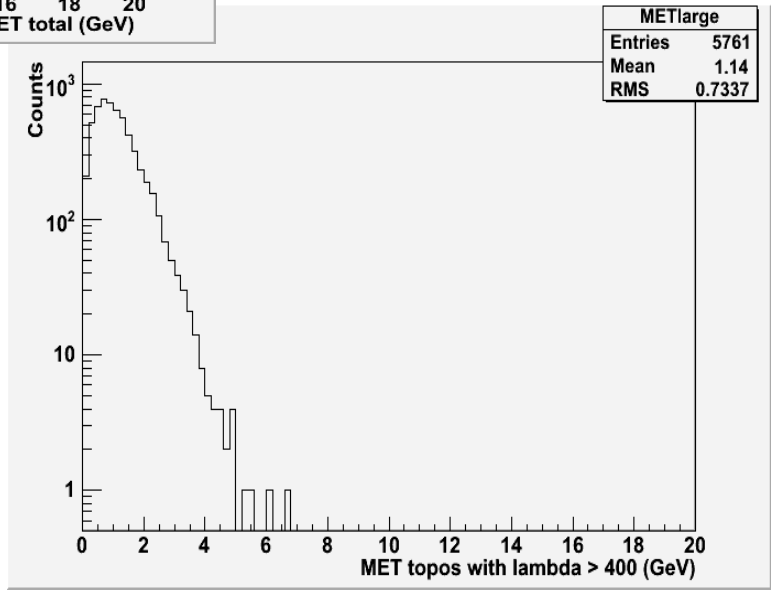
CLUSTERS WITH LAMBDA < 400 vs CLUSTERS WITH LAMBDA > 400

MET

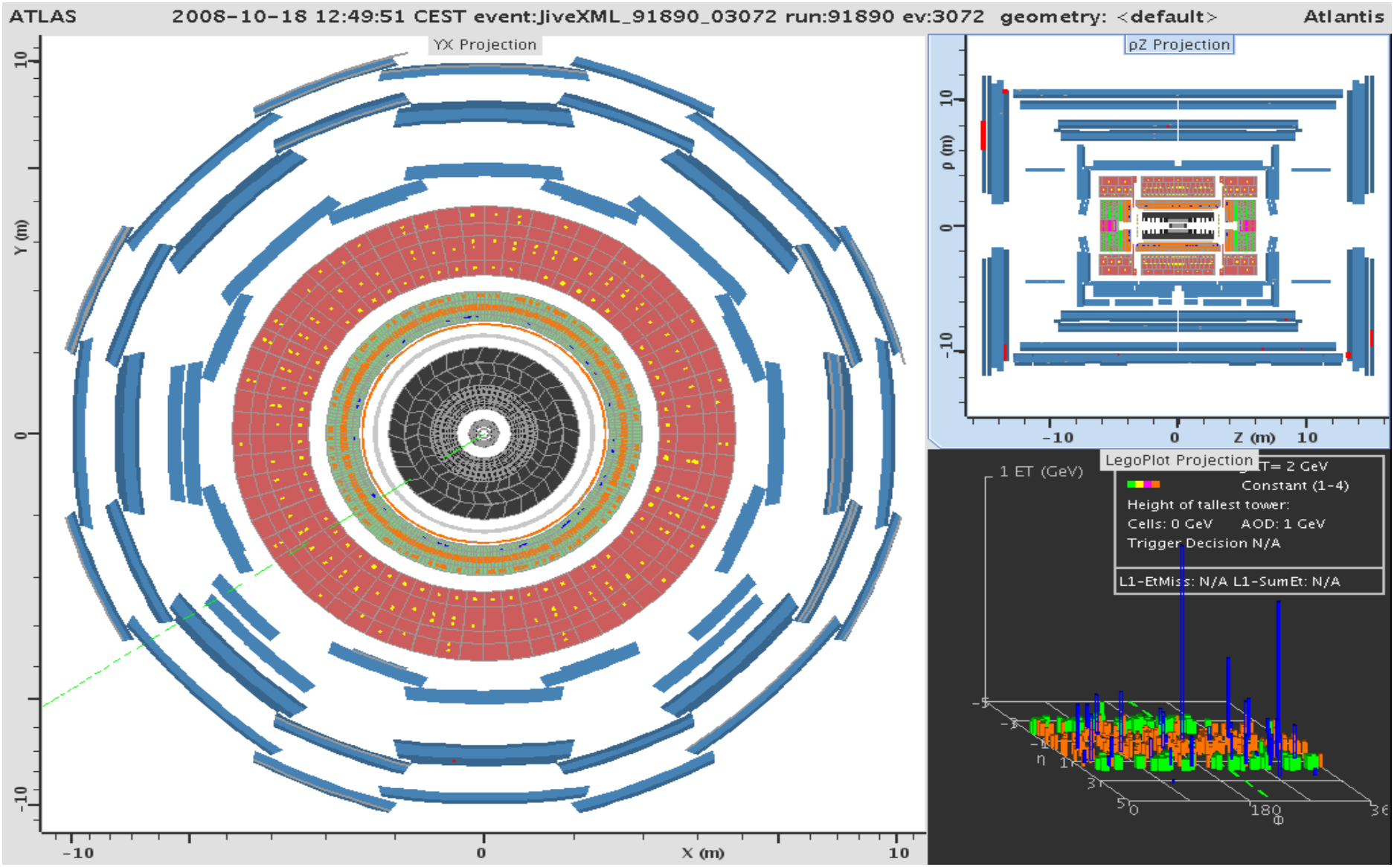




The clusters with lambda > 400 have a larger distribution in MET than the clusters with lambda < 400



ATLANTIS


ATLAS
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Atlantis
YX Projection
Y (m)
X (m)
pZ Projection
p (m)
Z (m)
LegoPlot Projection
1 ET (GeV)
Constant (1-4)
Height of tallest tower:
Cells: 0 GeV AOD: 1 GeV
Trigger Decision N/A
L1-EtMiss: N/A L1-SumEt: N/A
η
Φ