



First attempt to study Noise Dependence from Spacecraft Source Voltage

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Instrument Analysis Workshop 4 – SLAC July 14 – 15, 2005

Data Files

We are using two Towers Data:

- **Run 35002052 : Baseline (28 V)**
- **Run 35002114 : Min Source Voltage (27 V)**
- **Run 35002116 : Max Source Voltage (29 V)**

to verify there is no noise occupancy dependence from the Spacecraft Source Voltage

WARNING:

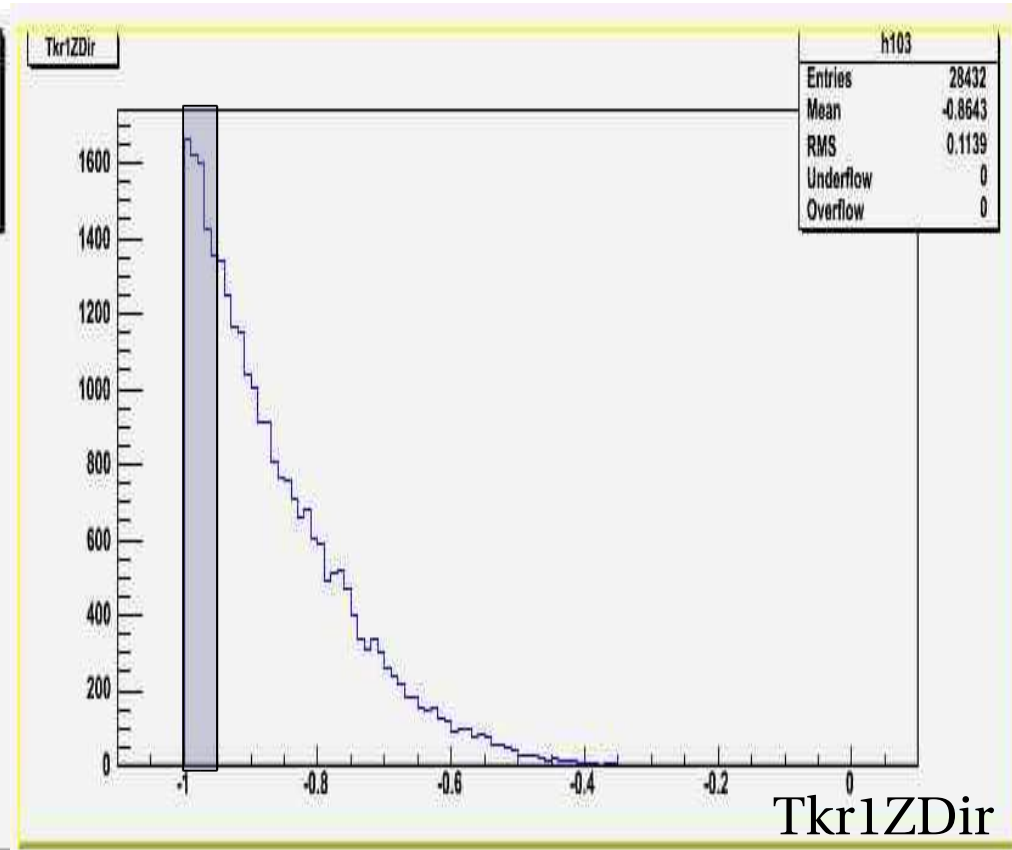
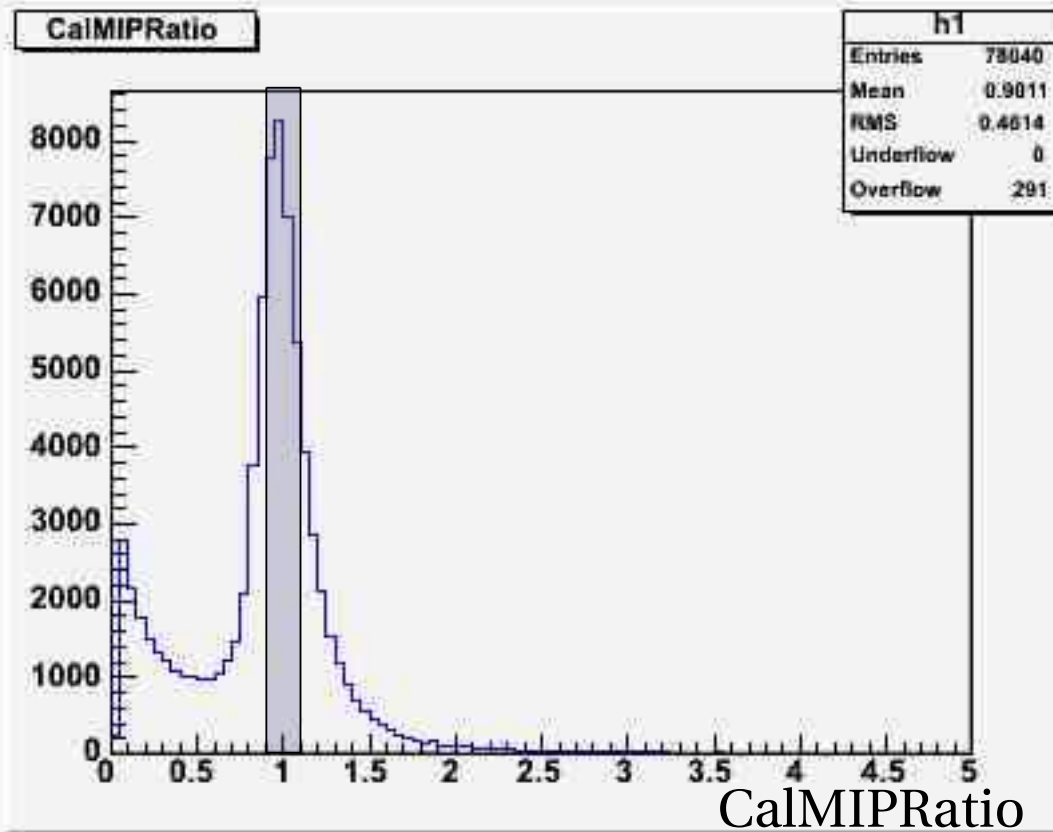
VERY PRELIMINARY ANALYSIS!!!!!!

Event Selection

TkrNumTracks = 1 (SVAC)

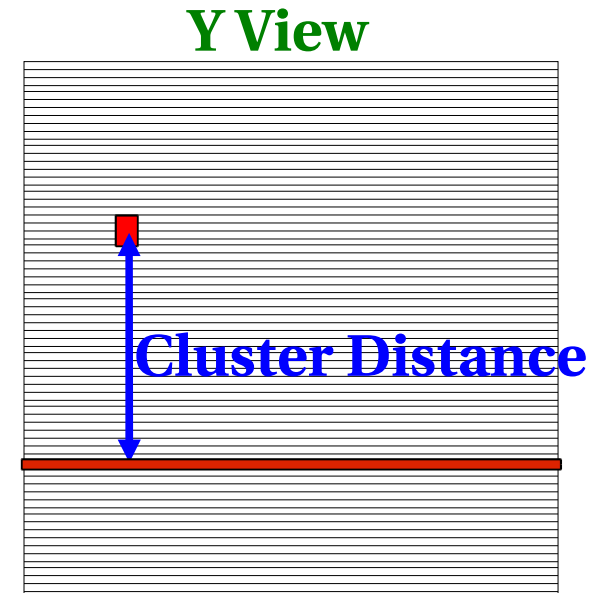
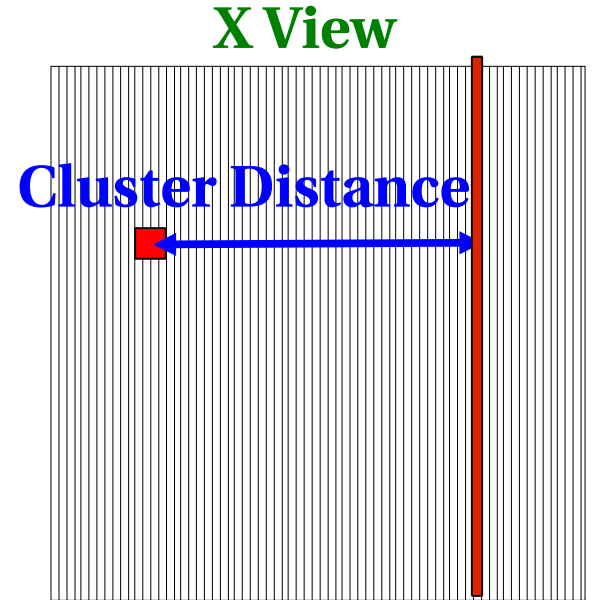
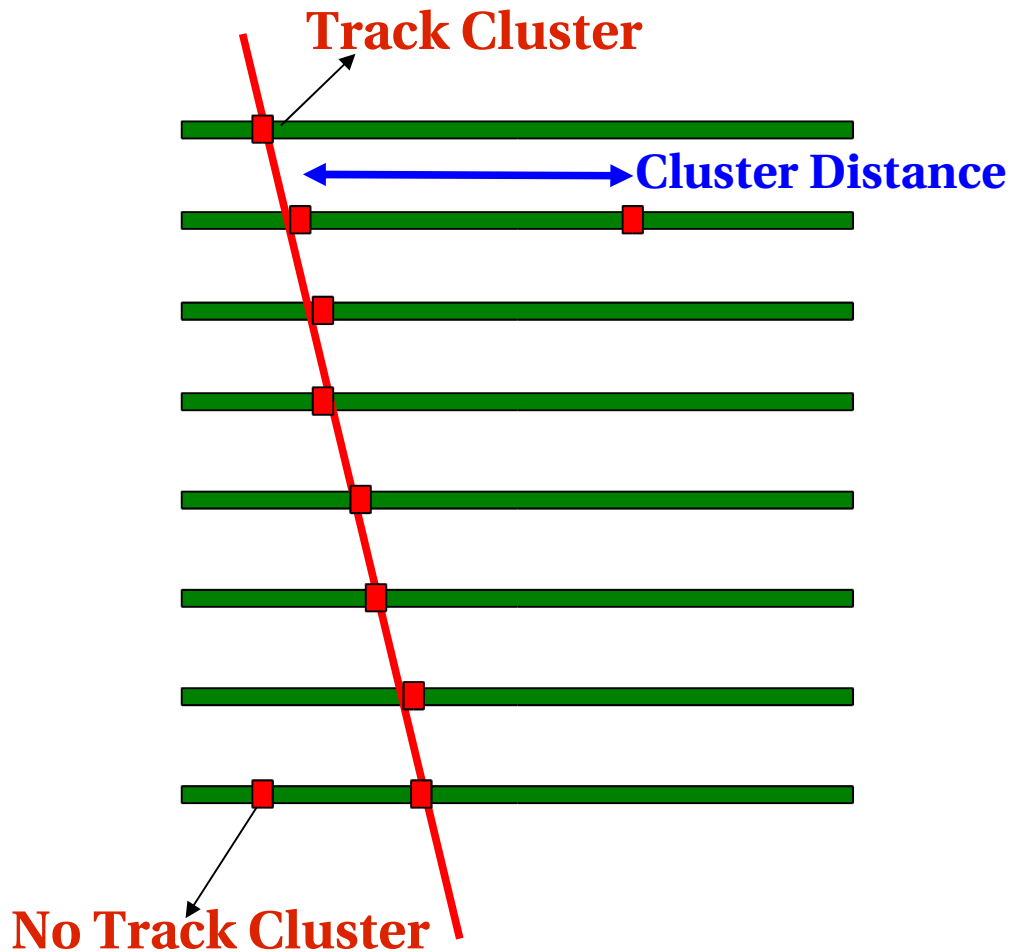
$0.9 < \text{CalMIPRatio} < 1.1$ (Merit)

$\text{Tkr1ZDir} < 0.95$ (Merit)

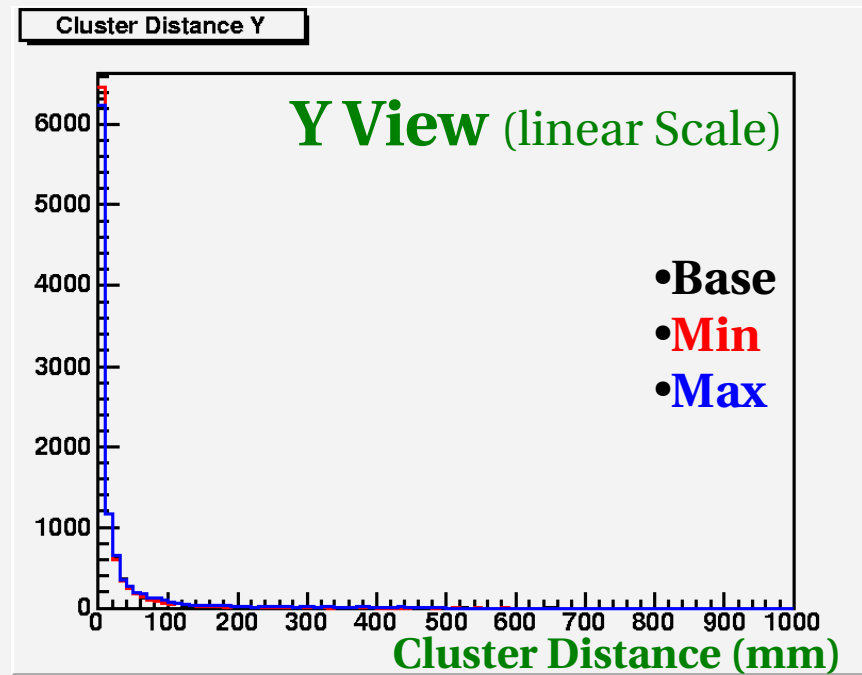
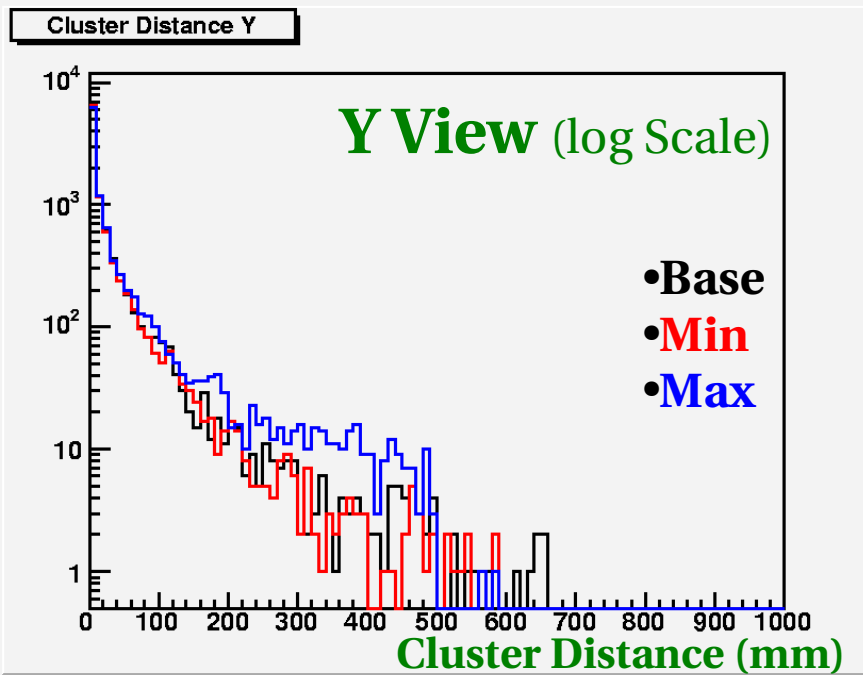
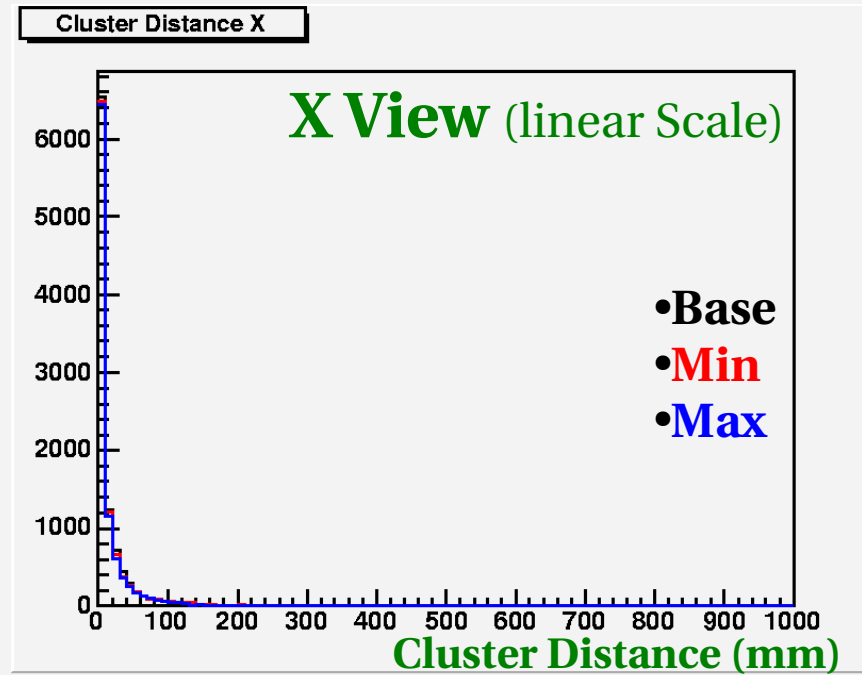
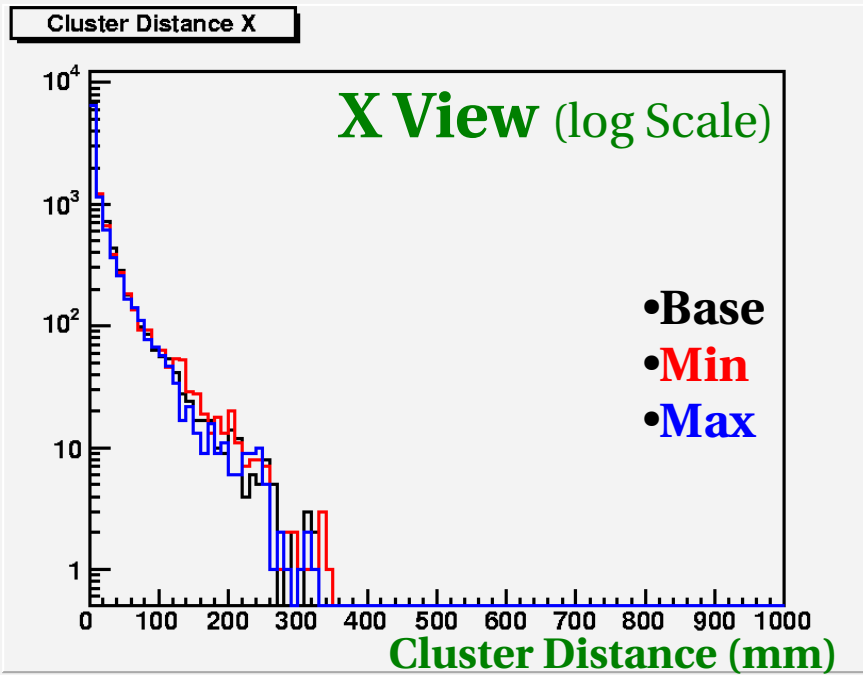


Method

We select clusters not associated to any track and compute the distance from the track cluster in the same plane

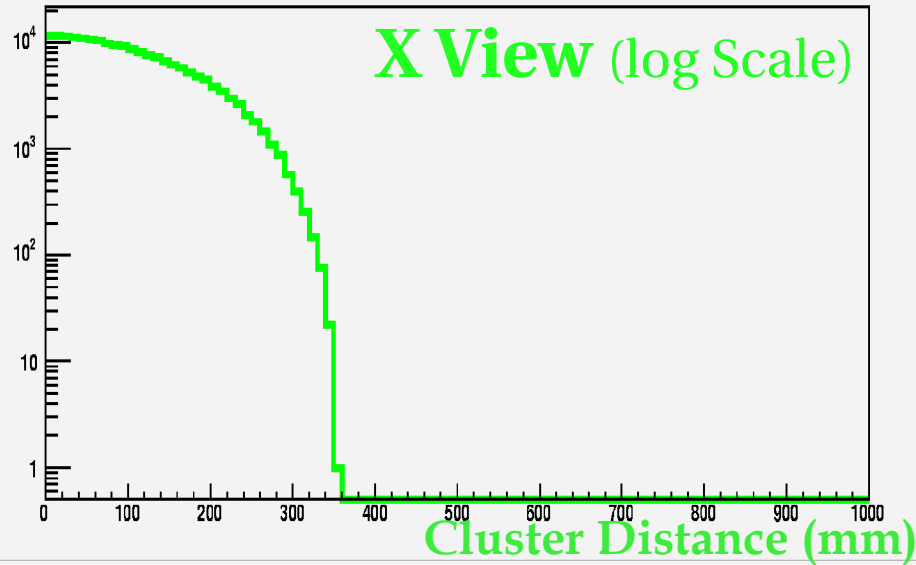


Cluster Distance

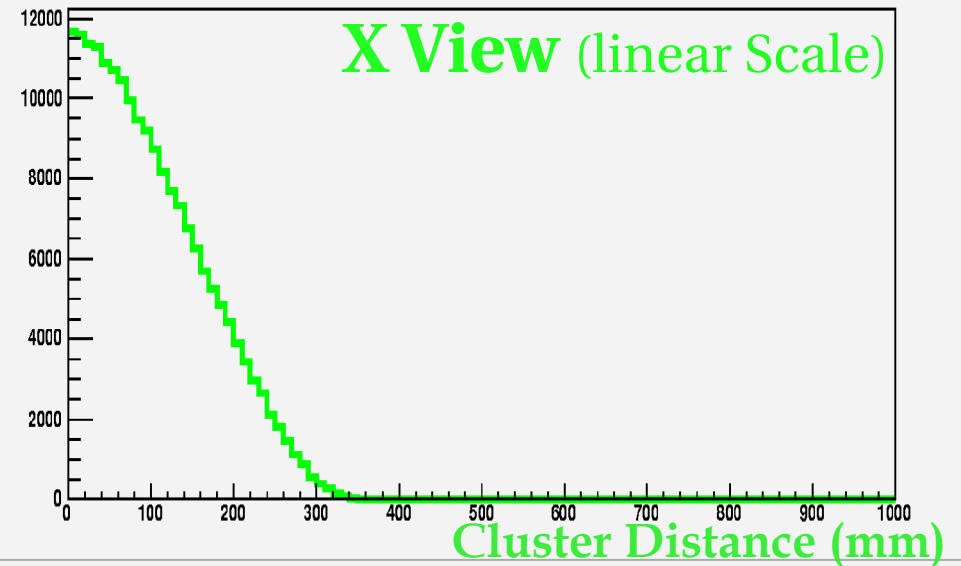


Simulated Uniform Noise Cluster Distance from Track Clusters

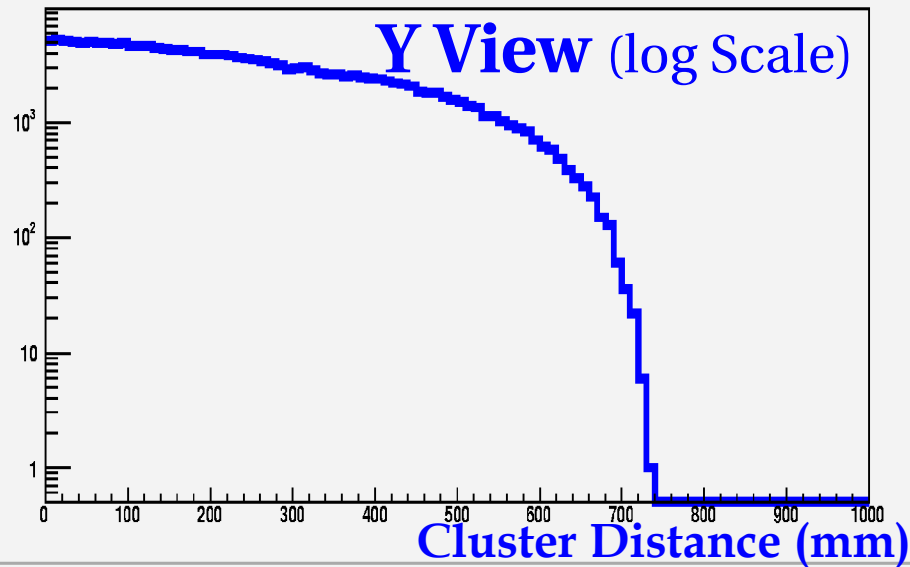
Simulated Cluster Distance X



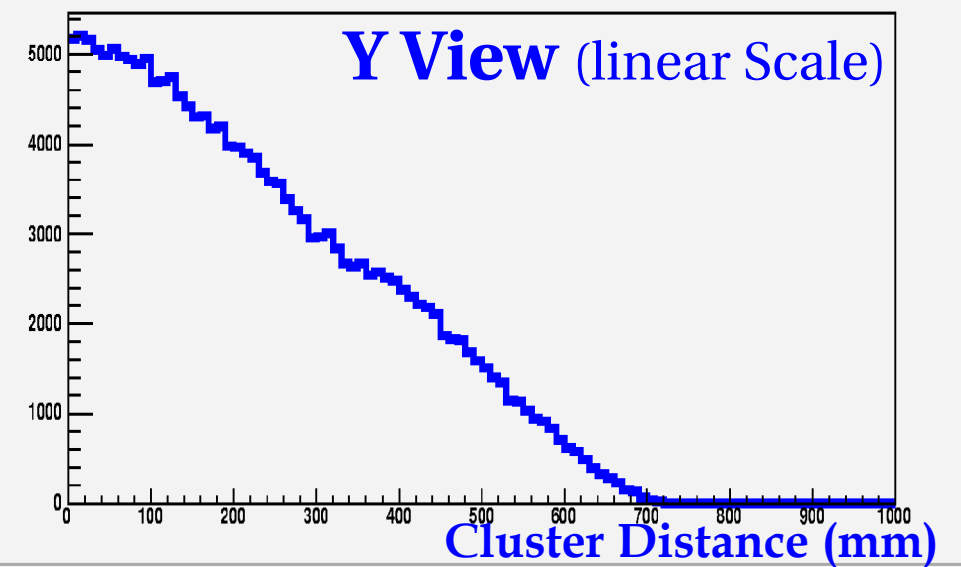
Simulated Cluster Distance X



Simulated Cluster Distance Y



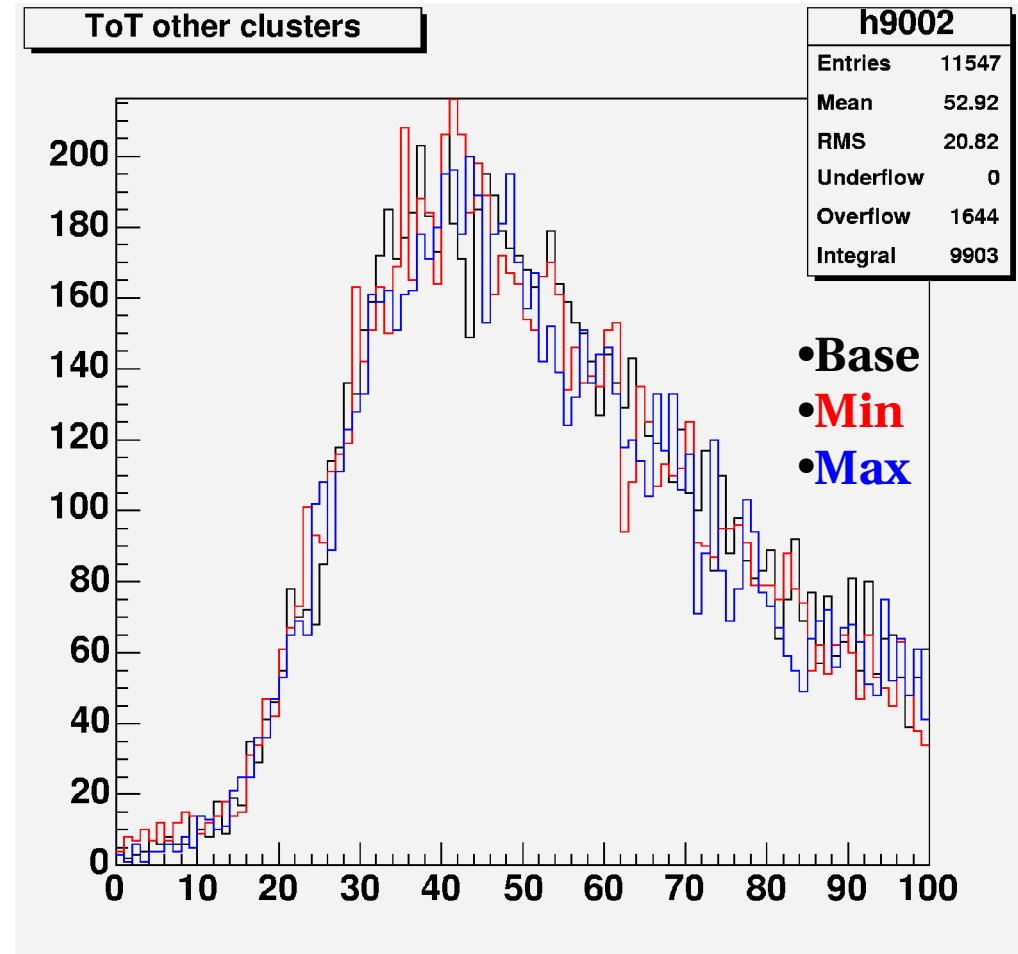
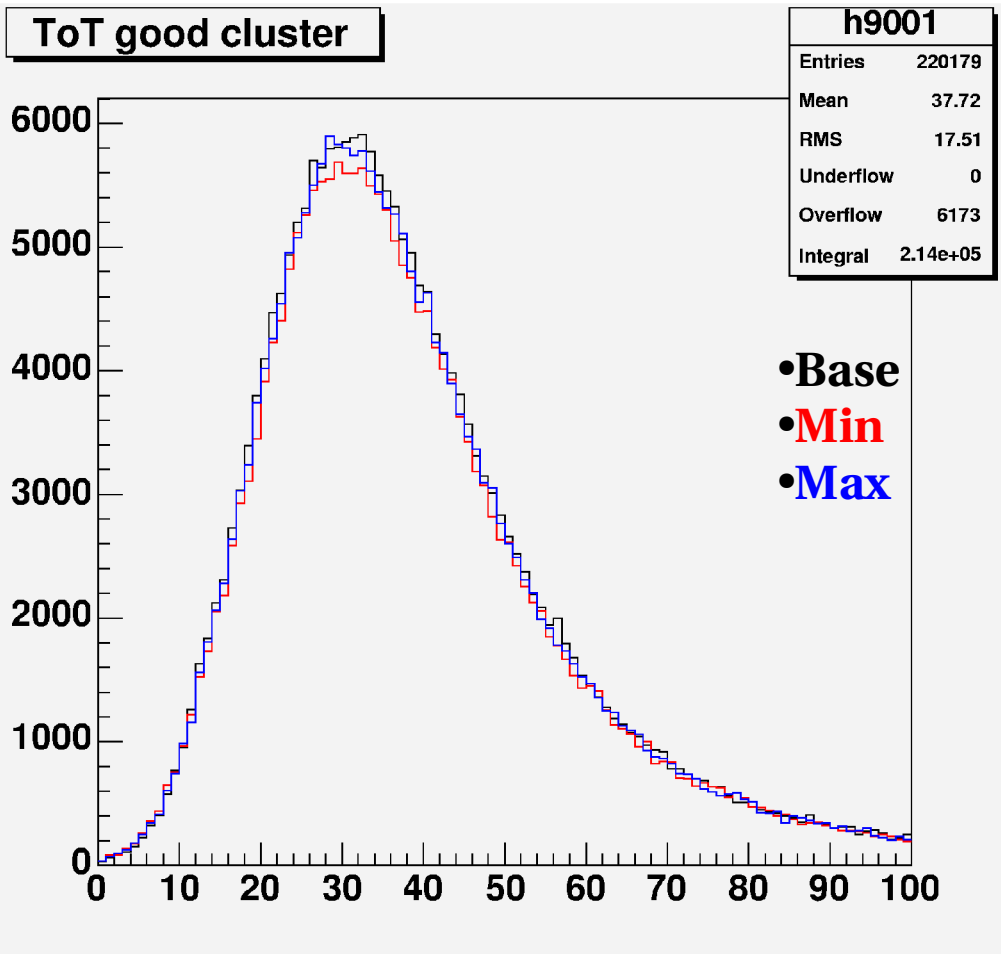
Simulated Cluster Distance Y



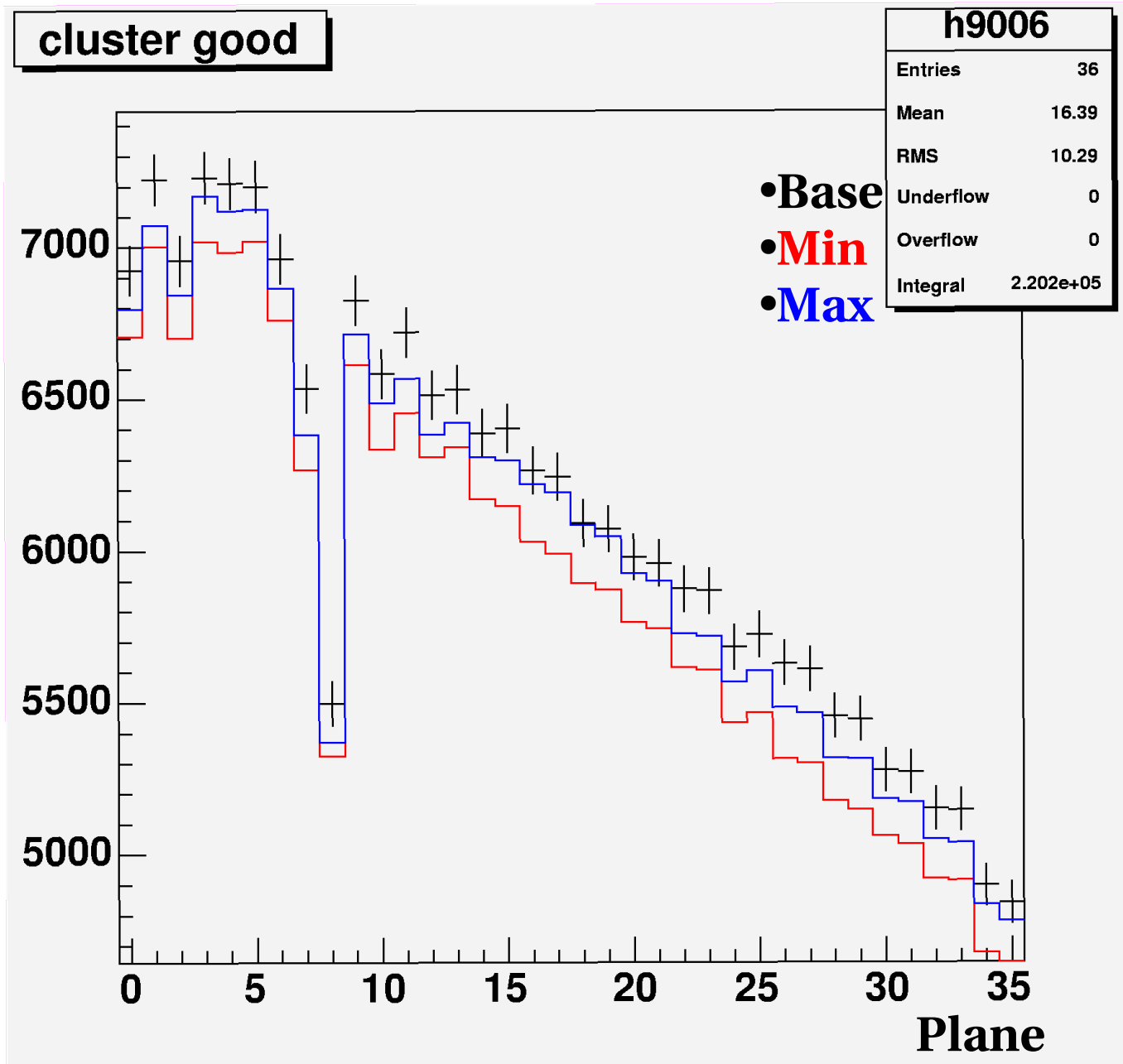
Cluster ToT

Average ToT for good clusters (belonging to the track) is smaller than for other clusters (noise)

WHY?



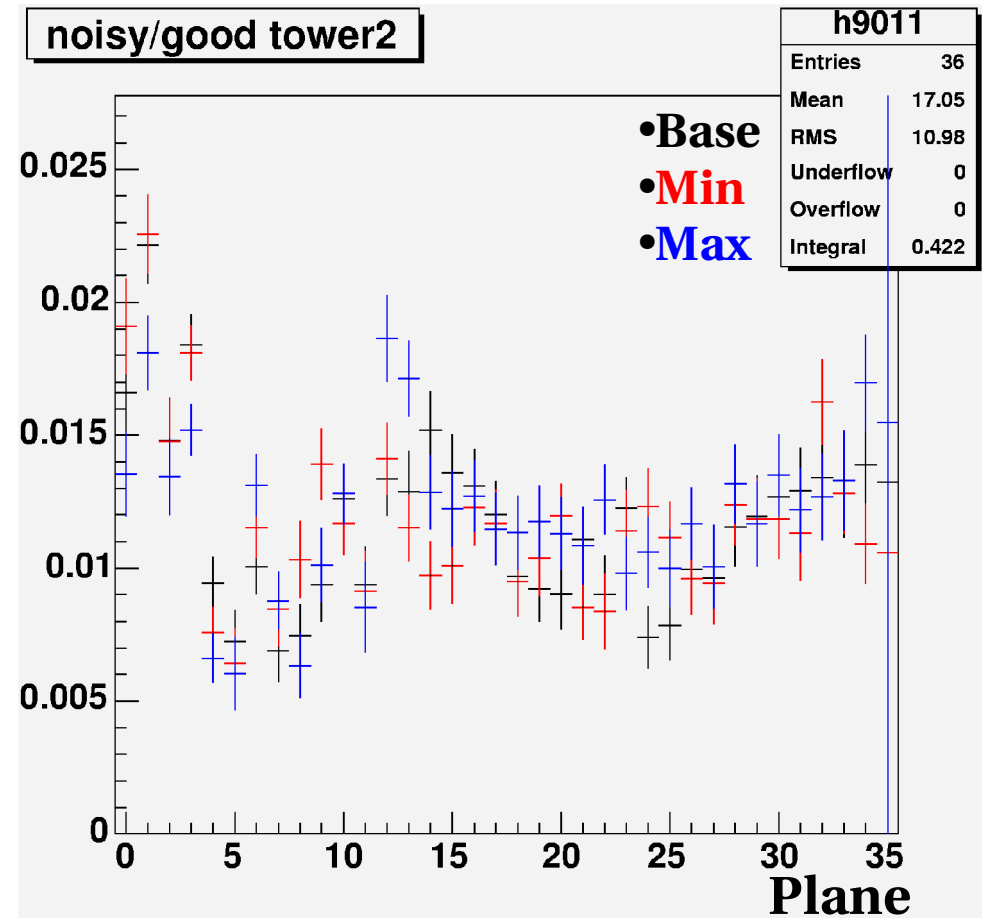
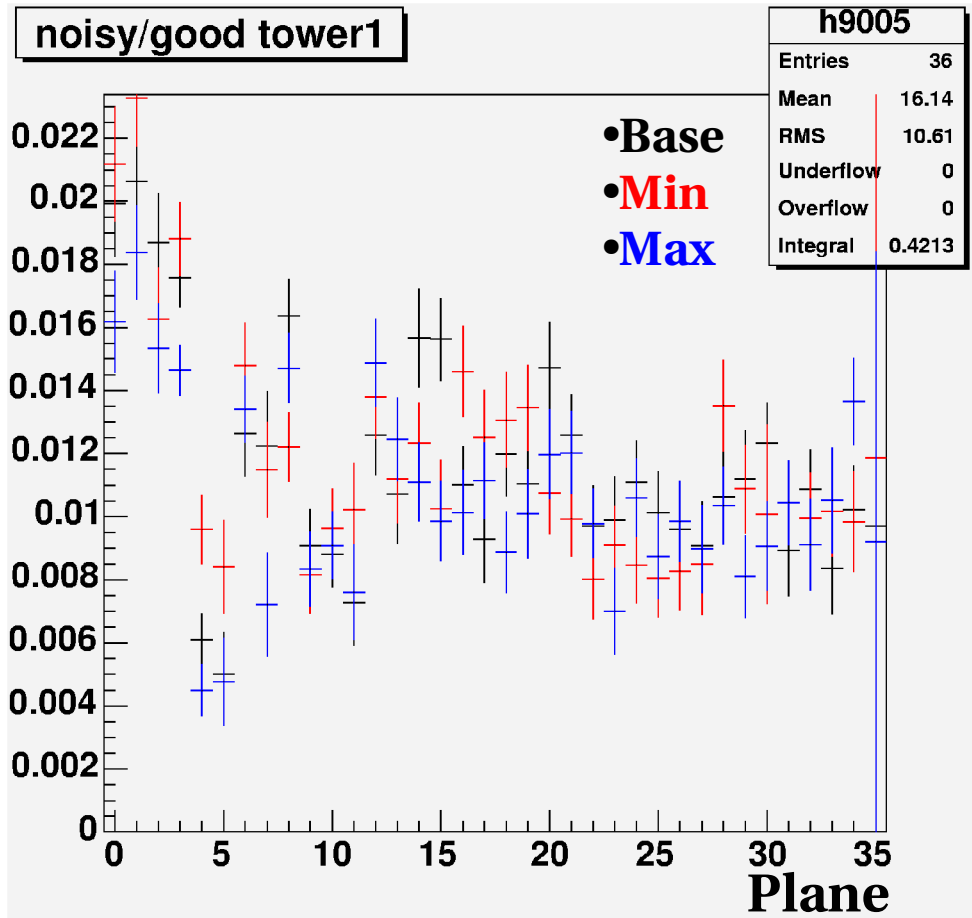
Track Cluster per Plane



Noisy Clusters/Good Cluster

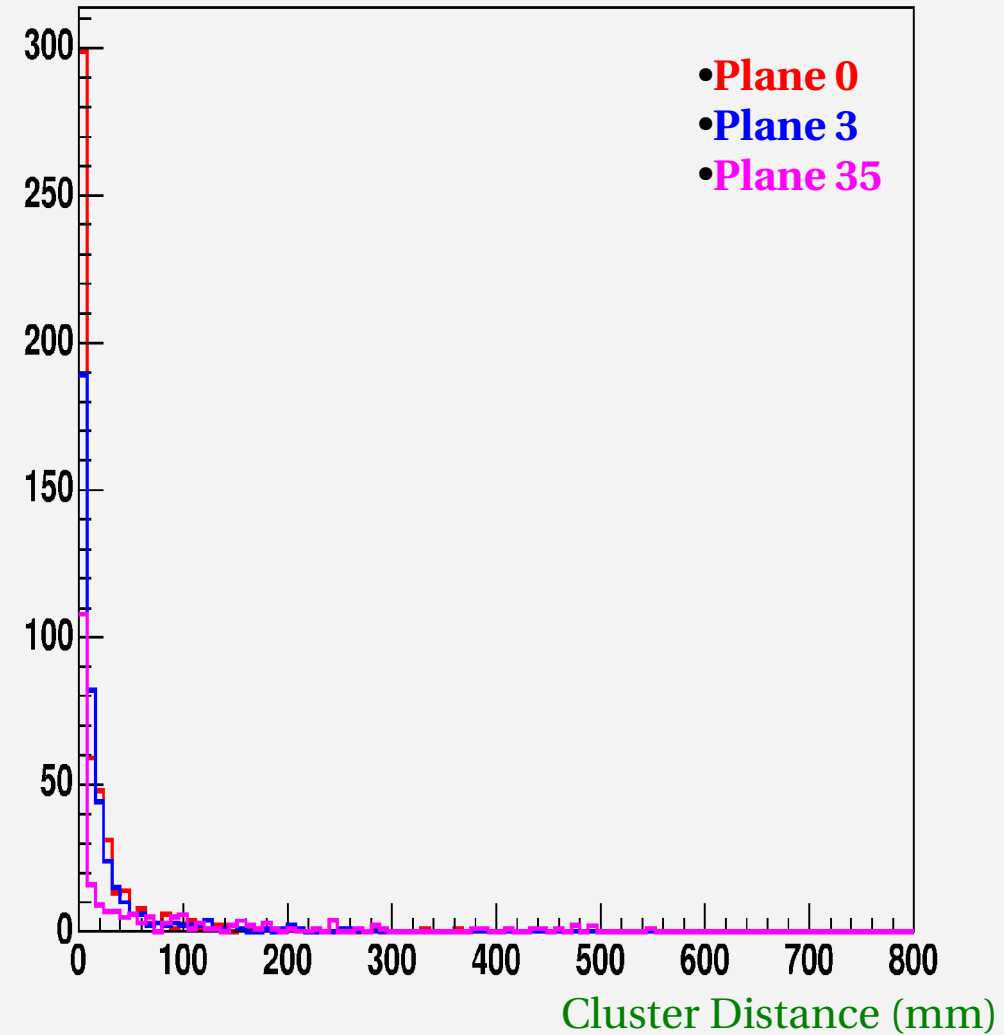
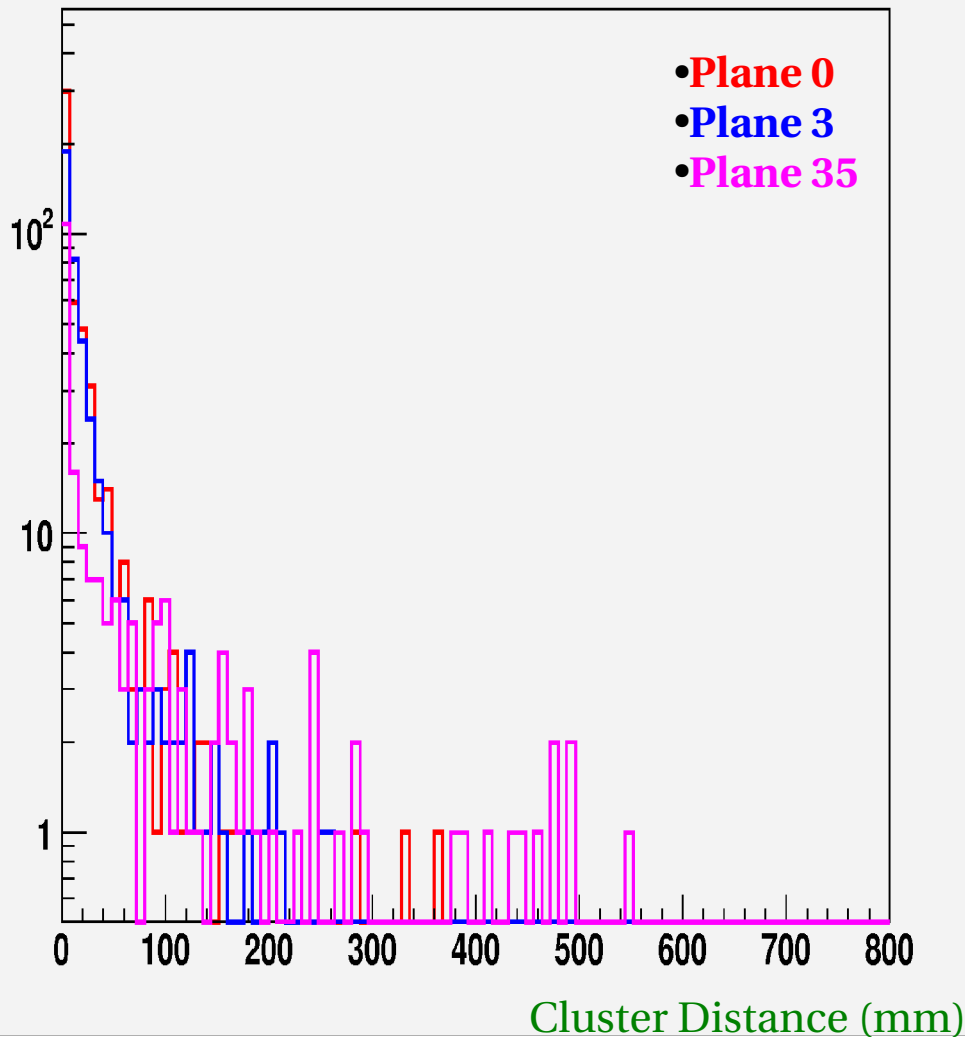
Assuming that the large peak at a distance close to zero is due to delta rays we define all **no track** clusters with **distance > 5 mm** as **noisy** clusters:

Top Plane = 35
Bottom Plane = 0



Differences among Layers

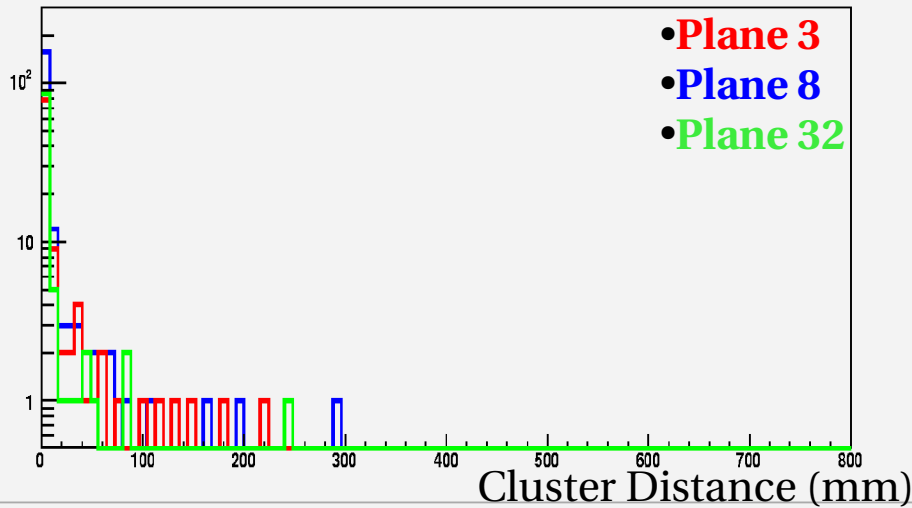
Particles coming from the CAL or the Converters could create off Track Clusters



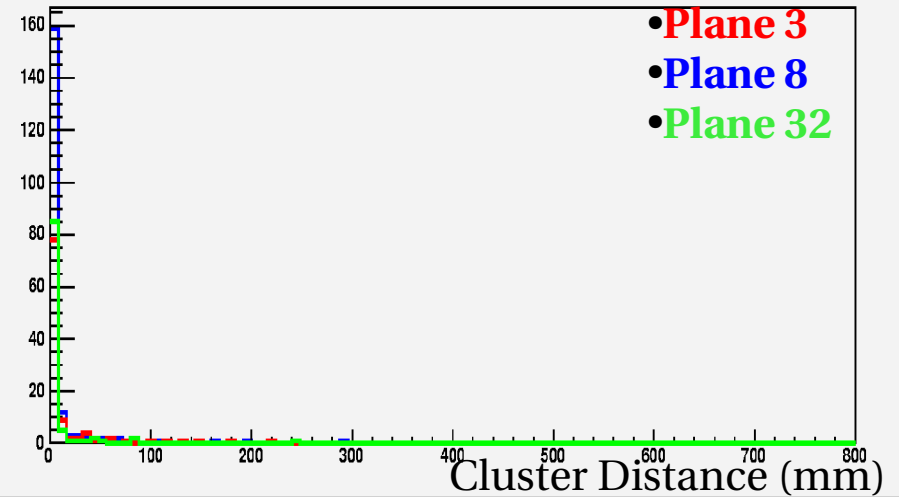
Looking for other definitions of Noisy Clusters

Select isolated noisy clusters (no other off track clusters in the plane and in previous and next plane: Isolated Clusters)

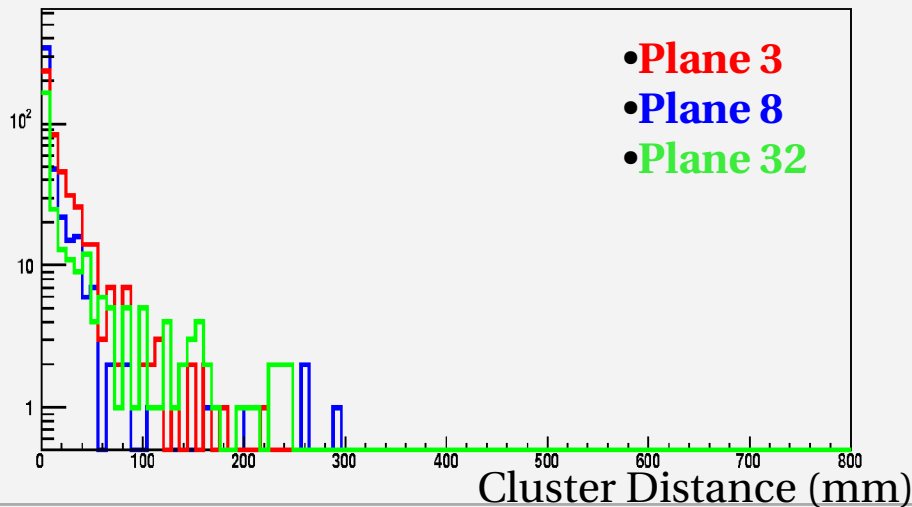
Isolated Clusters (log Scale)



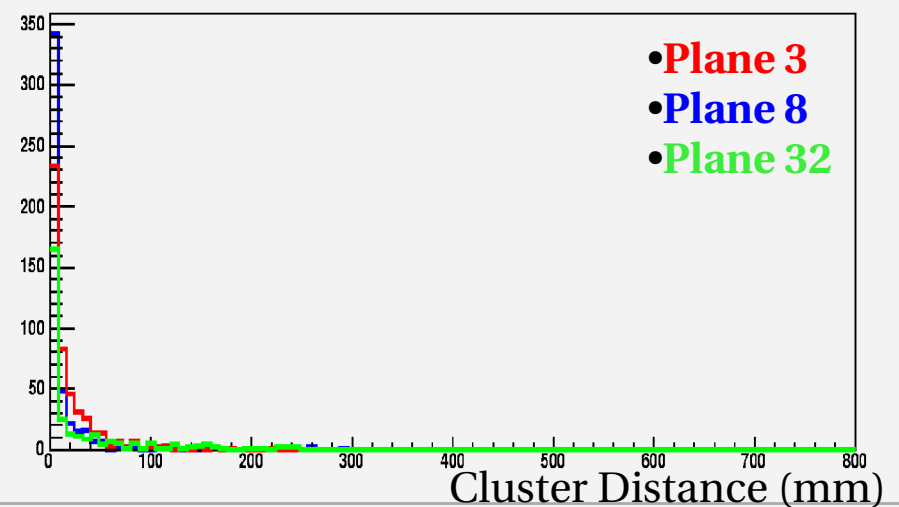
Isolated Clusters (linear Scale)



All Clusters (log Scale)



All Clusters (linear Scale)



Conclusions

- **Up to now no clear noise dependence from the Spacecraft Source Voltage has been found**
- **The optimal definition of Noisy Clusters has still to be found since noise seems to contribute only to a small fraction of the off-track clusters**
- **WORK IN PROGRESS.....**
(suggestions are welcome!)