

Beam Test Data Analysis

**Preliminary analysis in
the GSI Runs**

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Data Samples for Carbon Runs

Energy/nucleon = 1.5 GeV

Angle (X;Y;Z)	0 deg (108; -42; 0)	30 deg (108; -42; 0)	60 deg (-100; -40; 0)	90 deg (749; 100; - 860)	- 30 deg (494; -41; 0)
MC	191				
BT/1				2519 → 2523	
BT/50	2532 – 2535 2573 – 2576	2537	2550	2524 – 2527	2539
BT/51	2528 – 2533 2574 – 2625		2551		2540 – 2541 2544 – 2545
BT/52	2622				
BT/53	2531 – 2534 2623				
BT/54	2530 – 2575		2552		2542 - 2543

Data Samples for Xenon Runs

Angle = 0 deg

X = 108 mm

Y = -40 mm

Z = 0 mm

	BT/50	<i>BT/52</i>	BT/53	MC
Energy /nucleon				
1 GeV	2577 2578 (Y = -52) 2580		2581 – 2592 2593 – 2594	
1.5 GeV		2590	2582 → 2585 2587 – 2589	

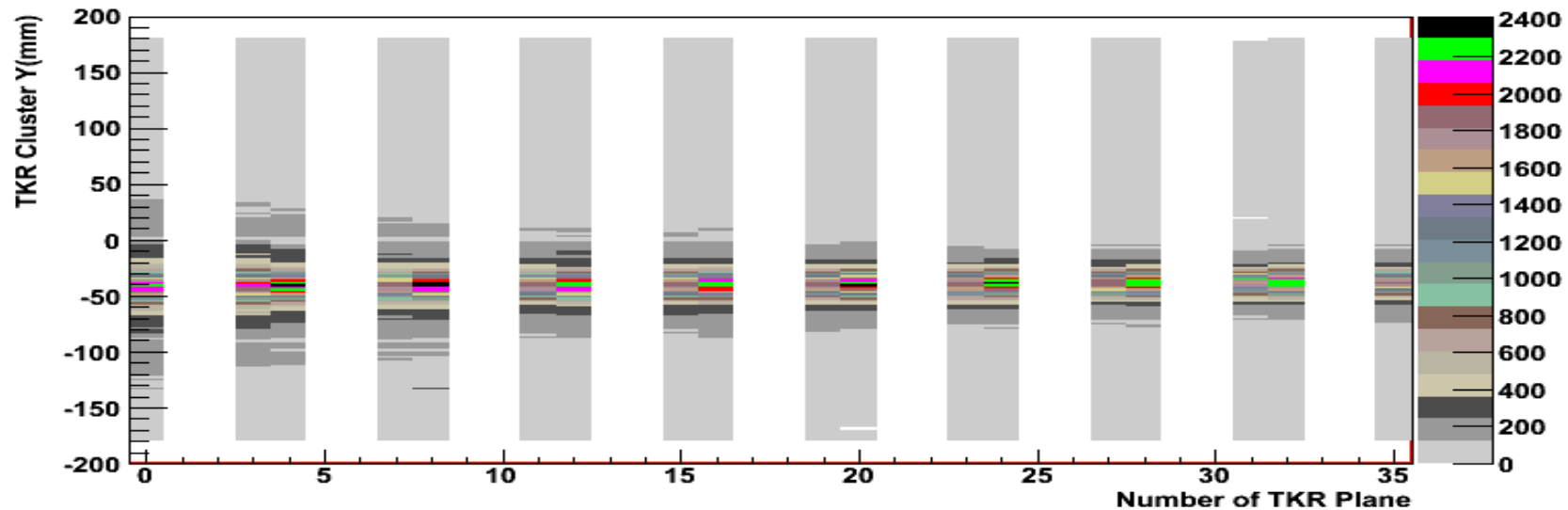
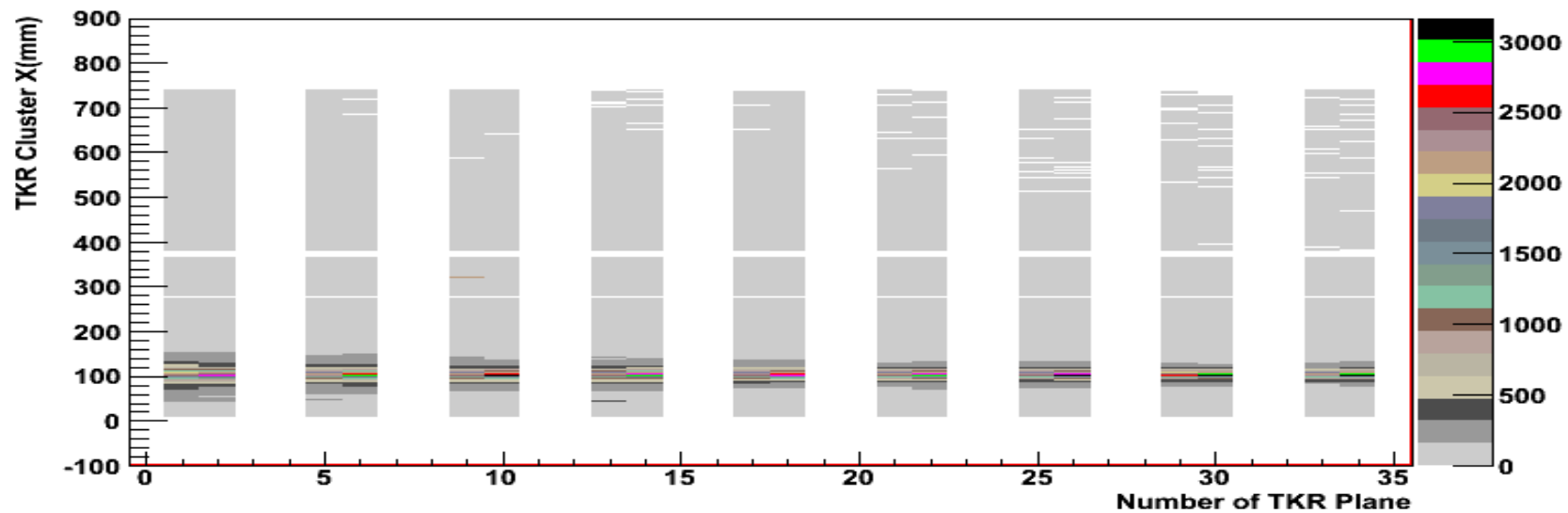
Analysis goal: study of TKR Hits in “clean” C and Xe events

Merit and SVAC n-tuple

(Preliminary) Cuts applied

- CalEnergyRaw > 0**
- TkrNumTracks >=1**
- Tkr1LastLayer == 0**
- TkrNumVertices >=1**
- GemConditionsWord != 0x20 (no periodic trigger)**

C - Run 2532: C-1.5 GeV/N – 0 degree

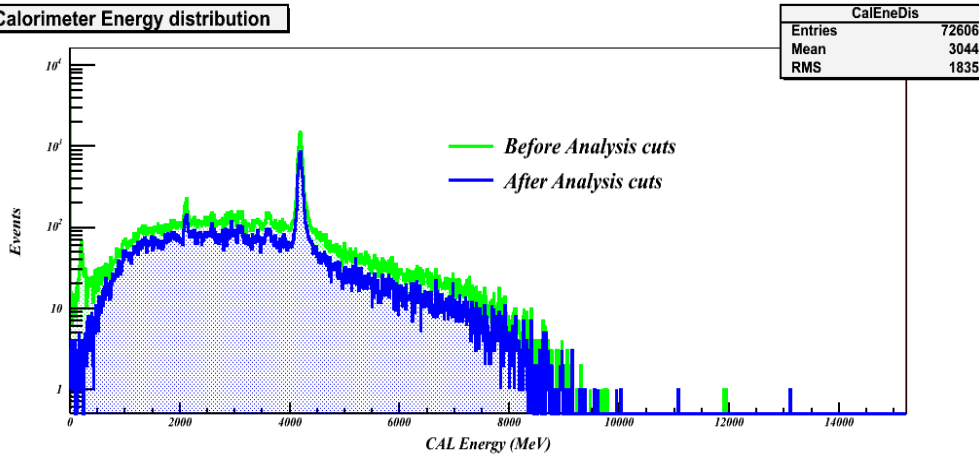


C - Run 2532: Energy distribution

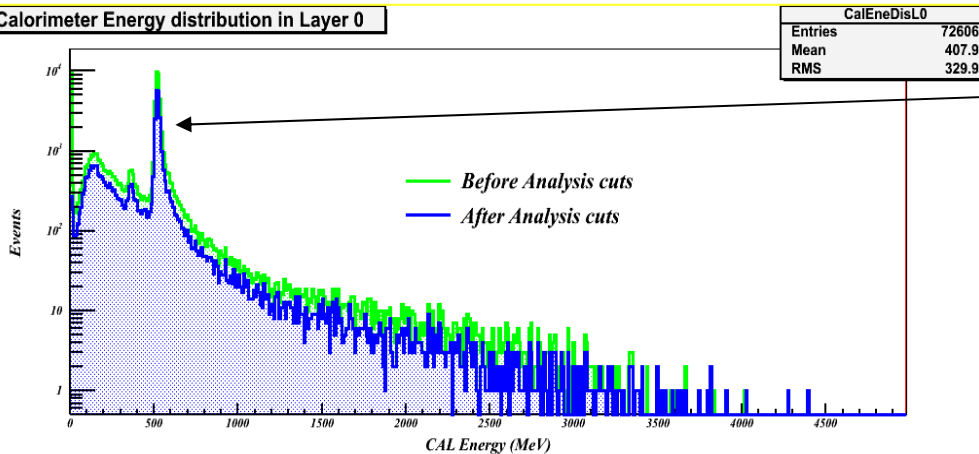
Energy distributions in all cal and in L0, before and after preliminary cuts.

There is a peak between 470 and 570 MeV in L0 cal dis
We assume this peak is the C Eloss in crystal bar

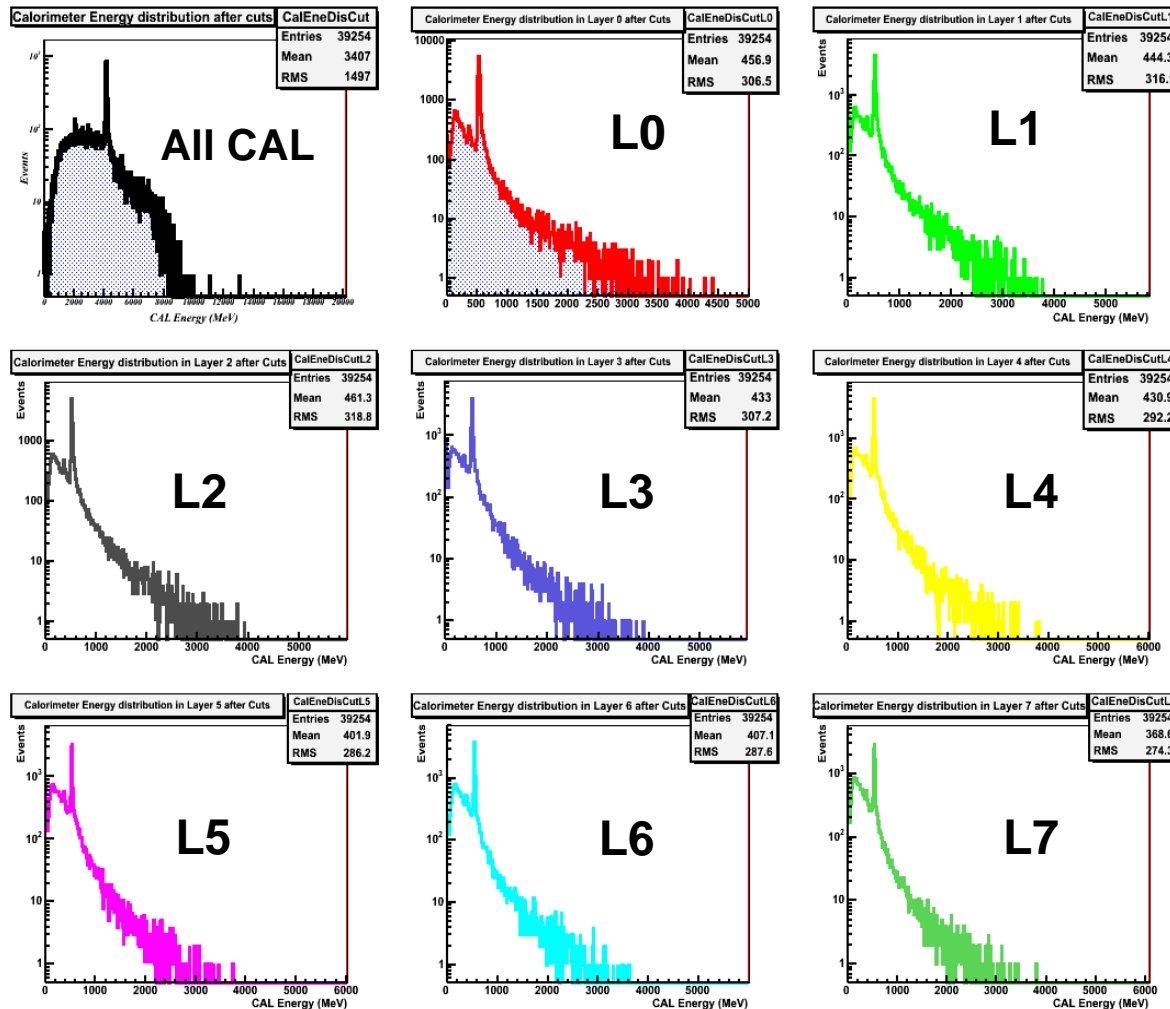
Calorimeter Energy distribution



Calorimeter Energy distribution in Layer 0



C - Run 2532: Energy distribution



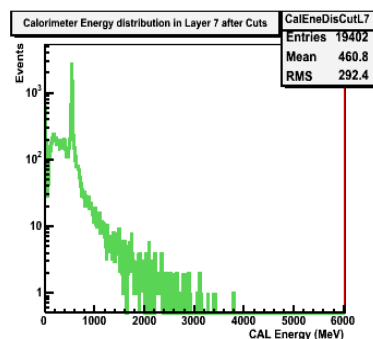
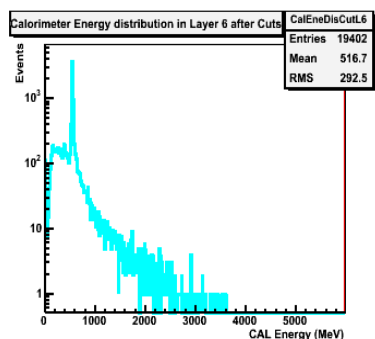
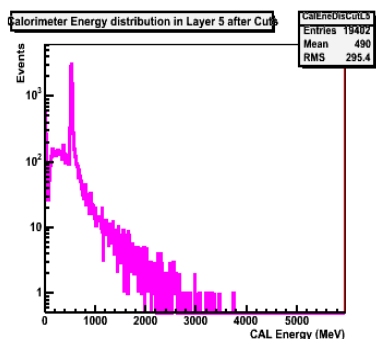
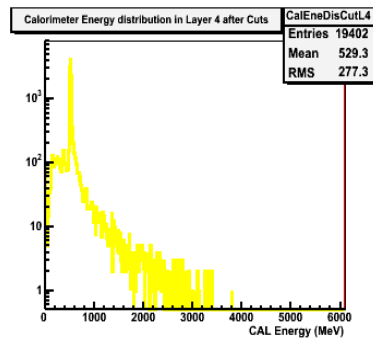
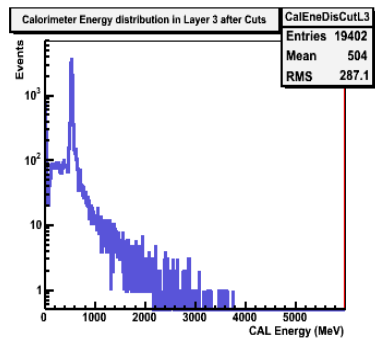
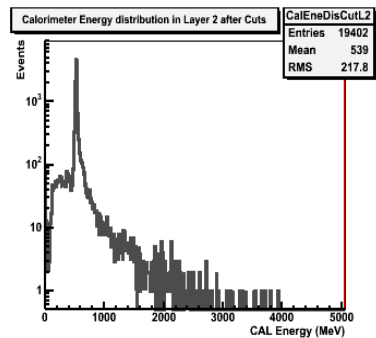
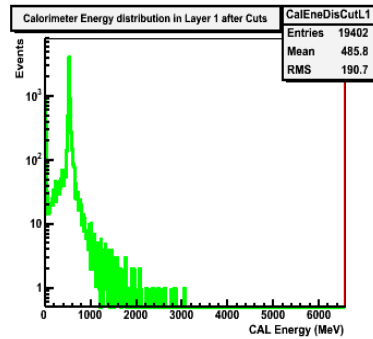
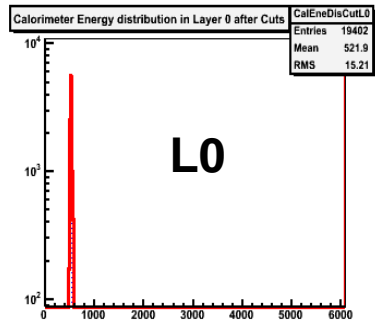
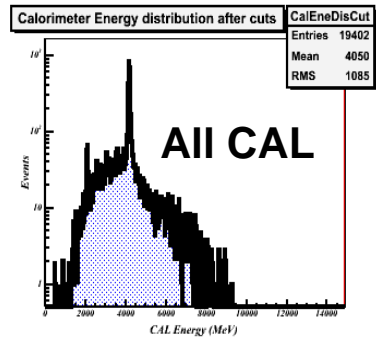
There is a peak at the same energy value in all Cal layers energy distribution

Cuts applied (2)

Merit and SVAC n-tuple

- **CalEnergyRaw > 0**
- **TkrNumTracks >=1**
- **Tkr1LastLayer == 0**
- **TkrNumVertices >=1**
- **GemConditionsWord != 0x20 (no periodic trigger)**
- **470 < CalELayer0 < 570 (... L0Cut)**

C - Run 2532: Energy distribution

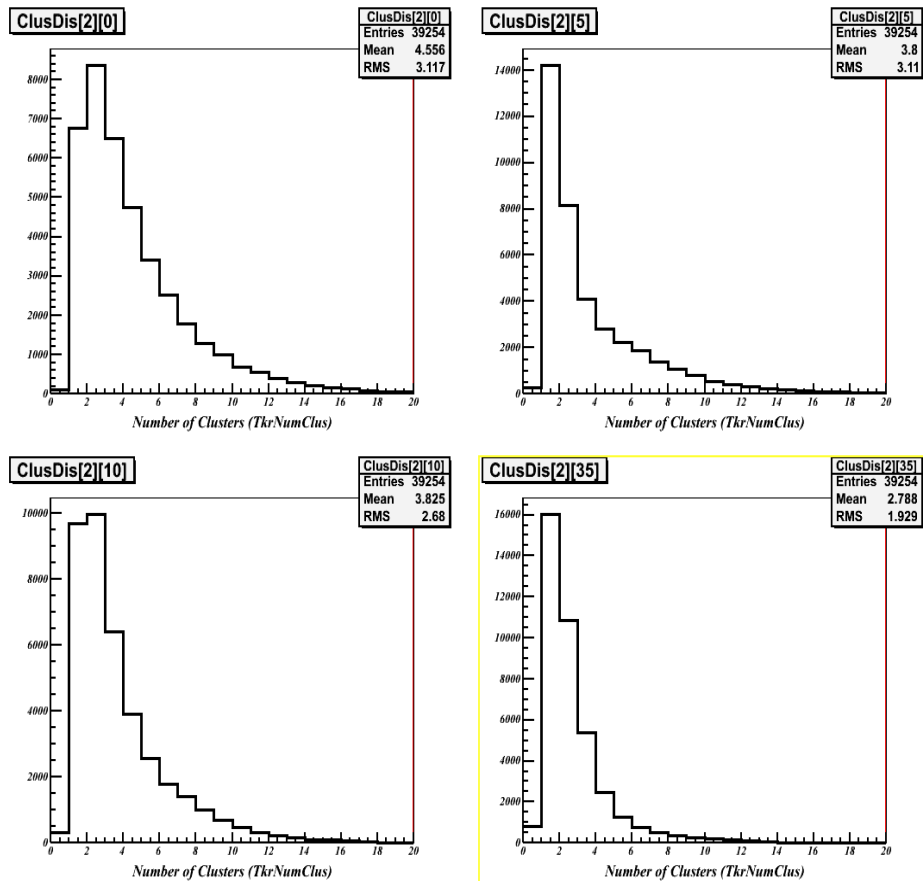


The peak (between 470 and 570 MeV) is still well visible in all Cal layers energy Distribution

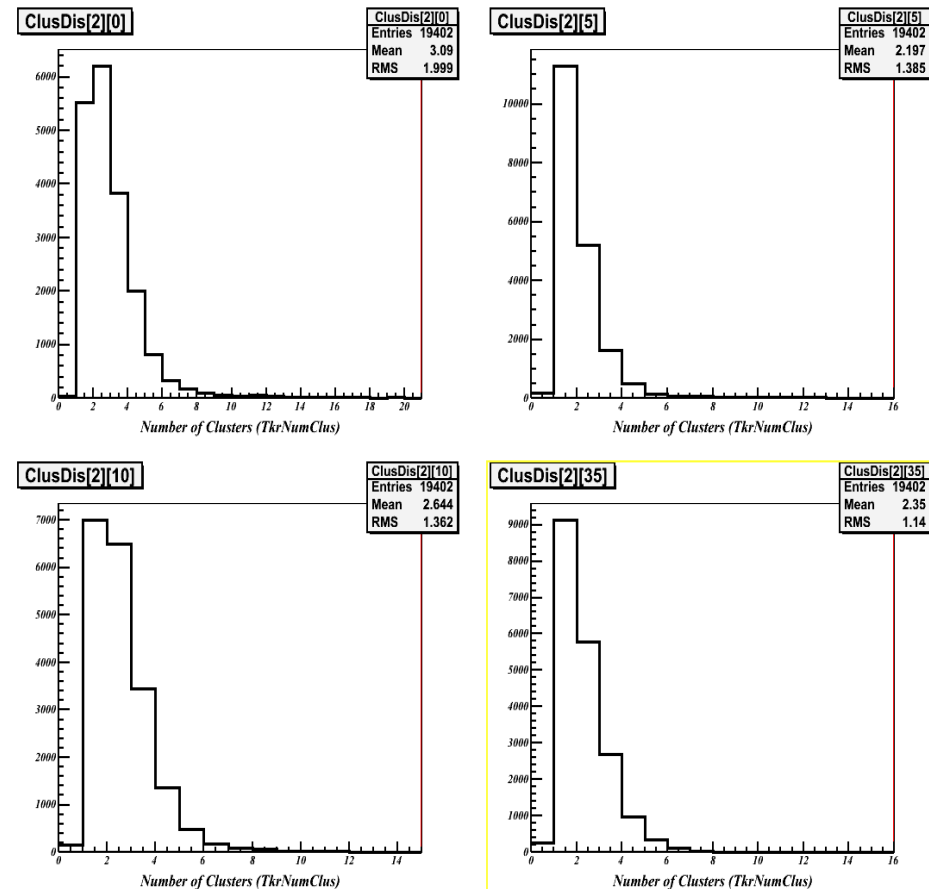
Something (C) going through all CAL Layers ??

C - Run 2532: Cluster Distributions

Before cuts

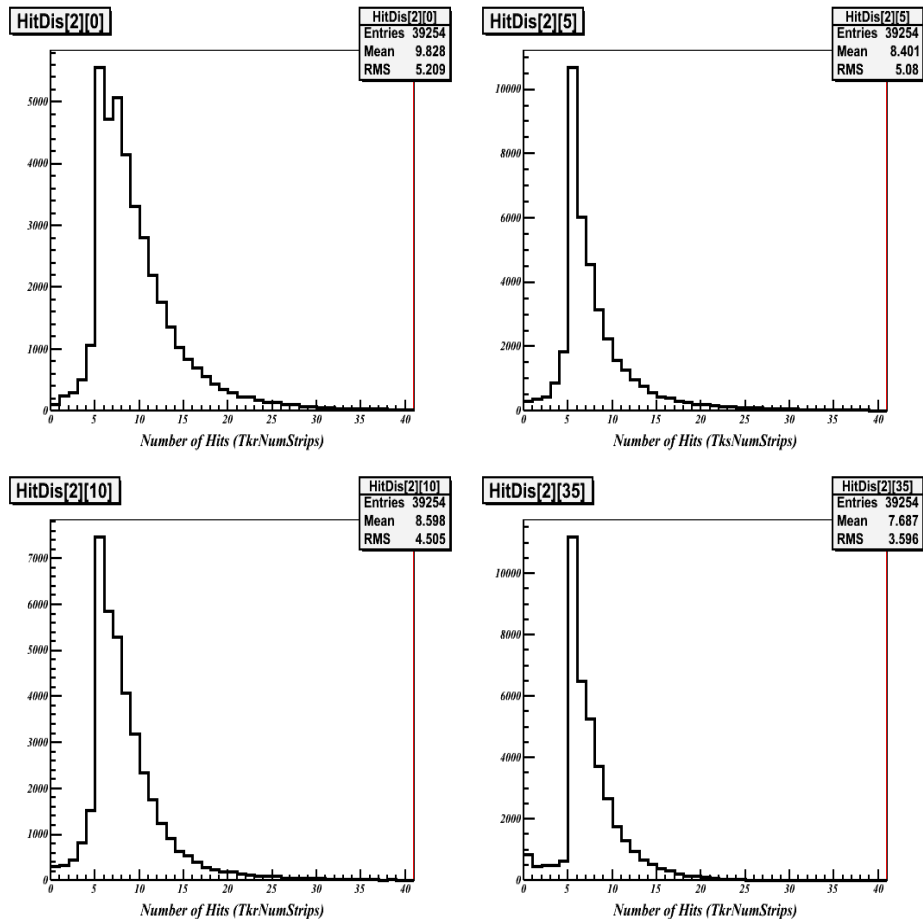


After cuts

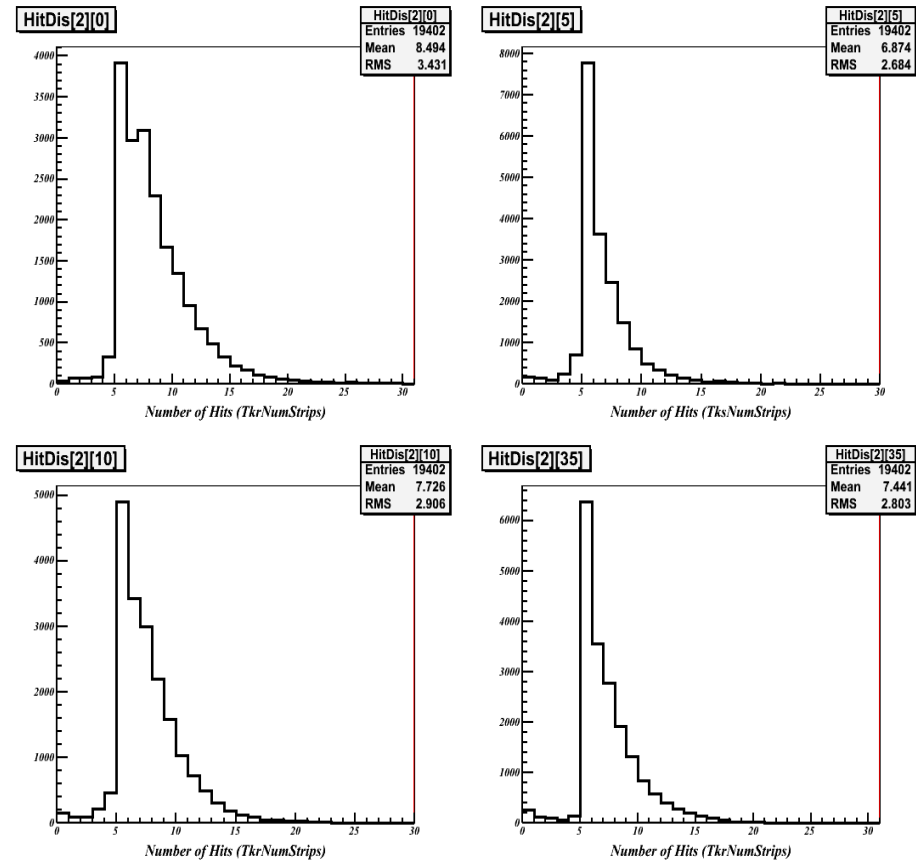


C - Run 2532: Hit Distributions

Before cuts



After cuts

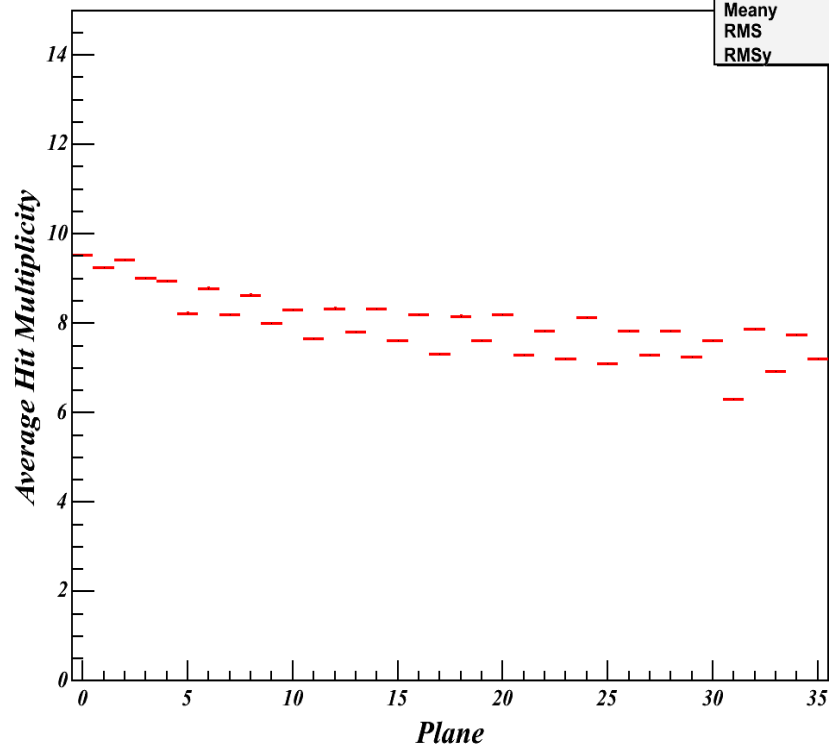


C- Run 2532: Hit Multiplicity

Before cuts

AverTwrHits[2]

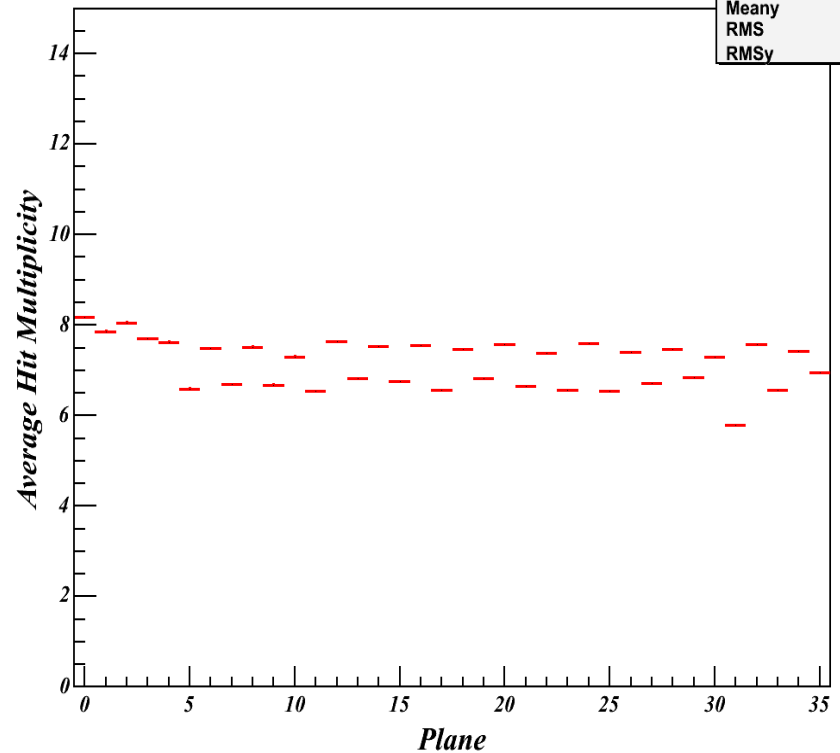
AverTwrHits[2]	
Entries	1413144
Mean	17.5
Meany	7.971
RMS	10.39
RMSy	5.039



After cuts

AverTwrHits[2]

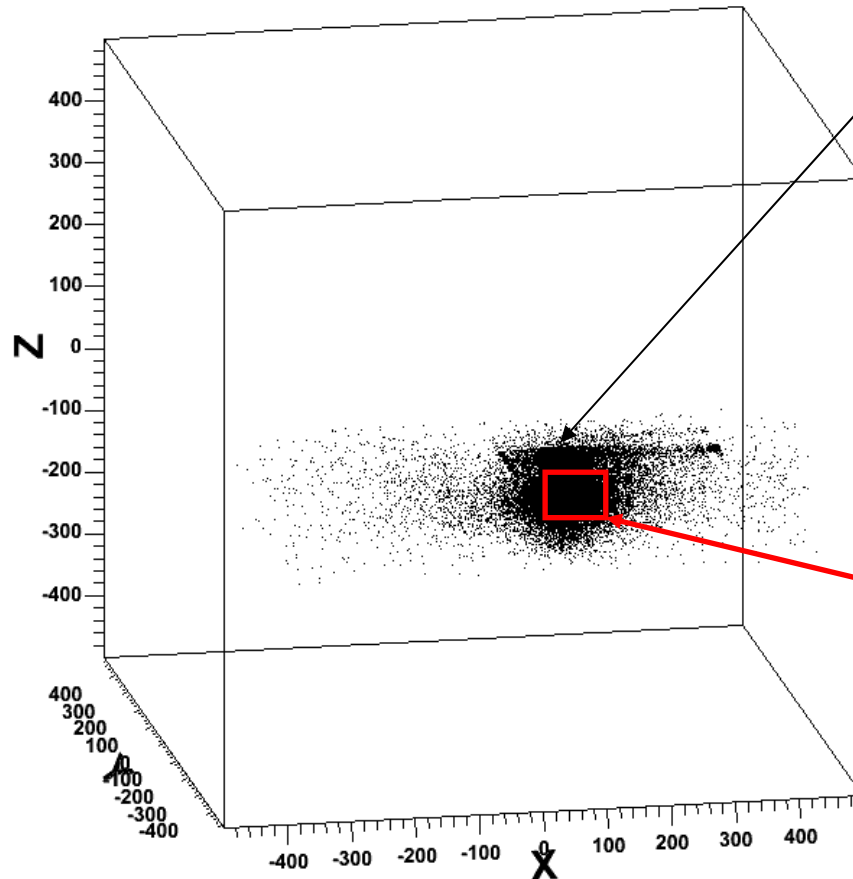
AverTwrHits[2]	
Entries	698472
Mean	17.5
Meany	7.158
RMS	10.39
RMSy	3.377



Xe Run 2577 @ 0 degree

Cluster Centroid in CAL

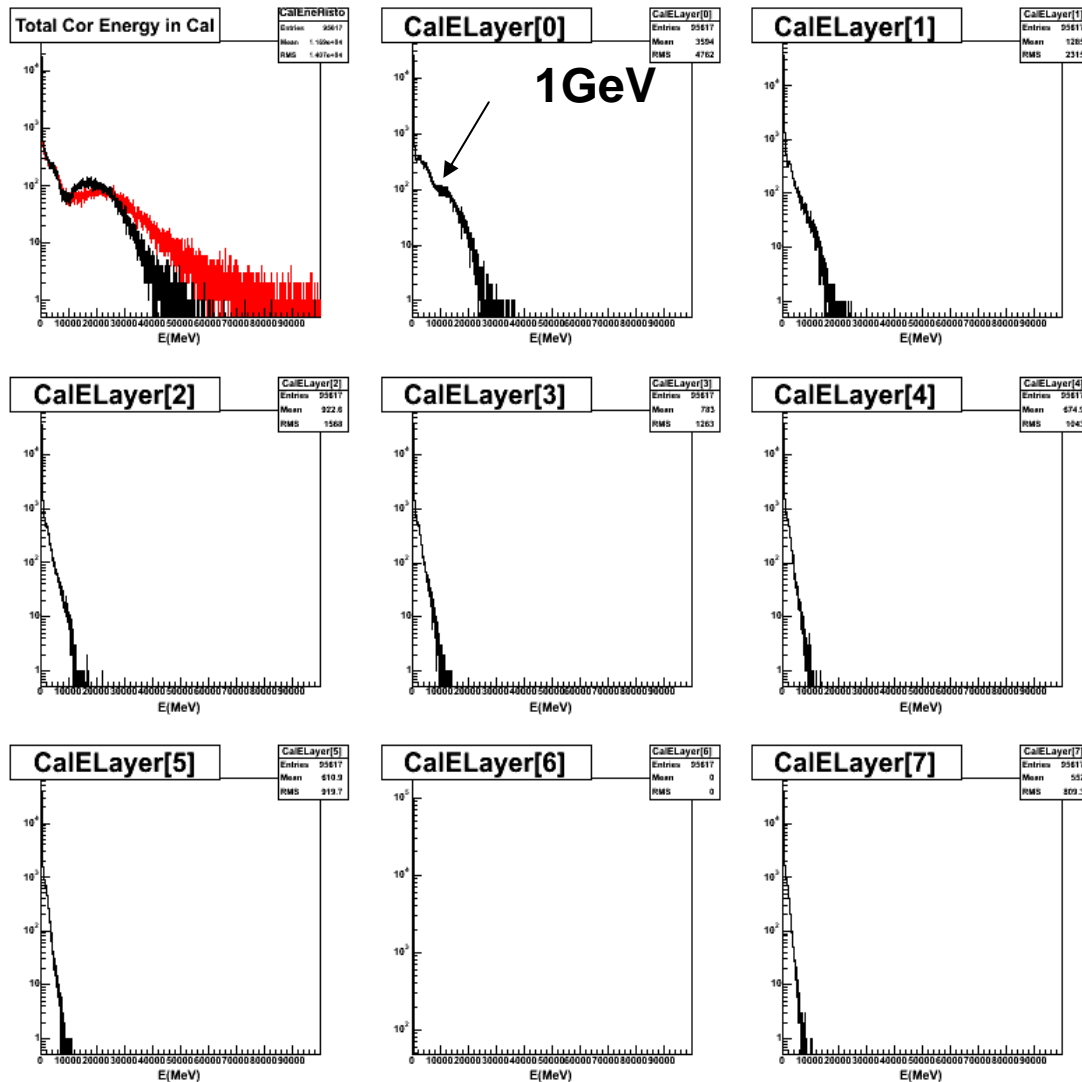
Position of the centroid of the CAL cluster



– Some events show the centroid in Layer0 (Low energy)

– We have selected events in this region (XYZcut)

Xe Run 2577: Energy Distributions



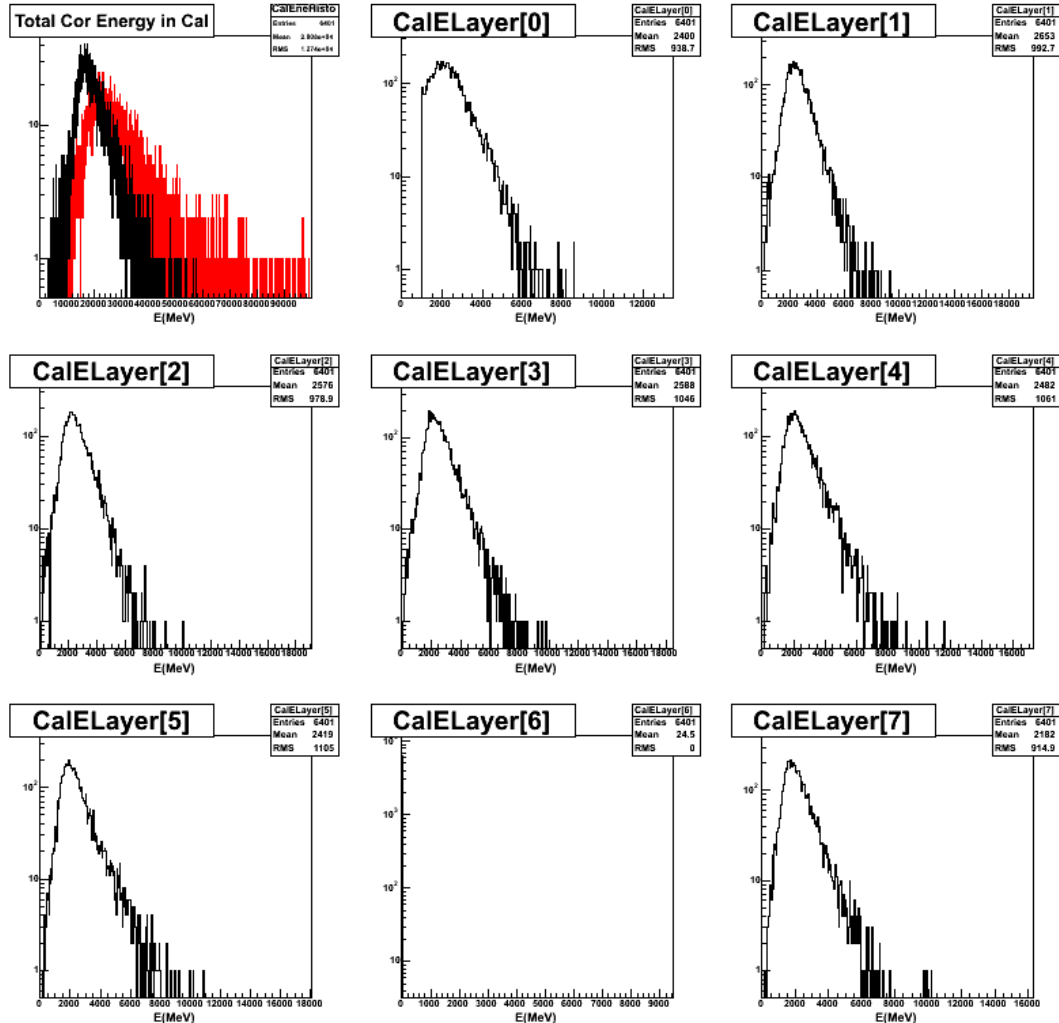
- Energy distribution in all CAL and Layer by Layer (No cuts applied)

- RED==CalEnergyCorr

- There is peak at about 20GeV(total raw energy)

- Layer6 dead

Xe Run 2577: Energy Distributions



- Energy distribution in all CAL and Layer by Layer (XYZcut && EneLayer0 > 1GeV)

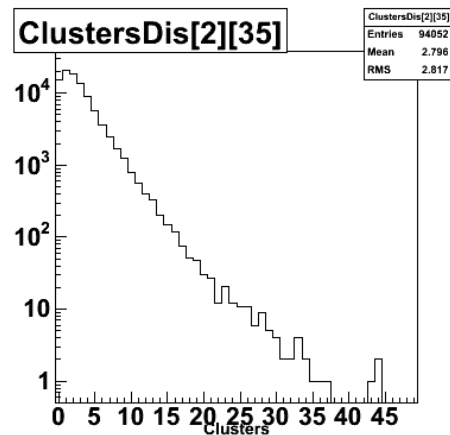
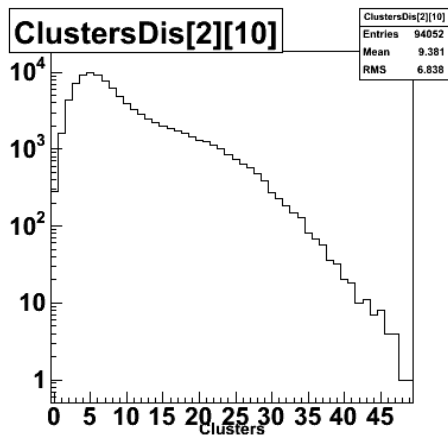
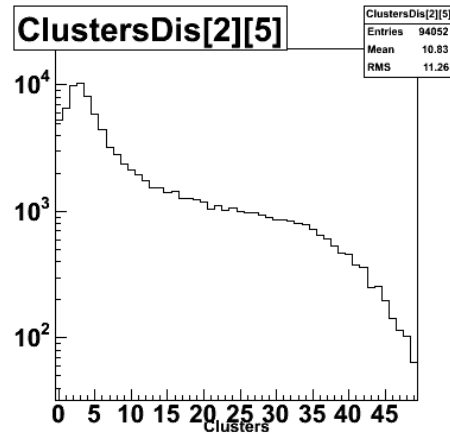
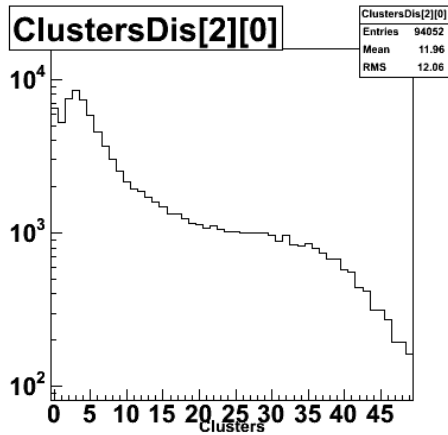
- RED==CalEnergyCorr

- There a peak in all the Layers between 2GeV and 3GeV

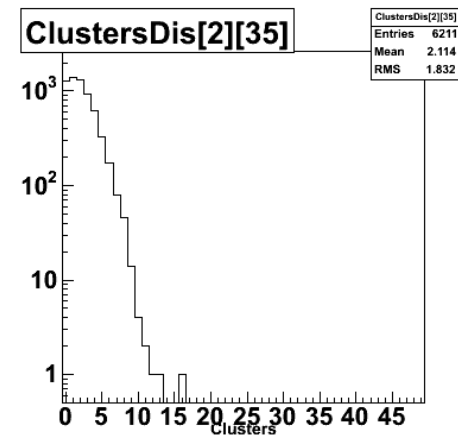
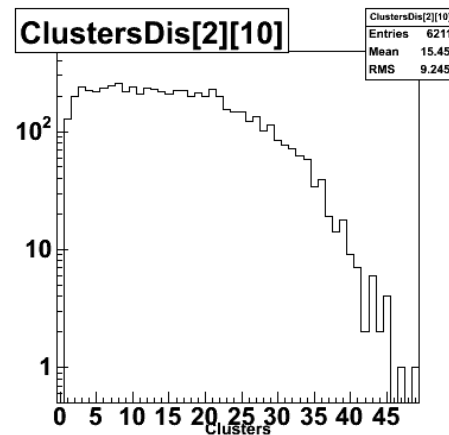
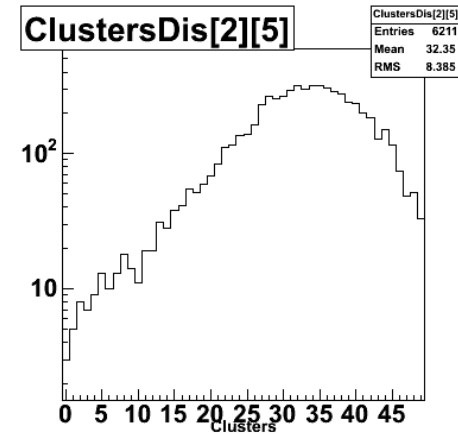
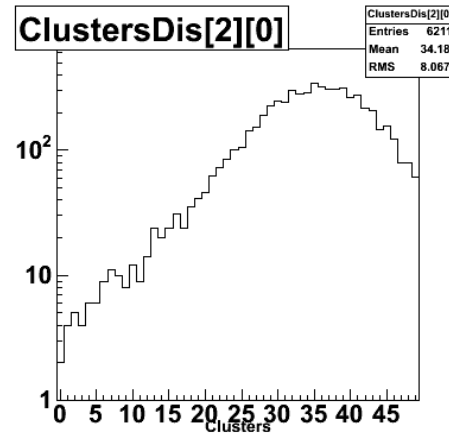
- Birks saturation in the crystals or something going through all CAL Layers ??

Xe Run 2577: Cluster Distributions

Before cuts

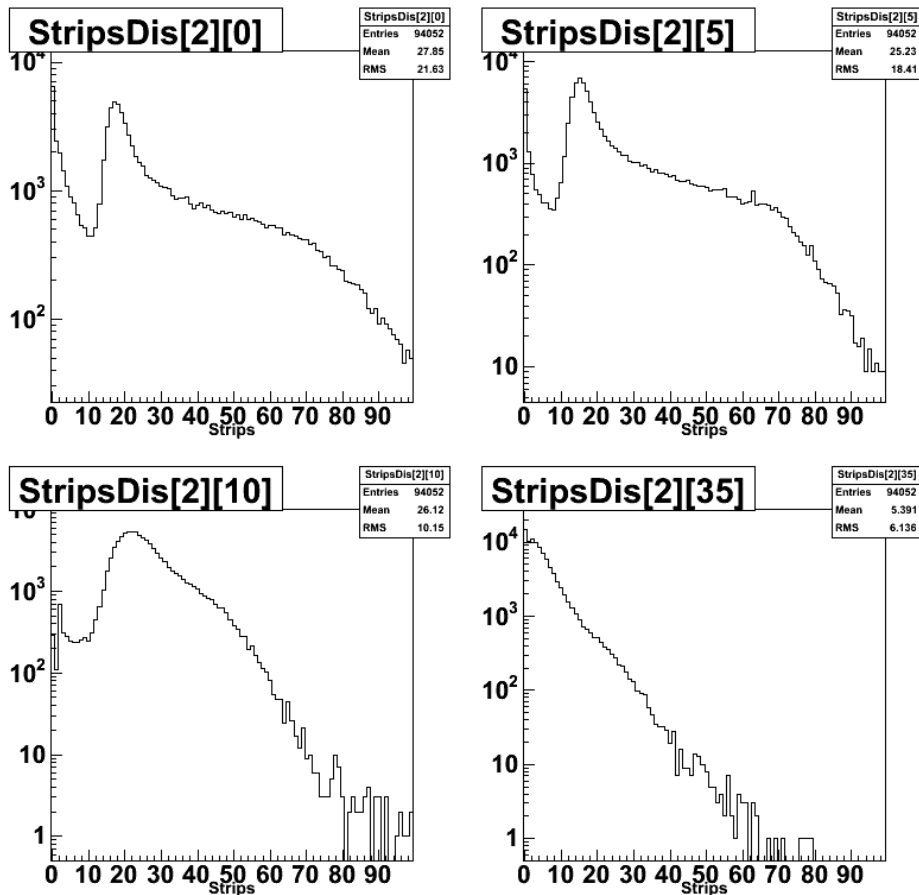


After cuts



Xe Run 2577: Hit Distributions

Before cuts



After cuts

