Analyse Muons 100 GeV run 714408

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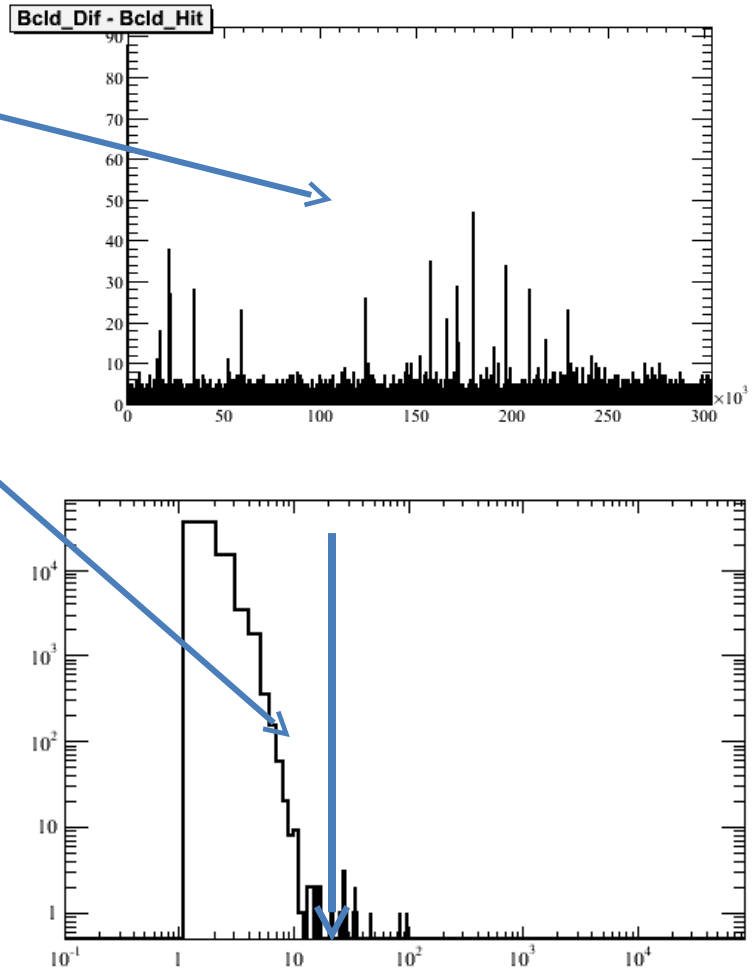
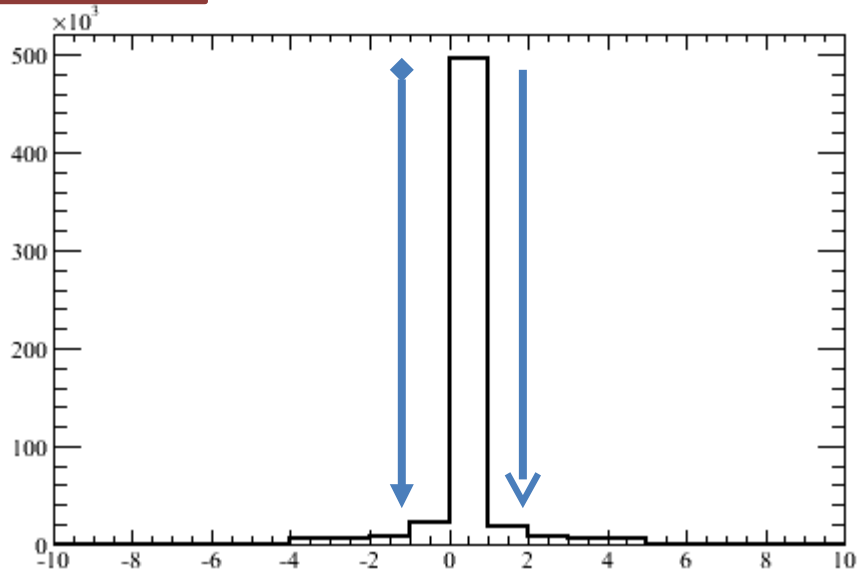
Create "Events"

- Start from LCIO record
- Convert it to root file with all hits
- Look for Time clusters
- Define the threshold of nb of hits in a time slot above which we have an event. Is 15 now
- Look for maxima above threshold
- Define an event : All hits in +- 5Time slots around Max = good hits
- Create a 2nd root summary file CaloEvents, containing all good hits
  - X,Y,Z, deltaT, HitL,M,H etc…



Timing Cut

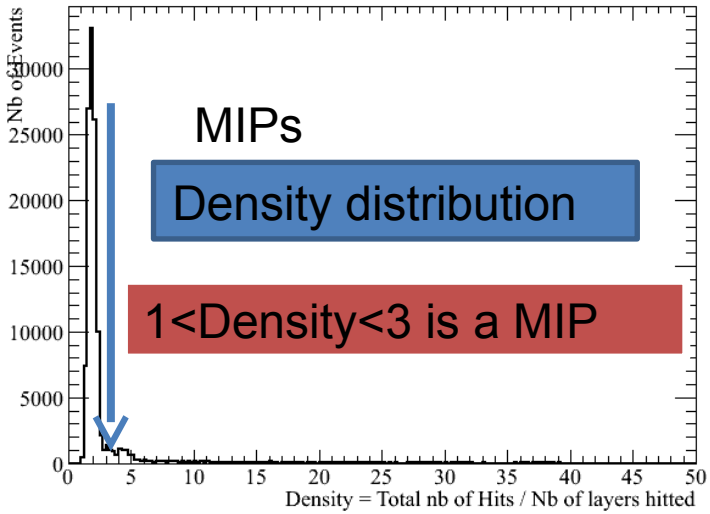
Working from now on only on CaloEvents root files



Tmax – Time All Event Hits

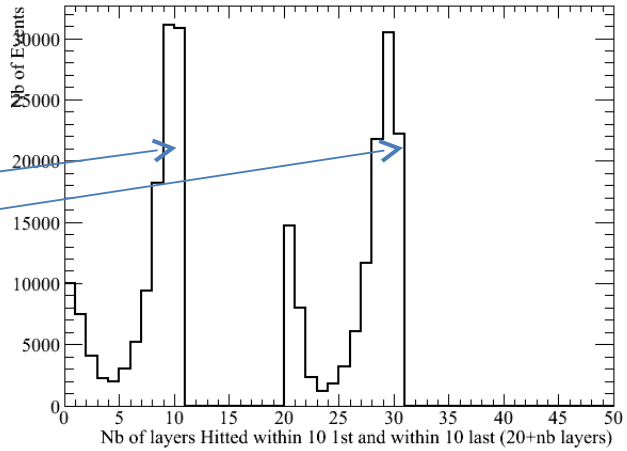
Take +-1 RPC, +- 2 uMegas slots around T Max, eliminate rest of the hits

Look for MIPs



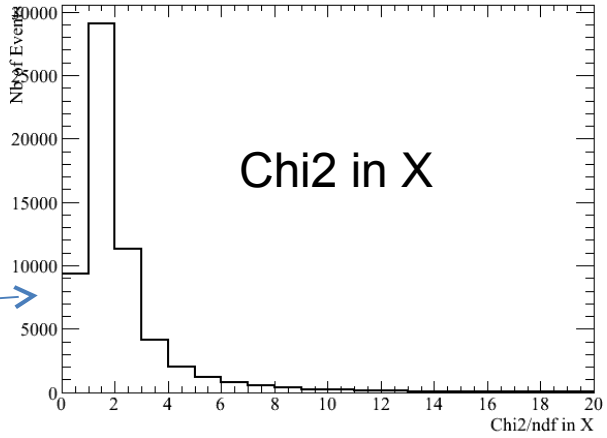
Density = Nb of Hits / Nb of Layers

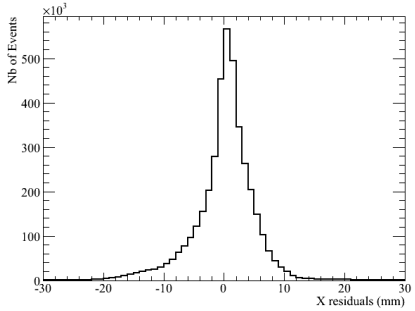
- Select MIPs
- Nb of Hit Layers within the first 10
- Nb of Hit Layers within last 10
- **Penetrating MIP = 6 Layers / 10 Forward && 6 Layers / 10 Backward**

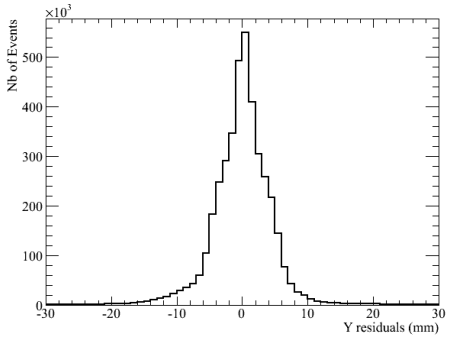


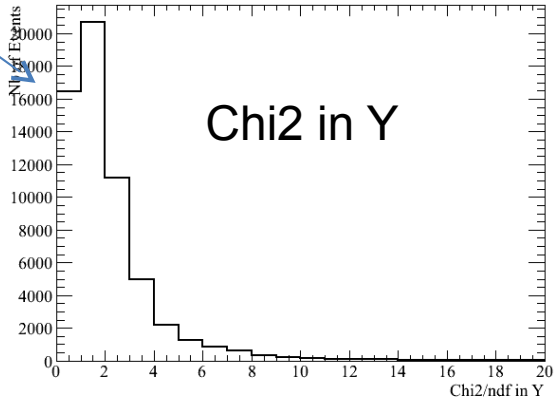
Penetrating MIPs

- Select Penetrating MIPs
- Fit a straight line in X and Y
- Fit works Chi2 for Npoints-2 deg of freedom

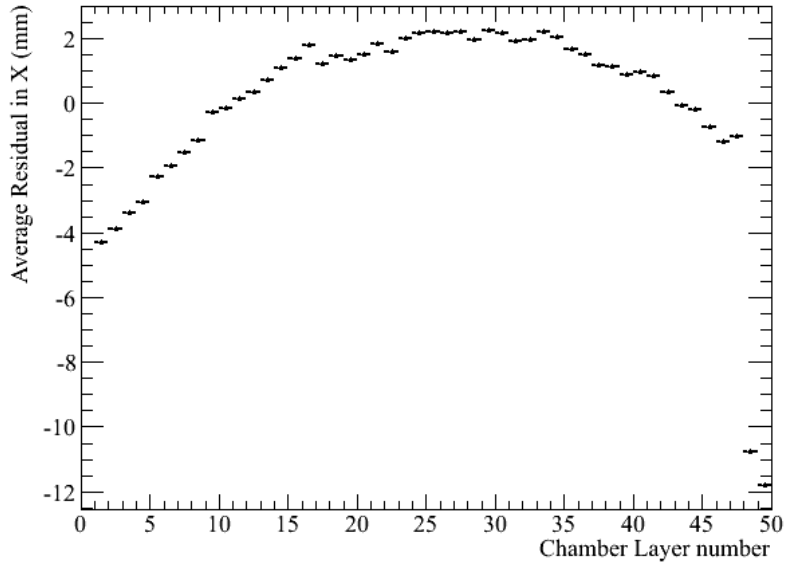


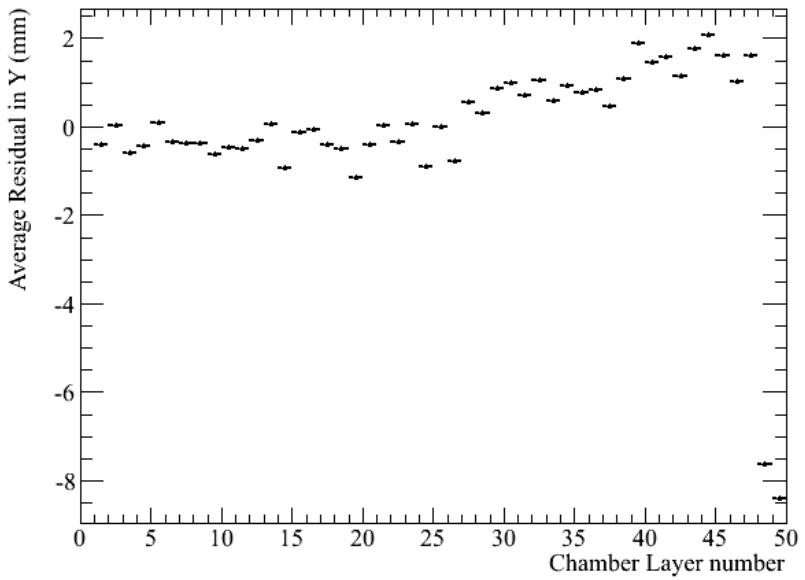




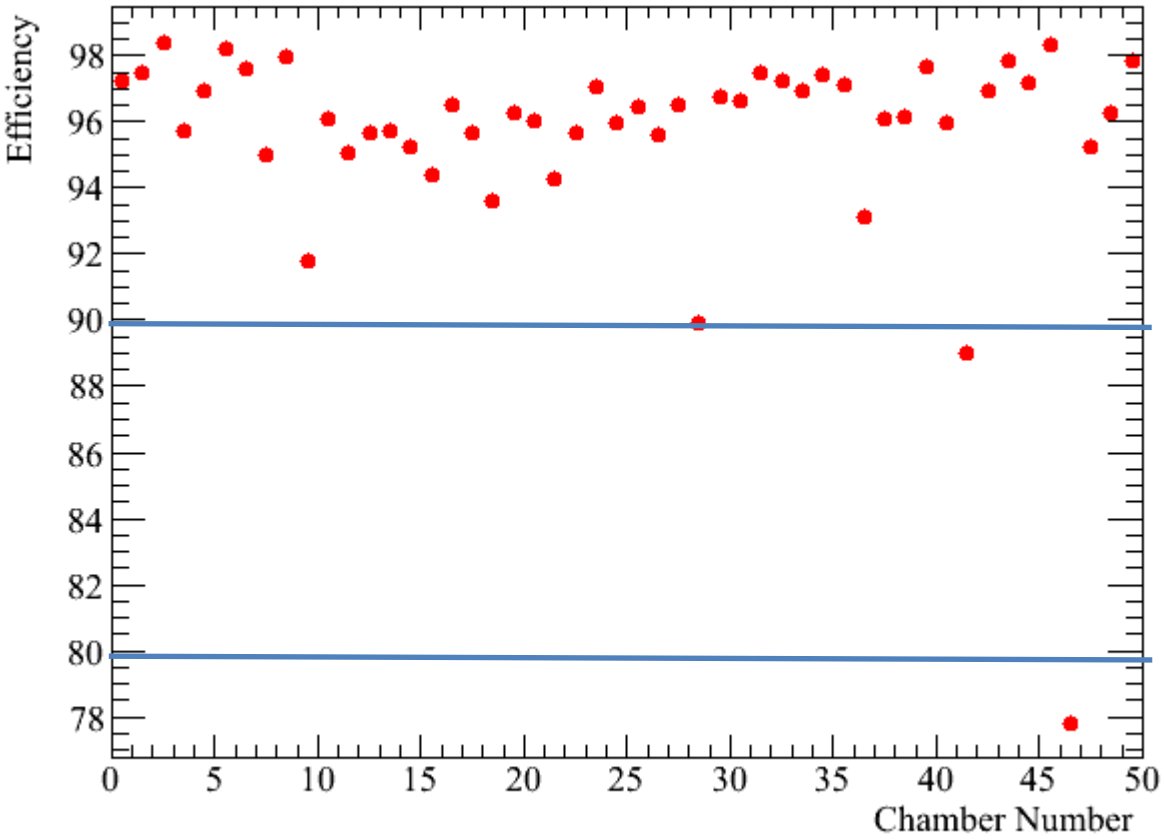


Average Residuals per layer





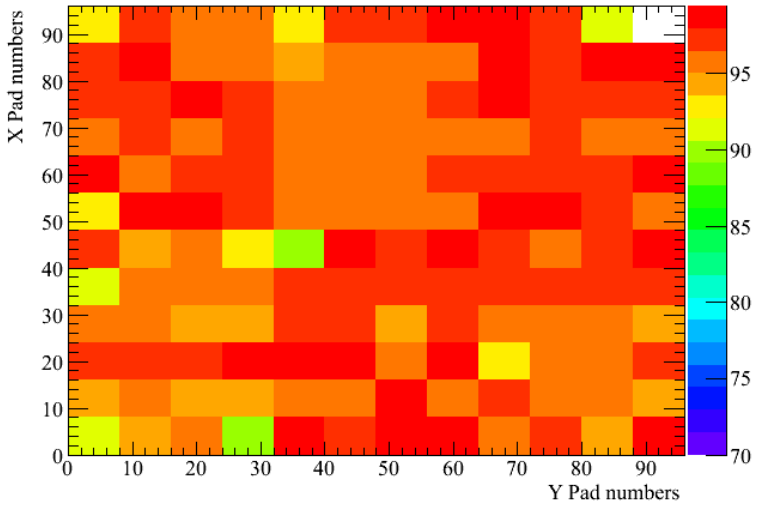
Efficiency


Efficiency
98
96
94
92
90
88
86
84
82
80
78
0
5
10
15
20
25
30
35
40
45
50
Chamber Number

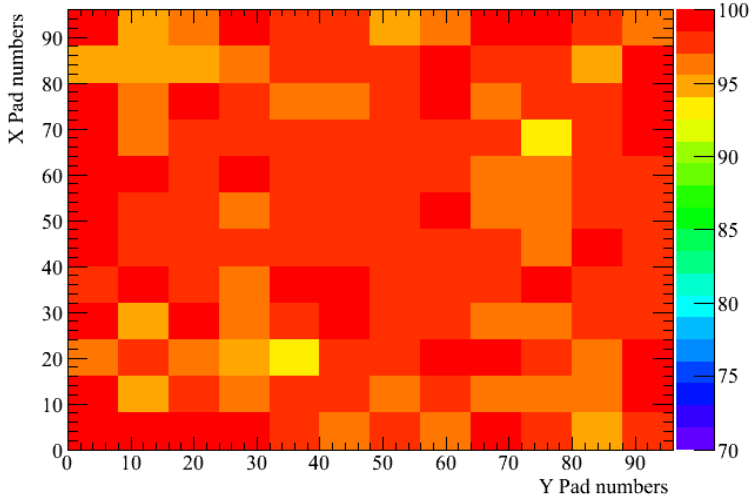
µMegas Efficiency in a chip Region

Chamber's nb from 0 to 49

Layer 48

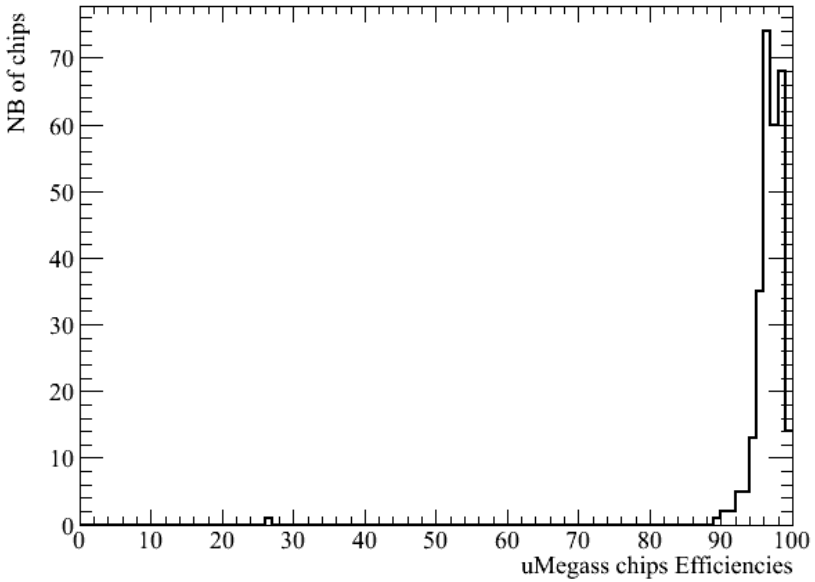


Layer 49

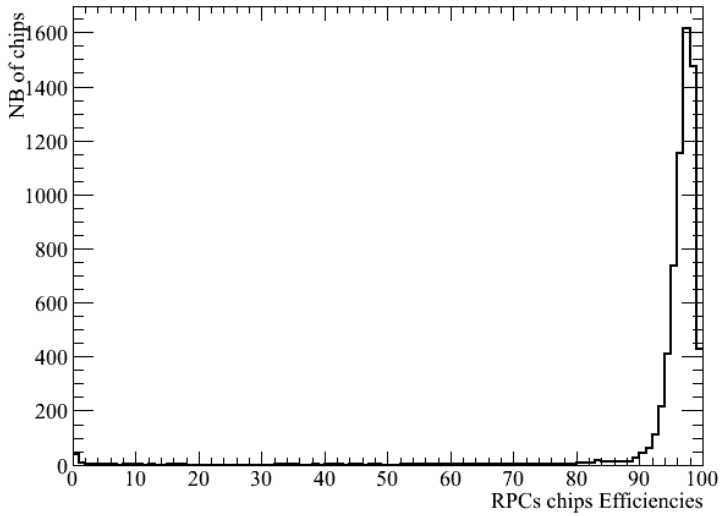


To compute efficiencies a fiducial volume is defined :

- 2< Ndamier < 94 in both directions x,y
- x,y 2 cm far from ASUS limits

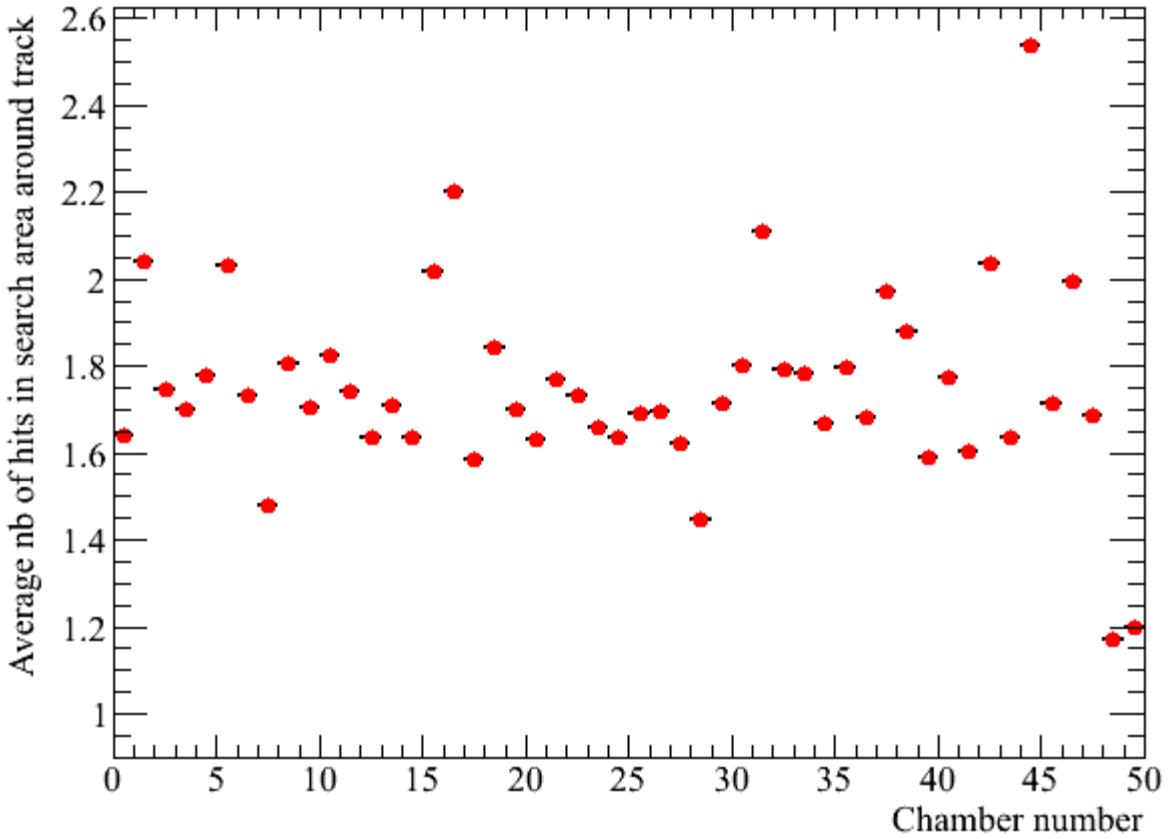


RPC and μMegas chip efficiency



Multiplicity

Nb of Hits in 7x7 cm around track

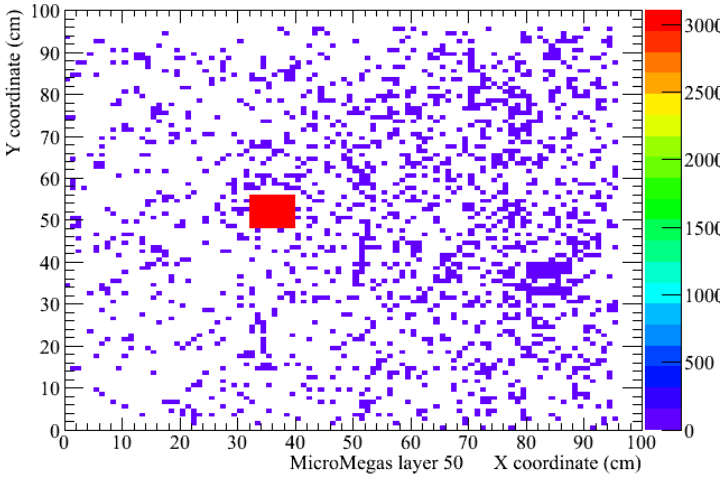


Conclusion

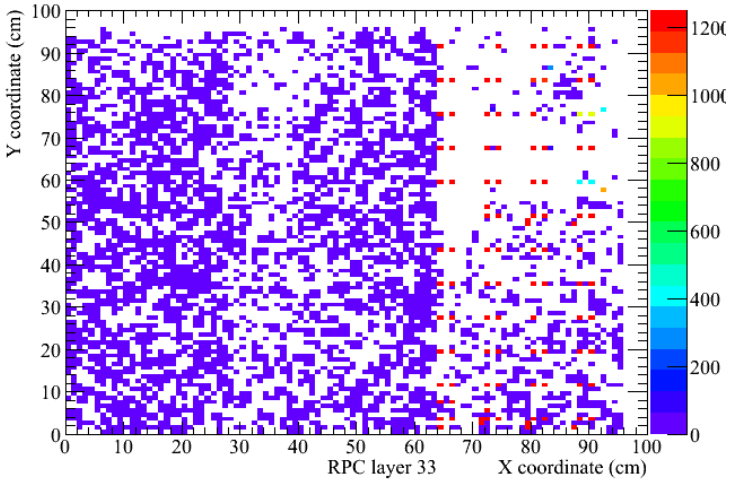
Globally the Calorimeter works very well

Fine details have to be understood the next weeks

Hadronic shower analysis to be done.

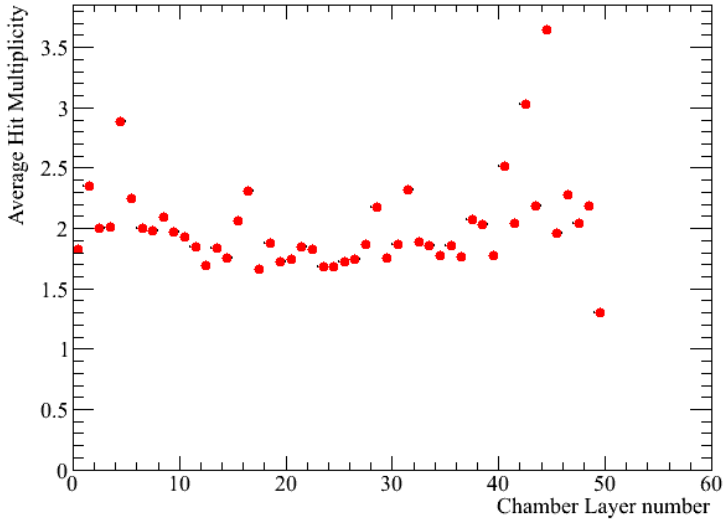


Layer 50 μMegas A noisy chip appears after ~9k events.



X versus Y Map RPC Layer 33
1DIF has problems

Aver age Hit Multi plicit y



Layer Number

WATCH OUT for problems