High mass analysis: first approach in summer 2011

Regular meeting
Dominik Wrana
20th of July 2011

Dataset

All GXG events we have:

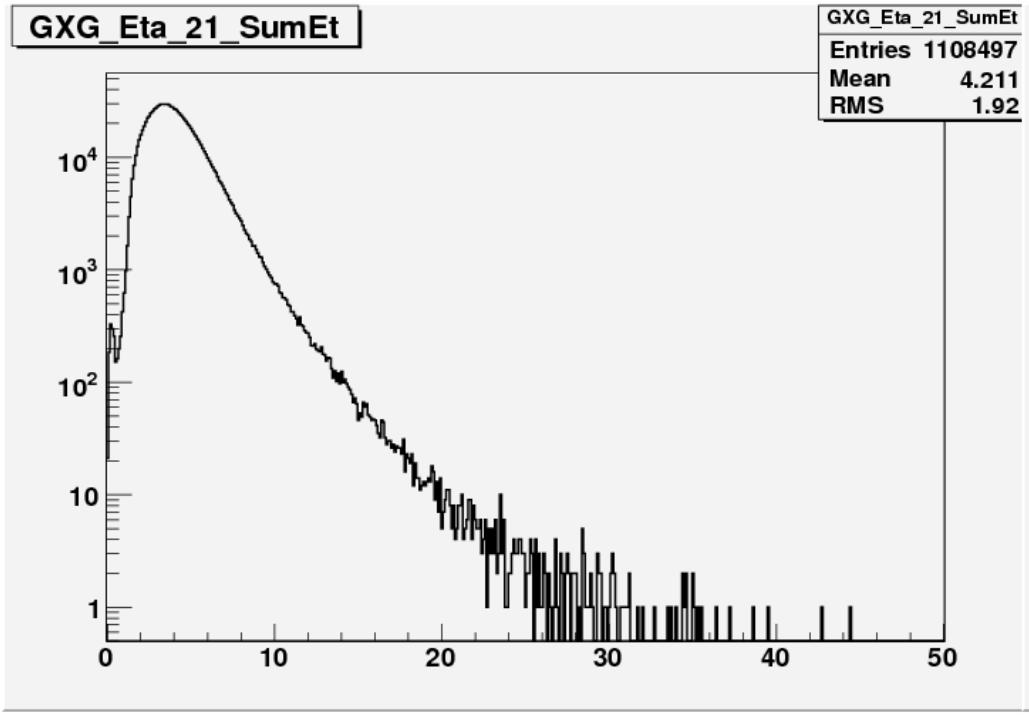
Runs # 292319, 294607, 294773, 294775, 294777, 294630, 304275, 306571, 306757, 306761, 306762

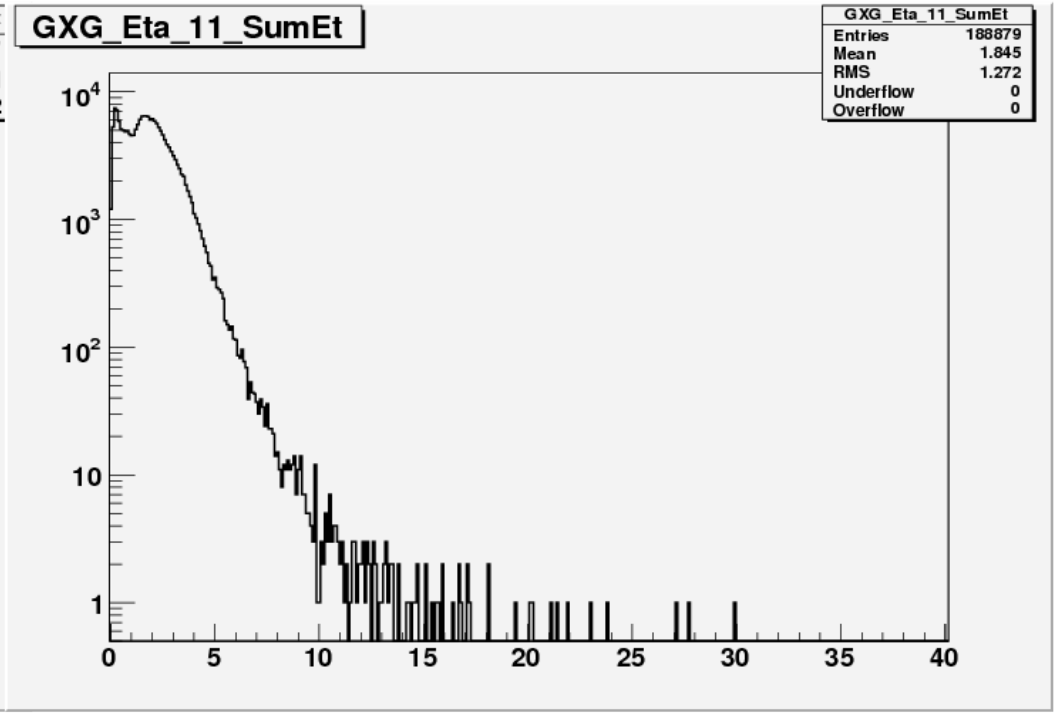
Trigger: TWO_CJET0.5

After:

- Forward rapidity cleanup
- Neural network cleanup

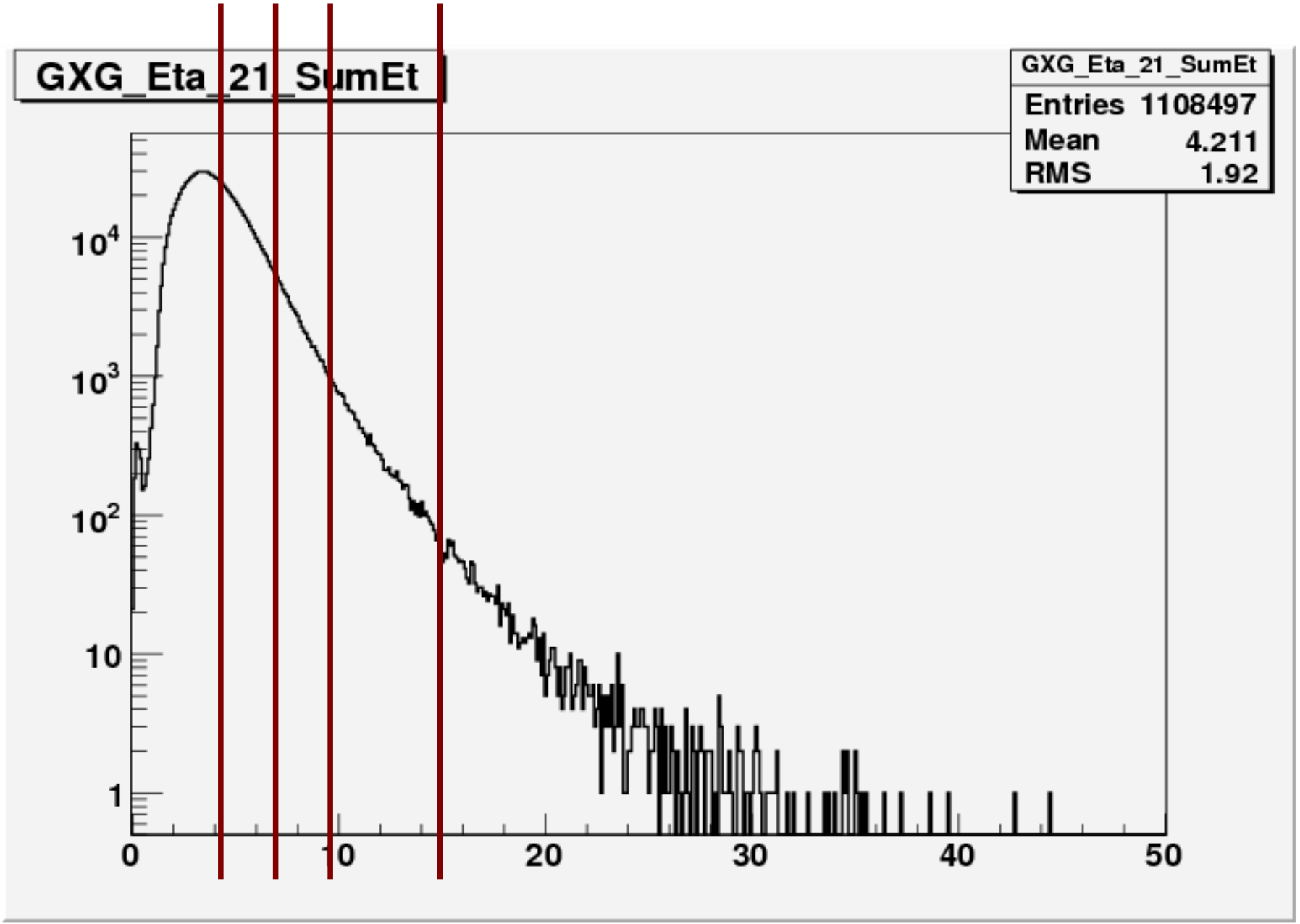
Calorimeter Et





Scalar sum of Et in a calorimeter up to 2.1 in eta

Scalar sum of Et in a calorimeter up to 1.1 in eta (after cuts on 1.1 to 2.1 region)


GXG_Eta_21_SumEt
GXG_Eta_21_SumEt
Entries 1108497
Mean 4.211
RMS 1.92
10^4
10^3
10^2
10
1
0
10
20
30
40
50

Event shape variables

- Energy tensor: $$S^{\alpha\beta} = \frac{\sum_i E_i^\alpha E_i^\beta}{\sum_i E_i^2}$$
-
- Eigenvalues $\lambda_1, \lambda_2, \lambda_3$: $$\lambda_1 \geq \lambda_2 \geq \lambda_3$$

Sphericity:

$$S = \frac{3}{2}(\lambda_2 + \lambda_3)$$

$$0 \leq S \leq 1$$

Aplanarity:

$$A = \frac{3}{2}\lambda_3$$

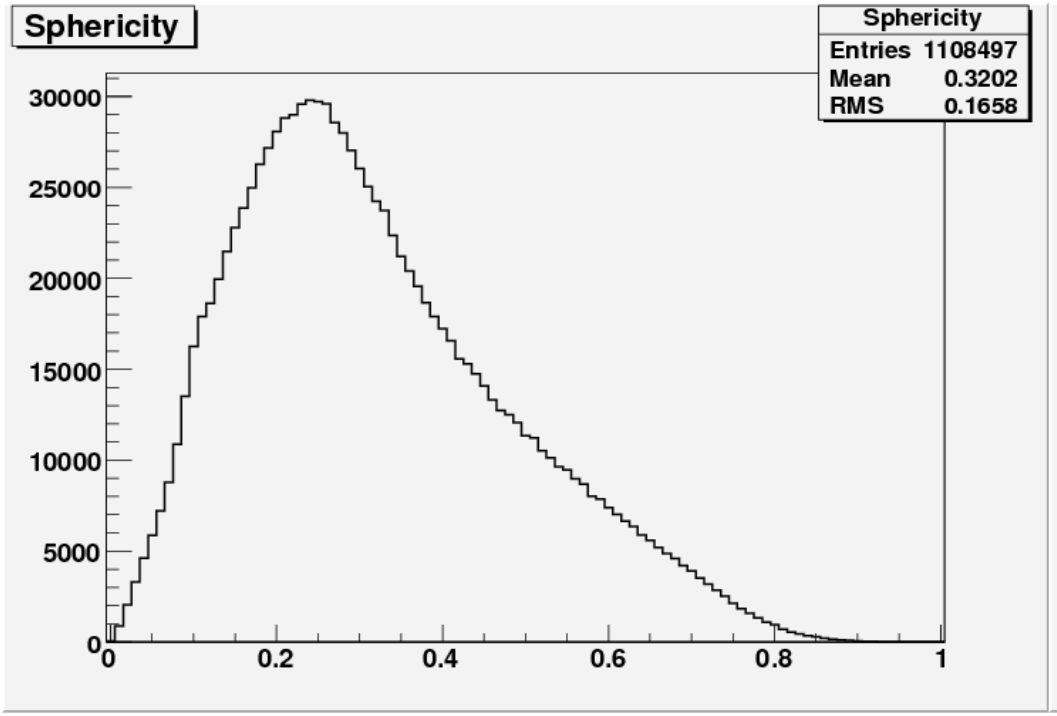
$$0 \leq A \leq \frac{1}{2}$$

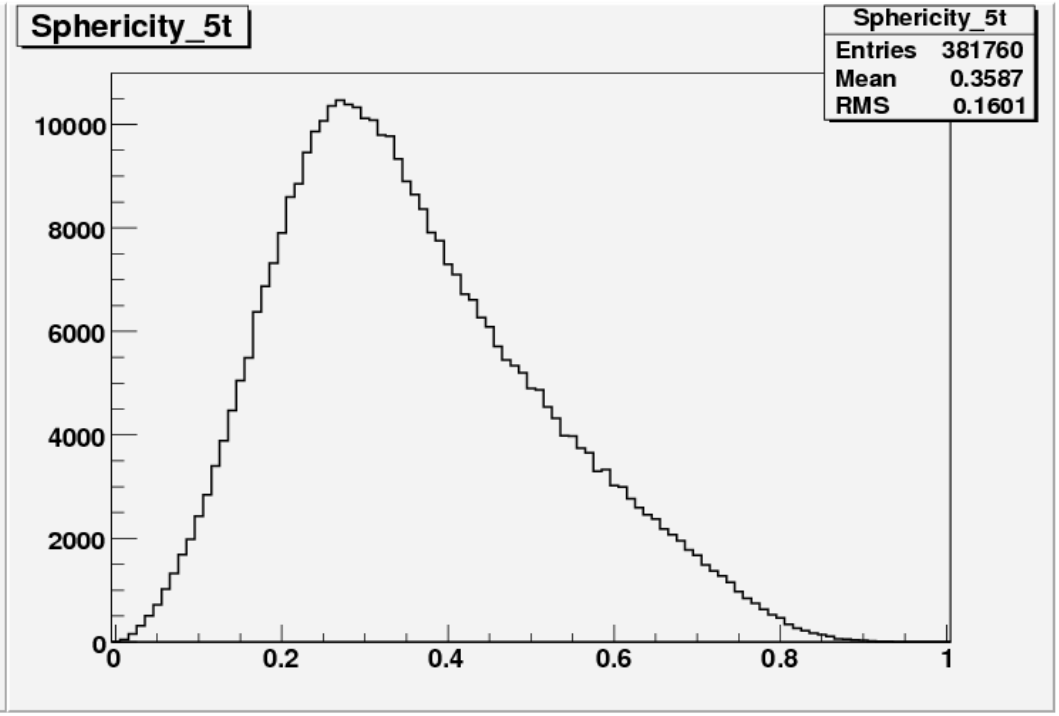
Circularity:

$$C = \frac{2\lambda_2}{\lambda_1 + \lambda_2}$$

$$0 \leq C \leq 1$$

Sphericity

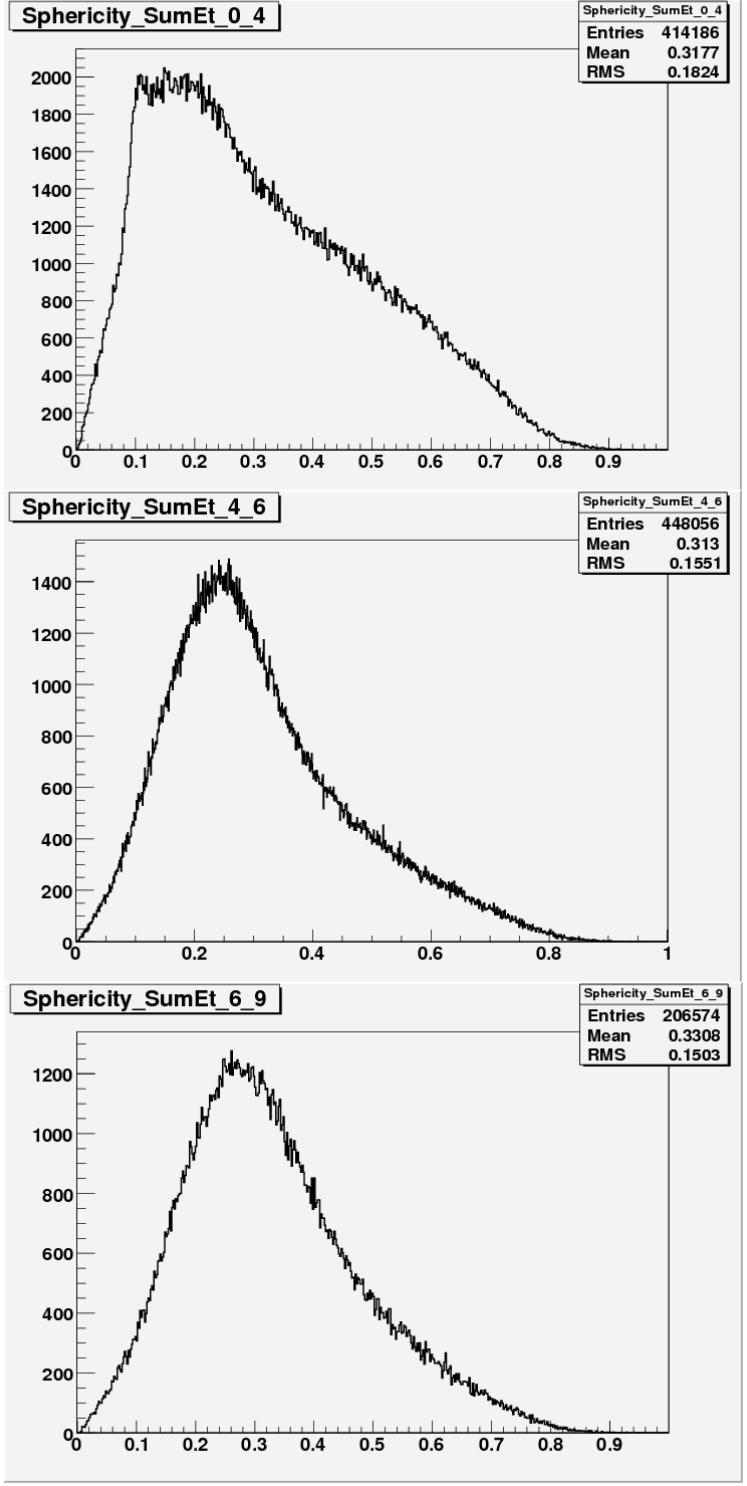


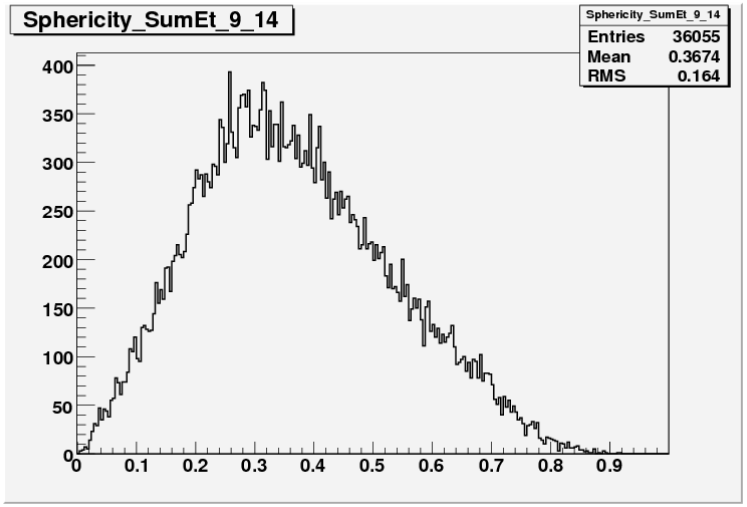


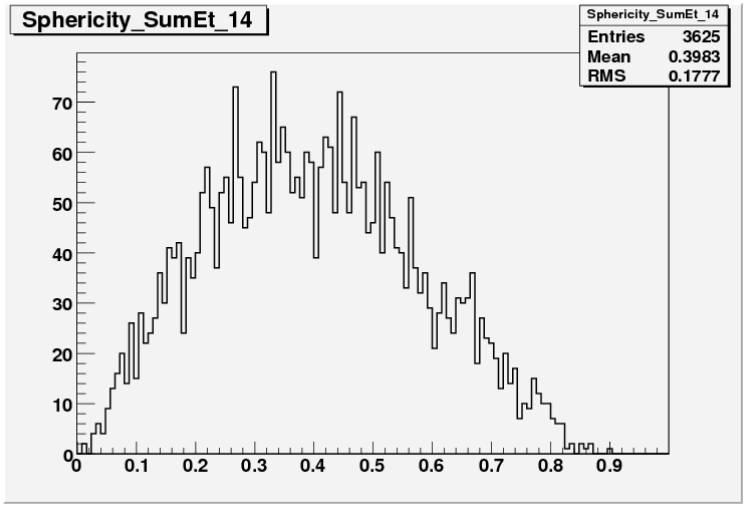
Sphericity for all events

Sphericity for events with number of tracks > 4

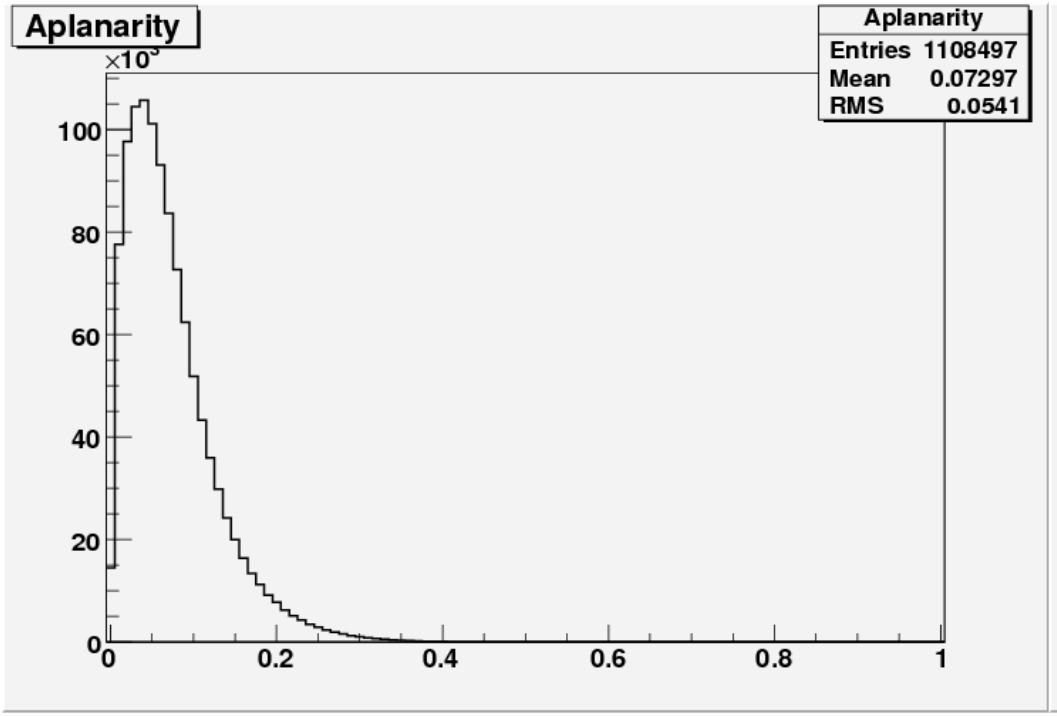
Sphericity for different bands of Et sum

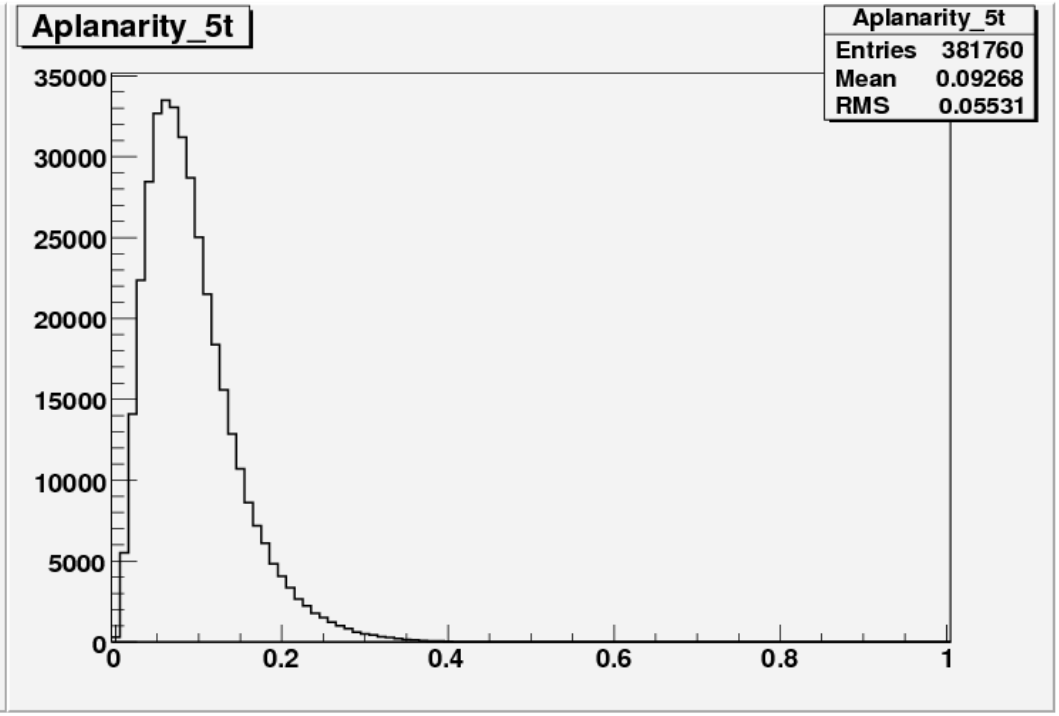






Aplanarity

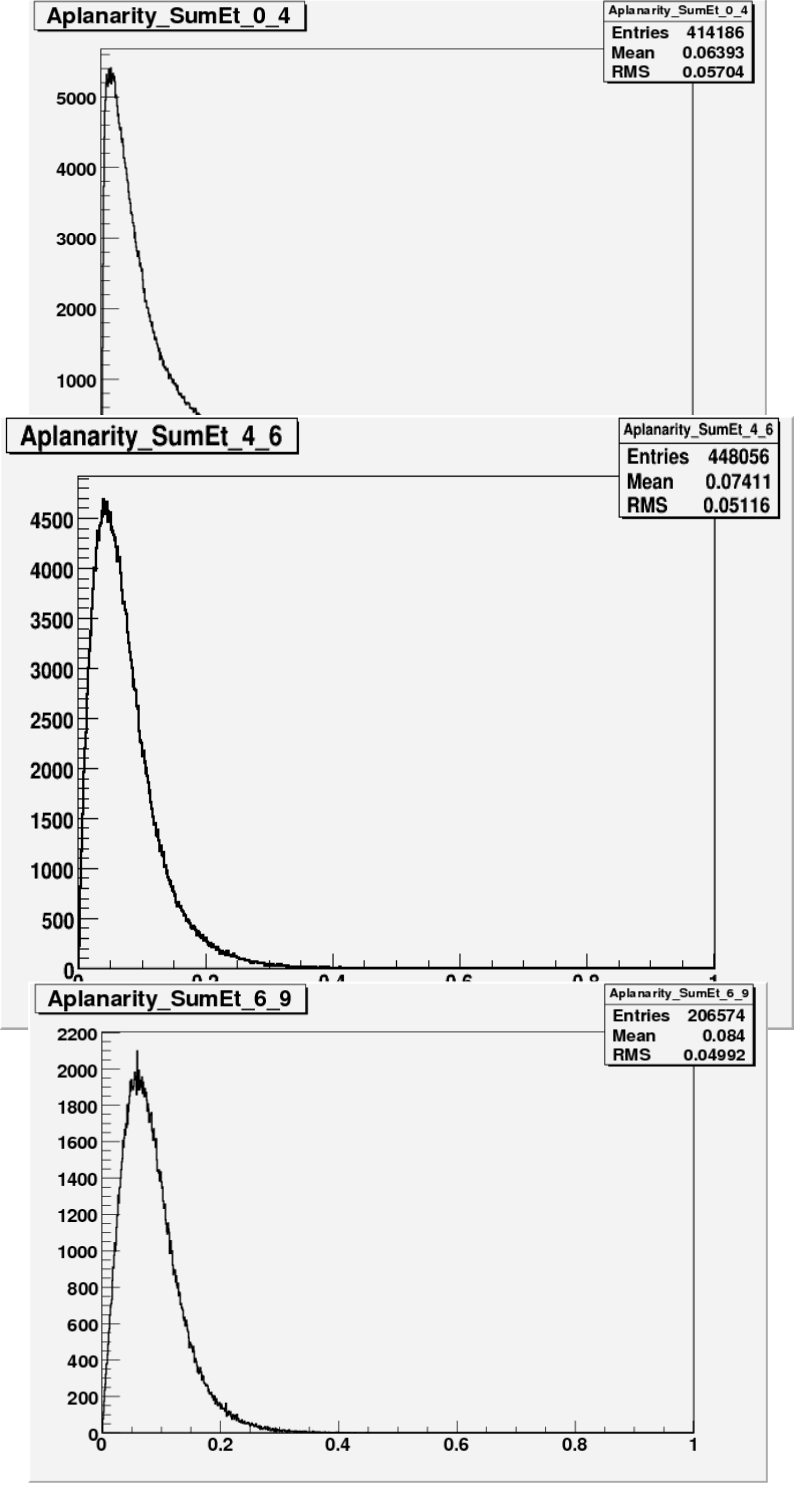


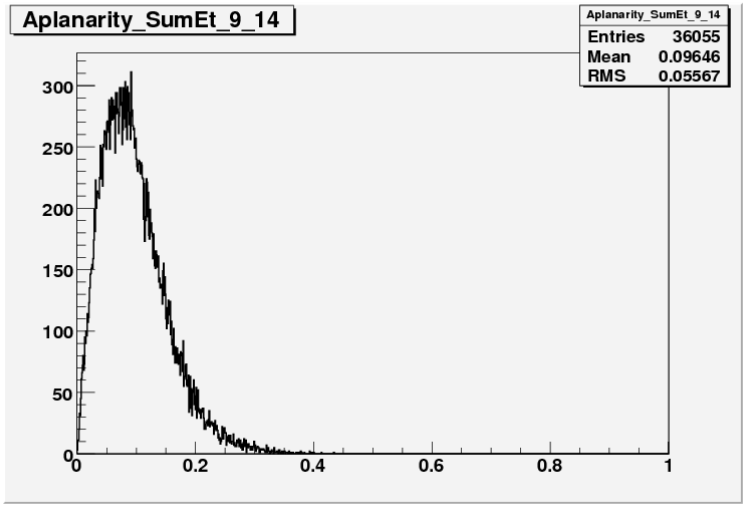


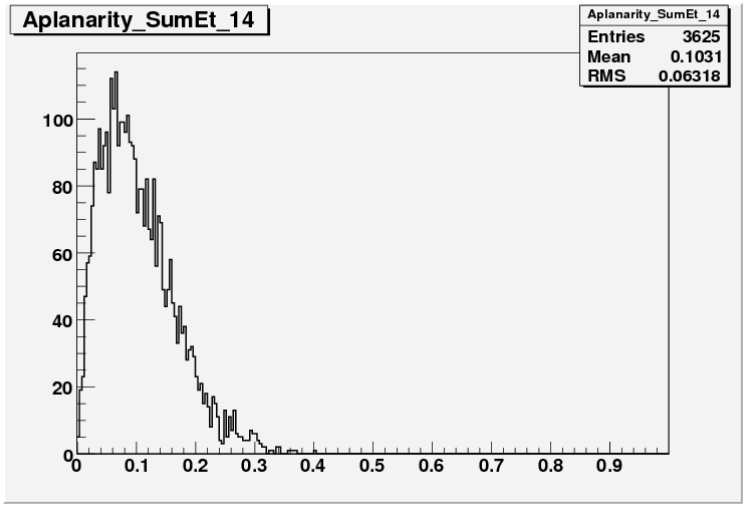
Aplanarity for all events

Aplanarity for events with number of tracks > 4

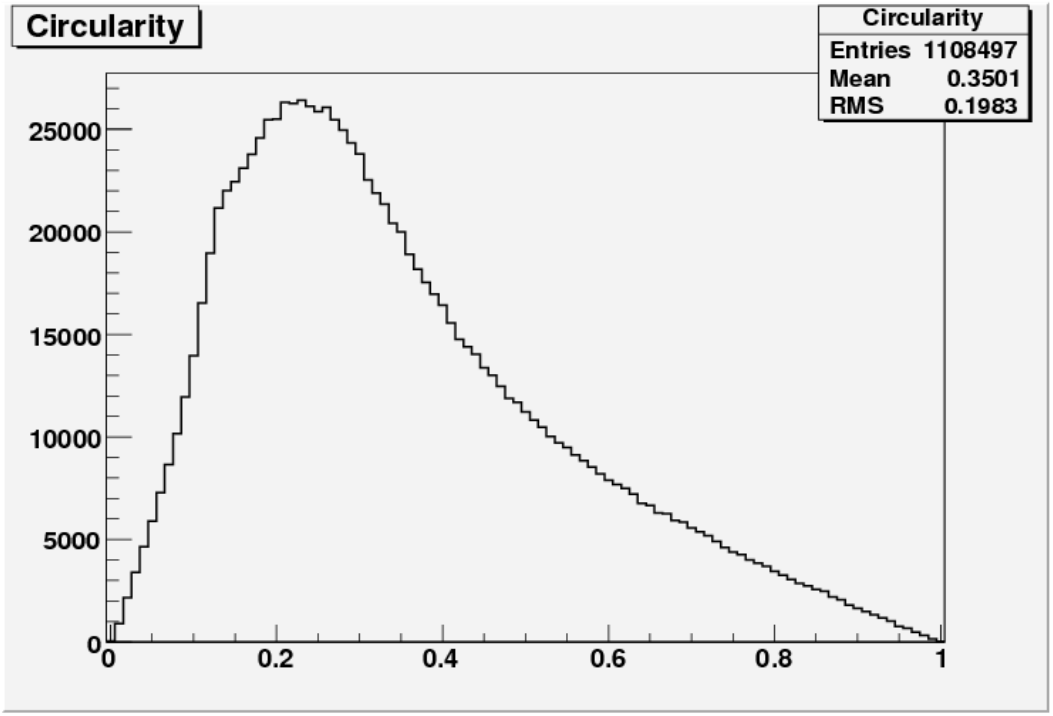
Aplanarity for different bands of Et sum





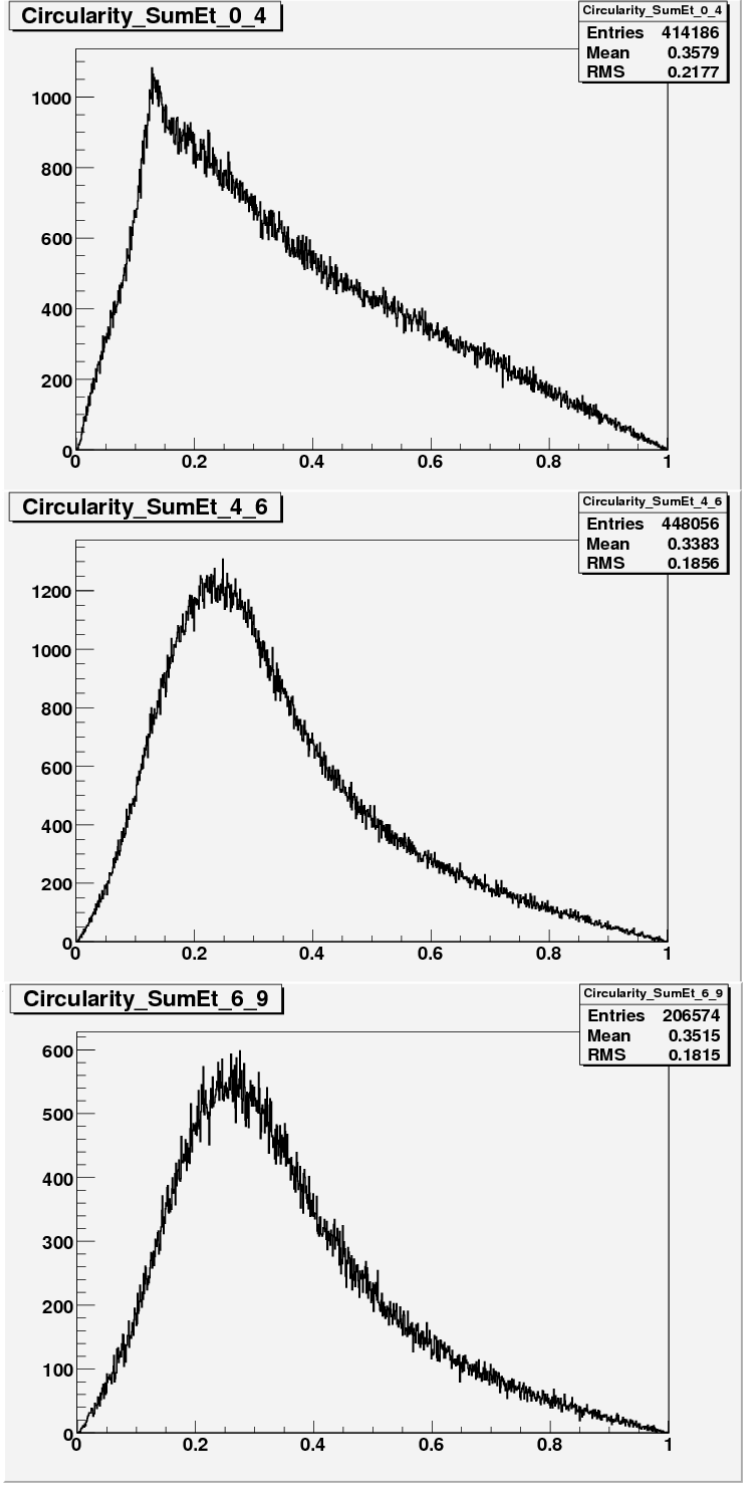


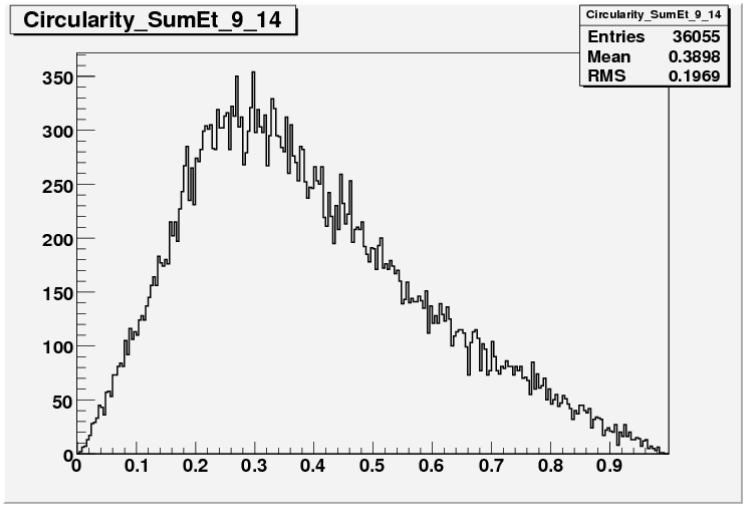
Circularity

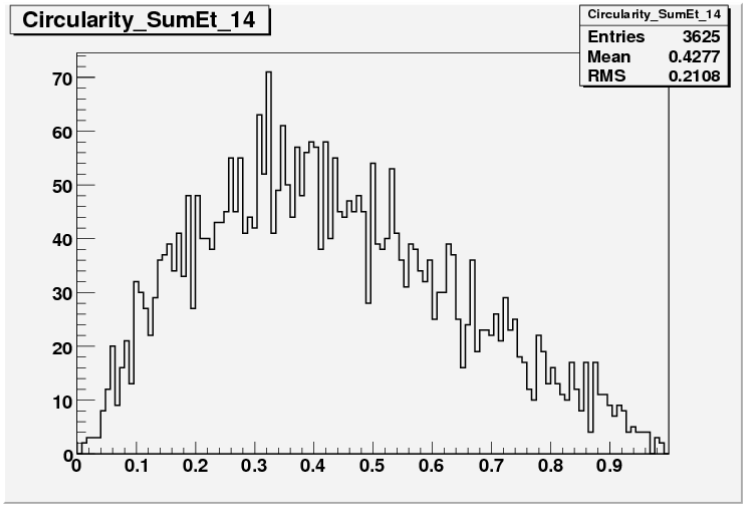


Circularity for all events

Circularity for different bands of Et sum

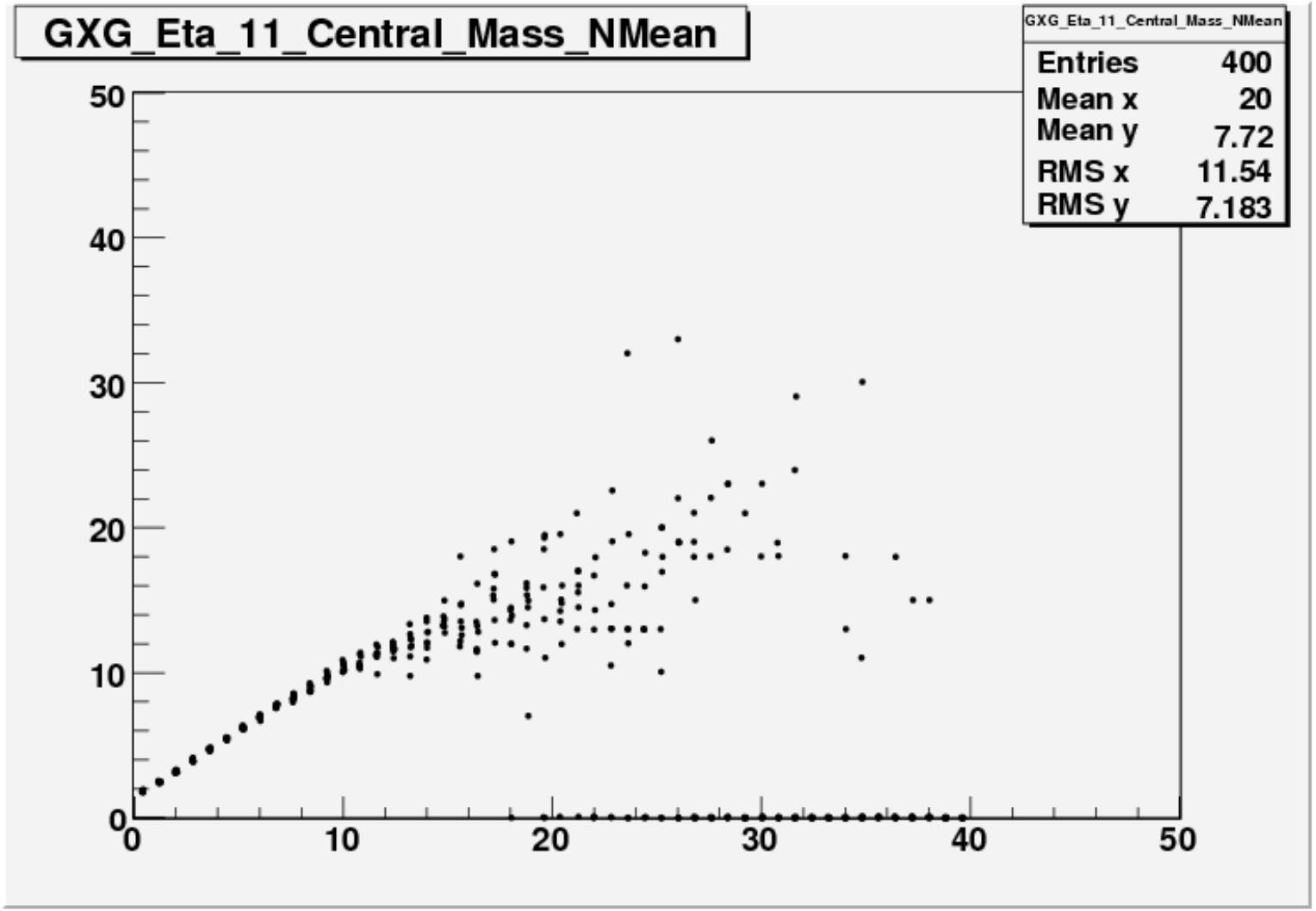




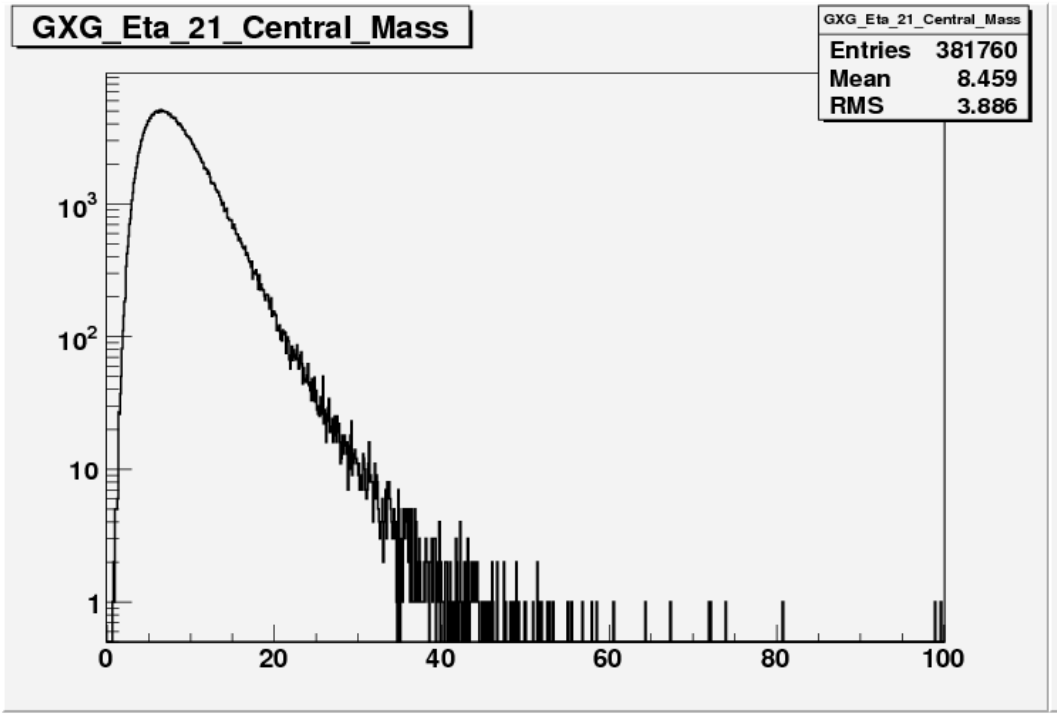


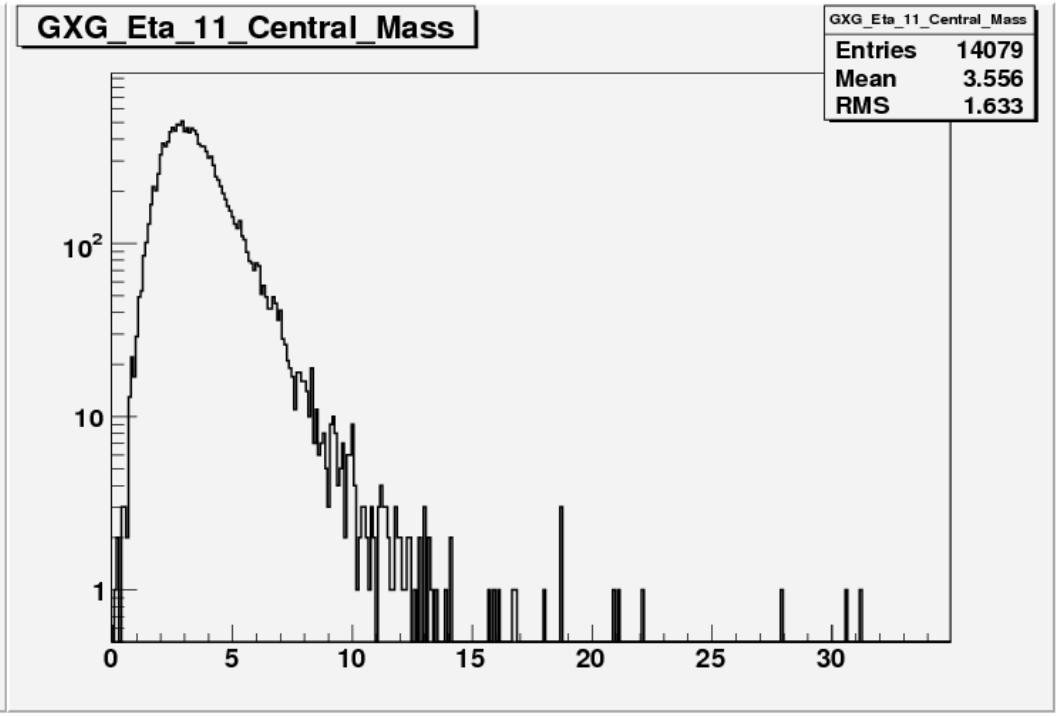
Central mass

Mean number of tracks vs central mass with a cal |eta| > 1.1 cleaned



Central mass

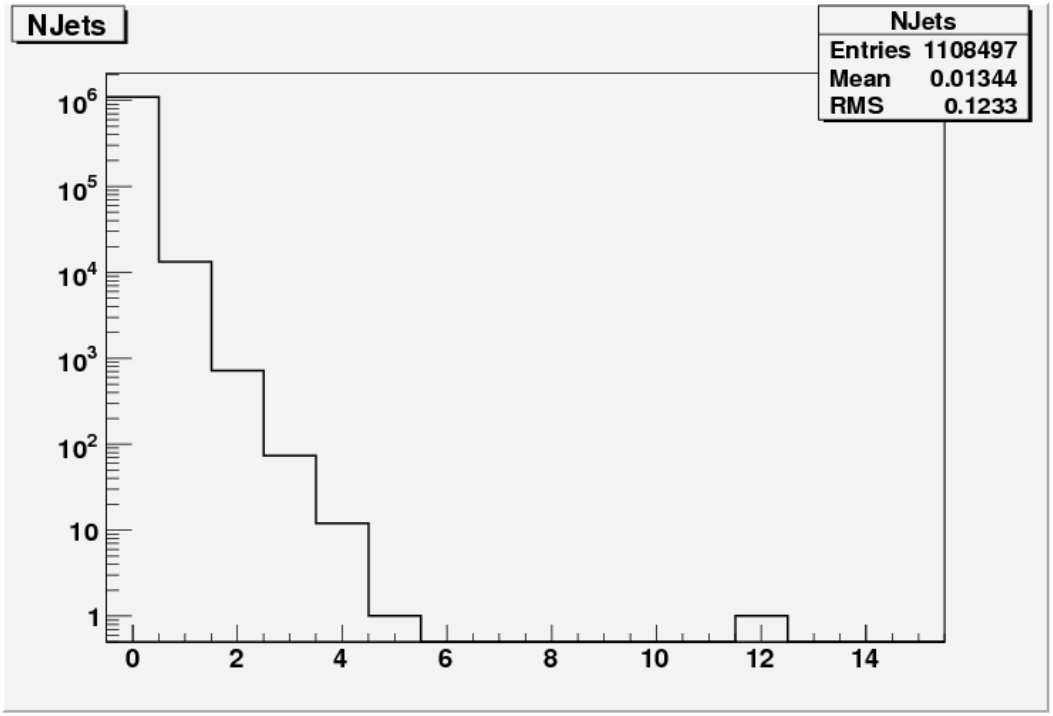




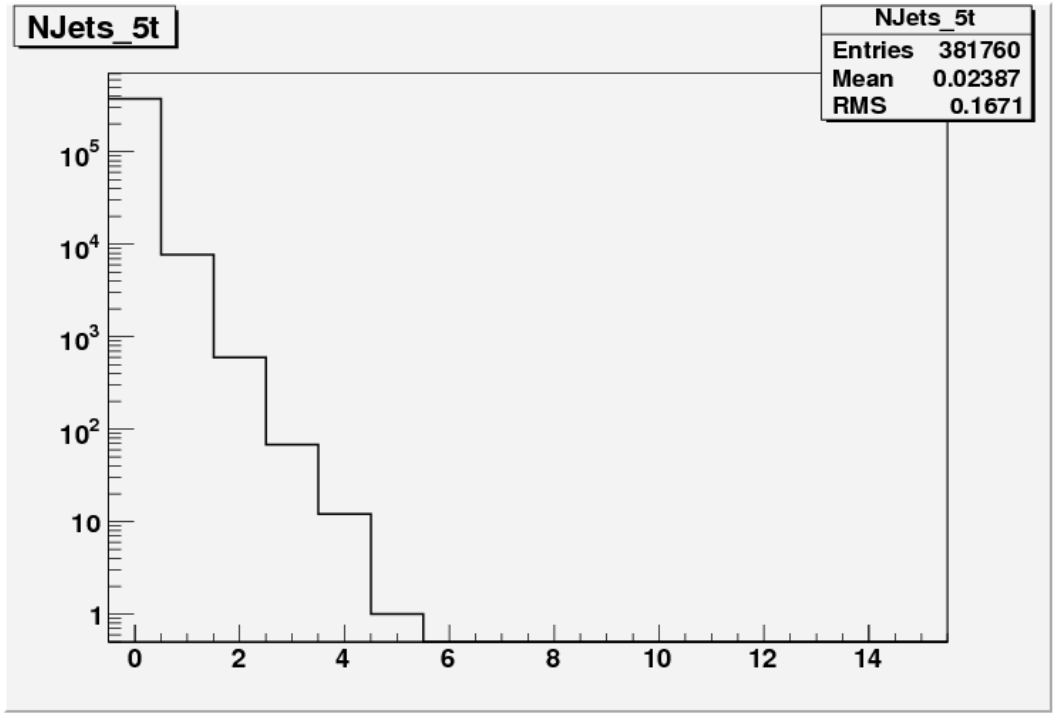
Central mass for events with #tracks > 4

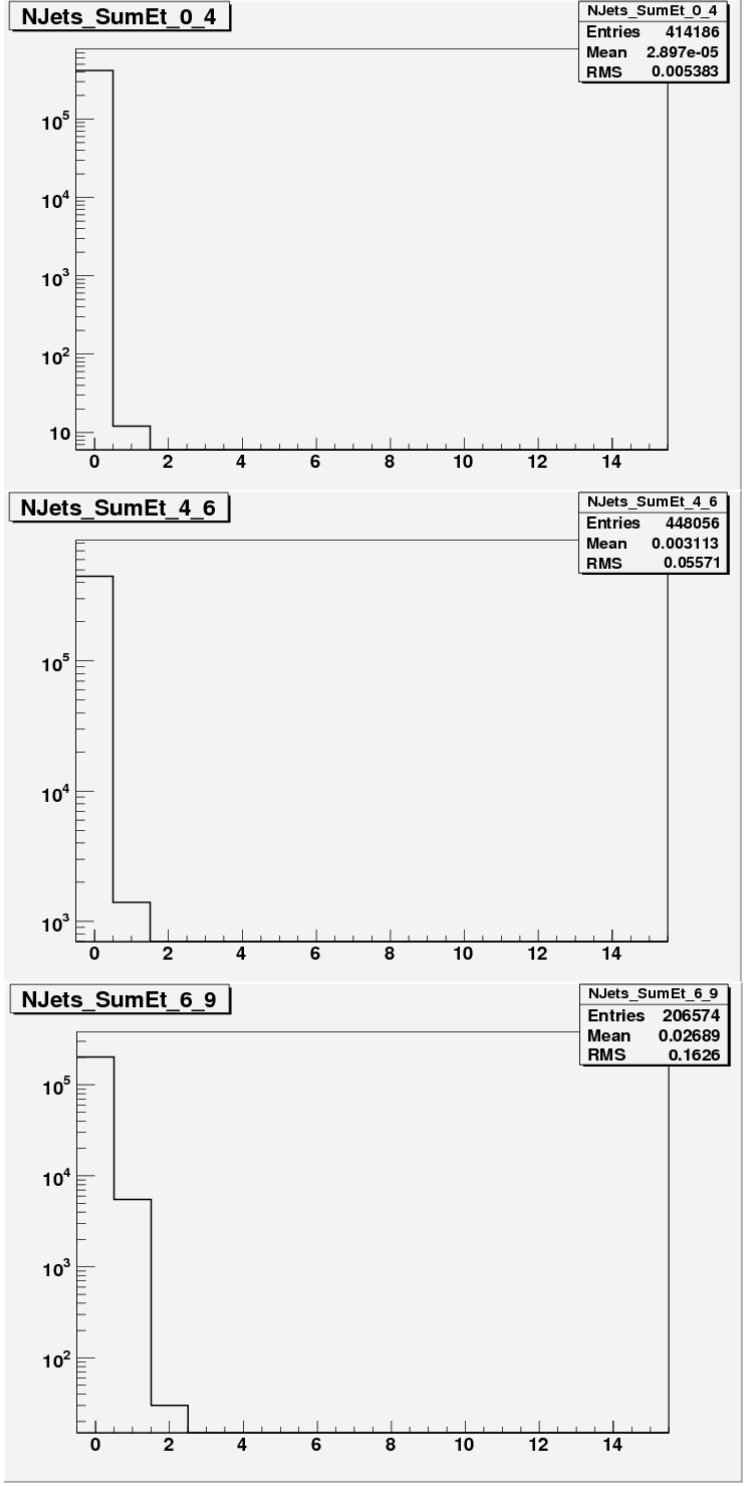
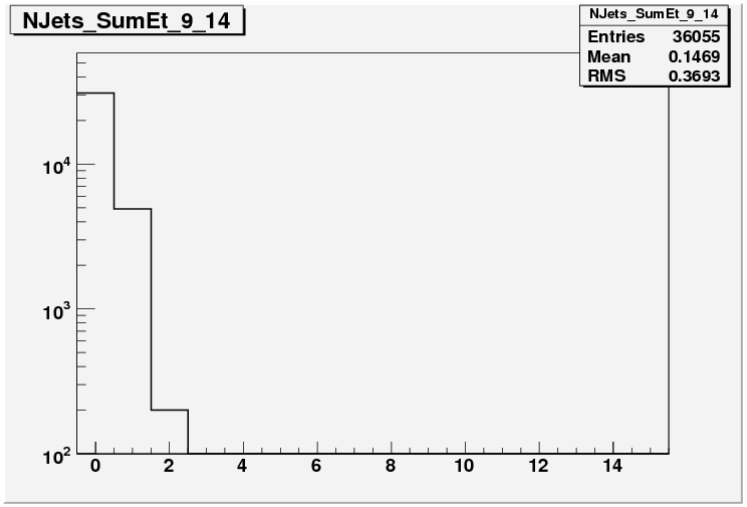
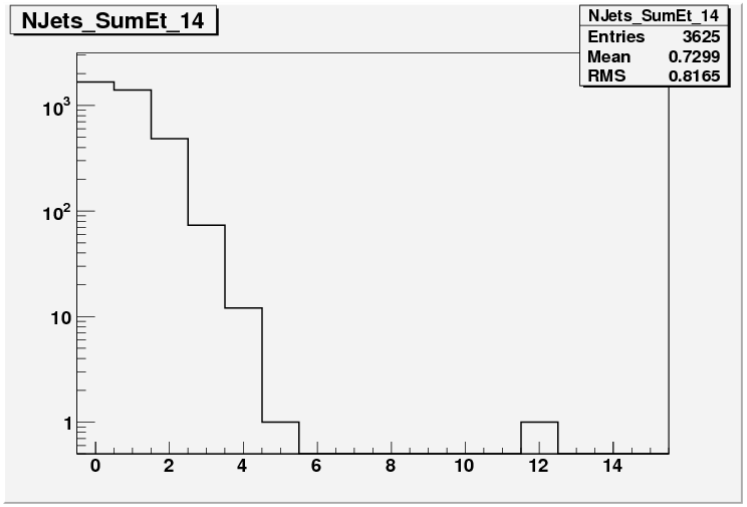
Central mass for events with #tracks > 4
With a clean cal
|eta| > 1.1

Jets



Number of jets for all events



Number of jets for events with #tracks > 4

Number of jets for different bands of Et sum