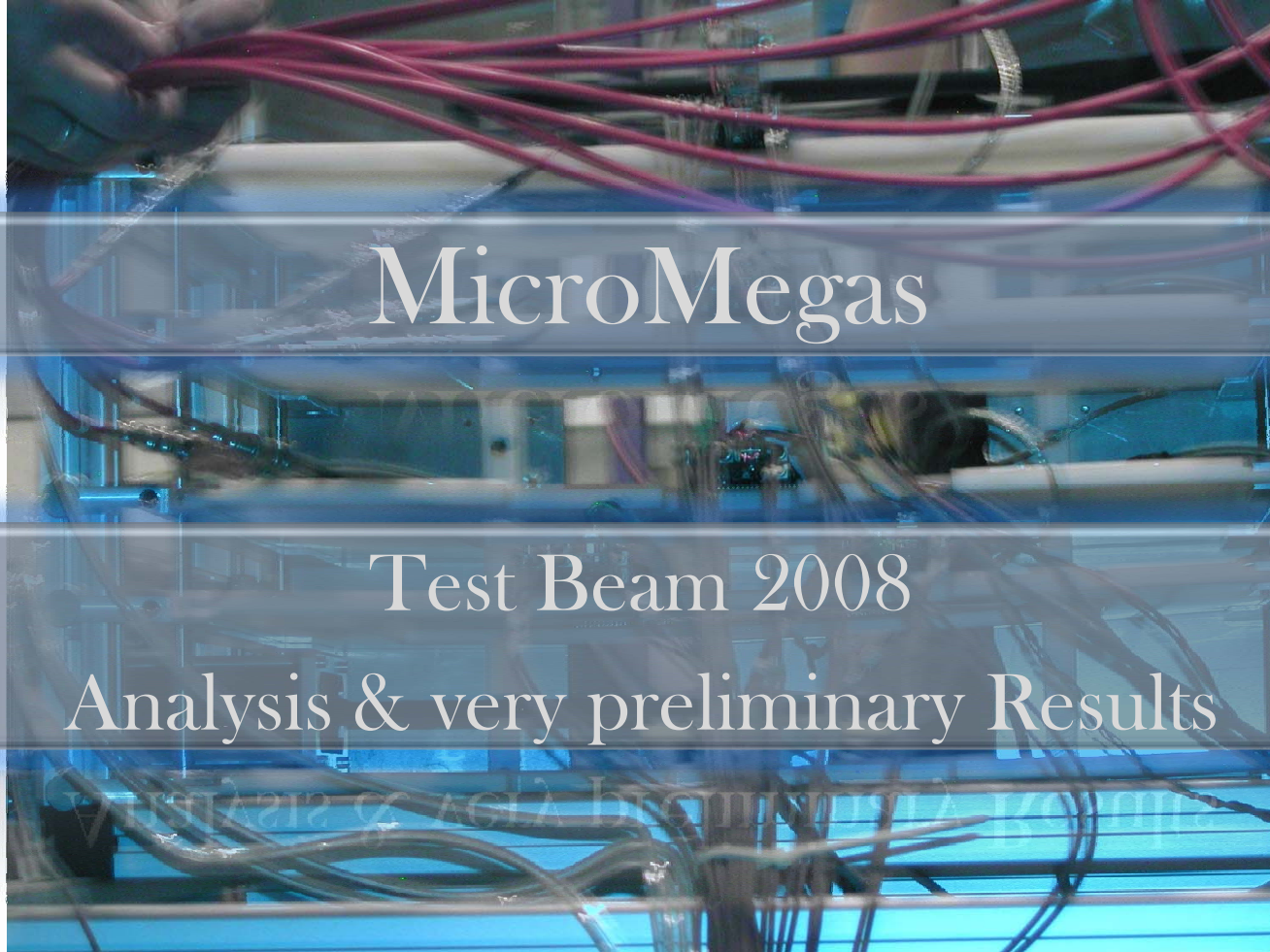




Laboratoire d'Anney-le-Vieux
de Physique des Particules



MicroMegas

Test Beam 2008

Analysis & very preliminary Results

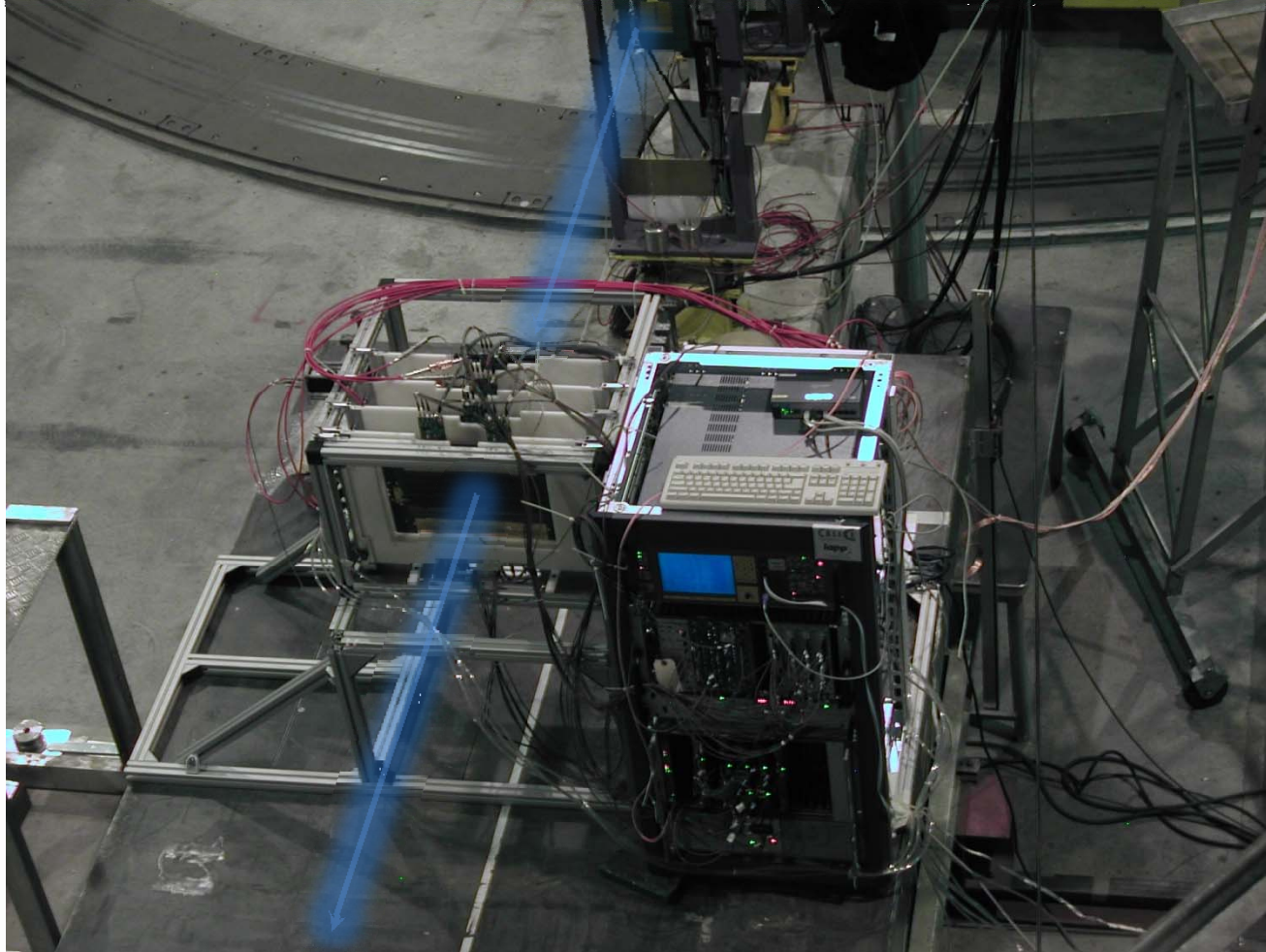
Ambroise Espargilière



Installation in H2 beam line at CERN

4 μM Chambers on an XYtable
Beam of 200GeV Muons or Pions

Beam of 200GeV Muons or Pions



The Test Beam

(4th August-14th August)

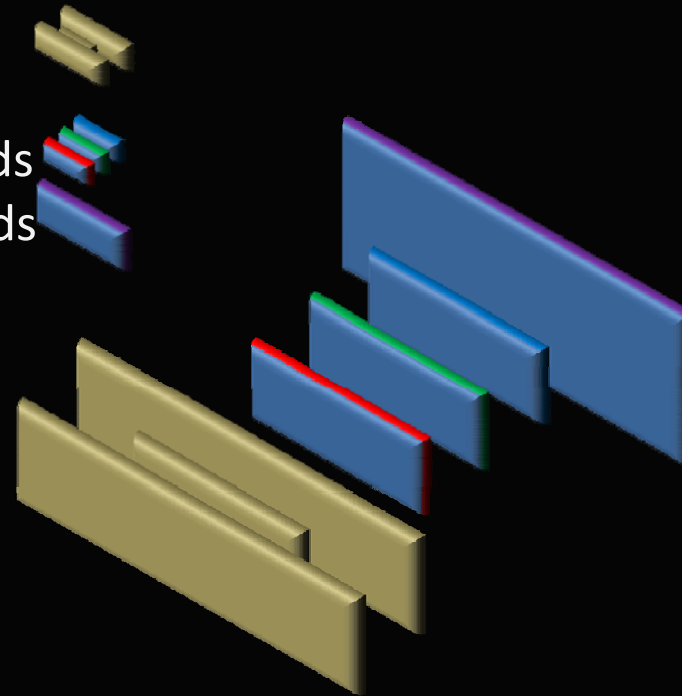
- The beam
 - H2B at the SPS-CERN
 - Officially from 4th to 10th August (but SPS problems)
 - Thanks to COMPASS-Shashlik from 14th to 15th
- The team
 - LAPP + IRFU
- The data
 - 6-7 August Muons & Pions (Gain inter-calibration)
 - 14-15 August : 205 000 Muons
 - 15 August : 150 000 Pions

This preliminary analysis

The Test Beam

(4th August-14th August)

- The setup
 - trigger: 3 scintillators in coincidence
 - 3 MicroMegas 6x16 pads
 - 1 MicroMegas 12x32 pads
 - Iron absorber option
 - DAC from subatech : CENTAURE



A great effort from the whole team

Efficient work in good atmosphere

Nice contribution from IRFU

Electronics and mechanics team



Temperature and pressure

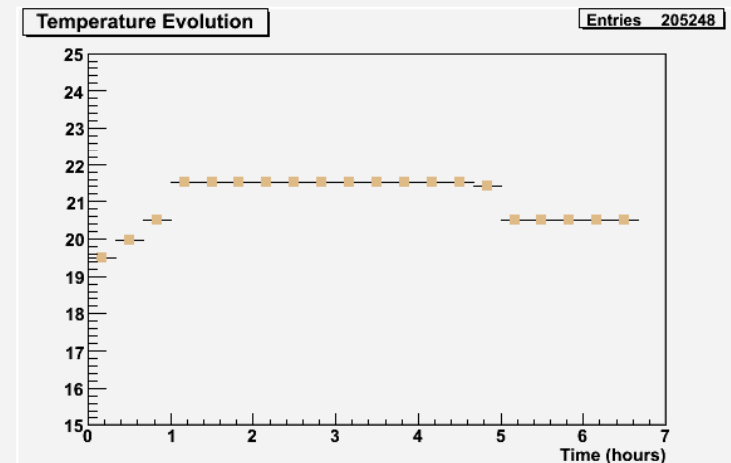
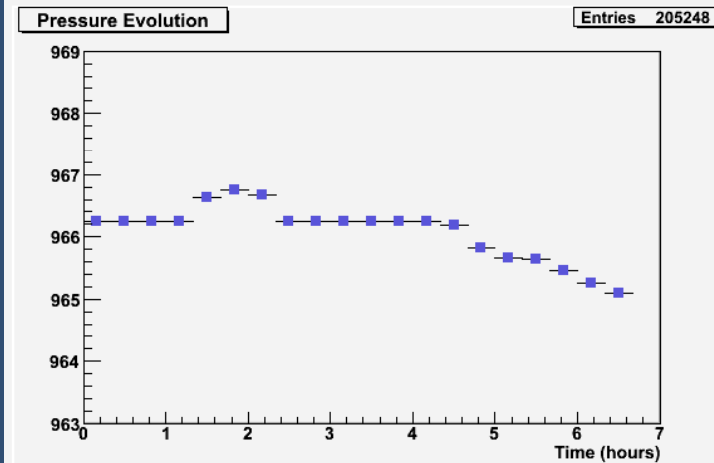
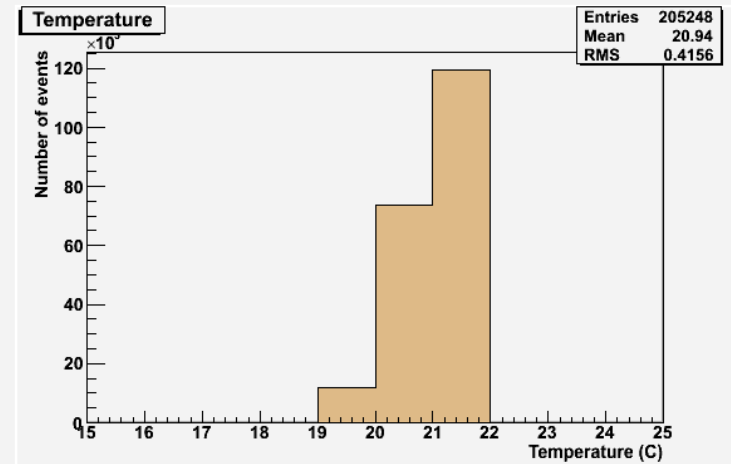
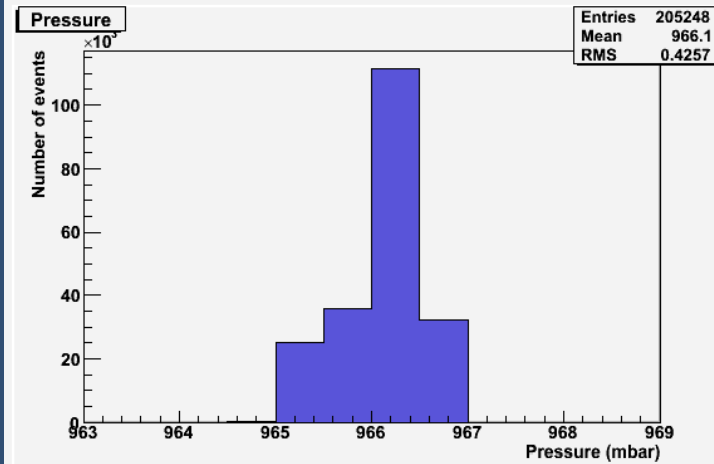
➤ show quite little variations

➤ Previous results :

- Pressure dependency: < 5 ADC/mbar

- No temperature dependency observed

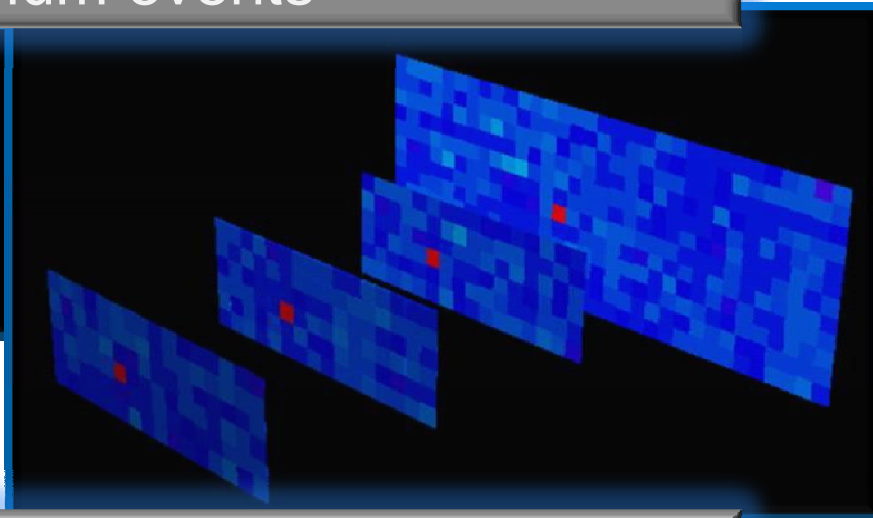
➤ No correction for a first step



Tagging usefull events

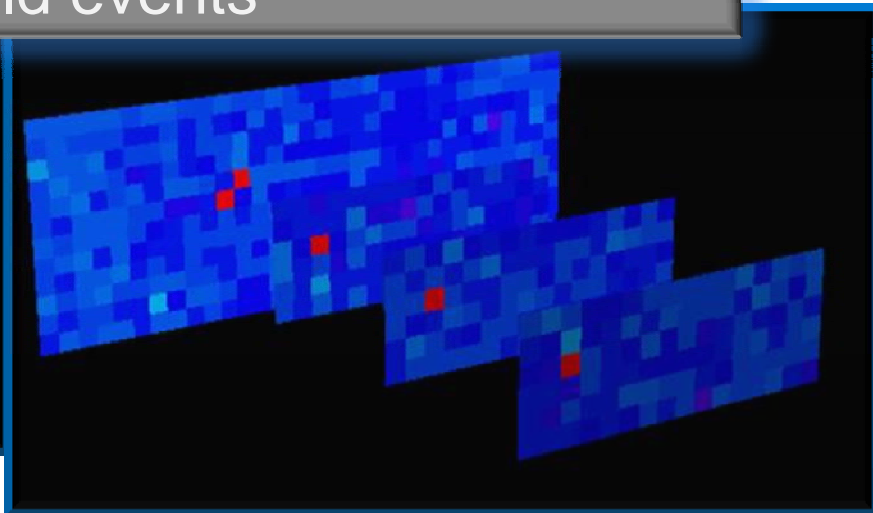
Platinum events

- One single hit per chamber
⇒ the cleanest events
- Pedestal & gain studies

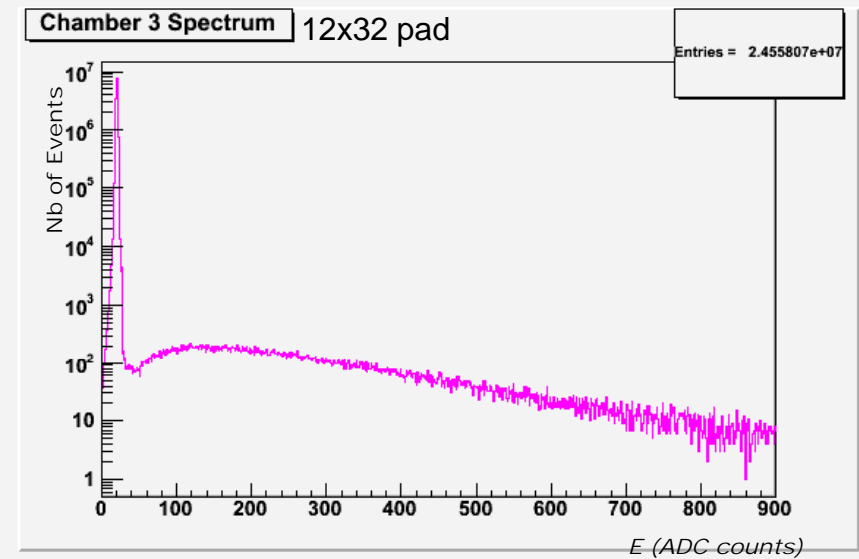
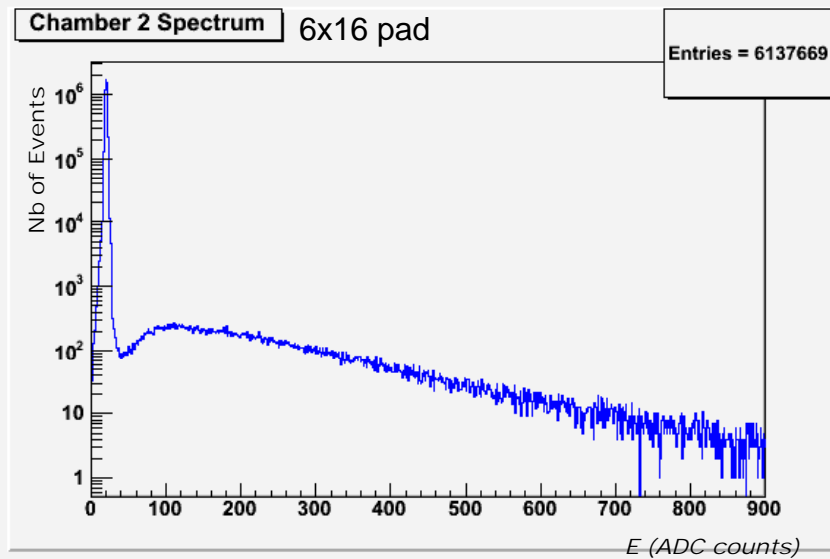
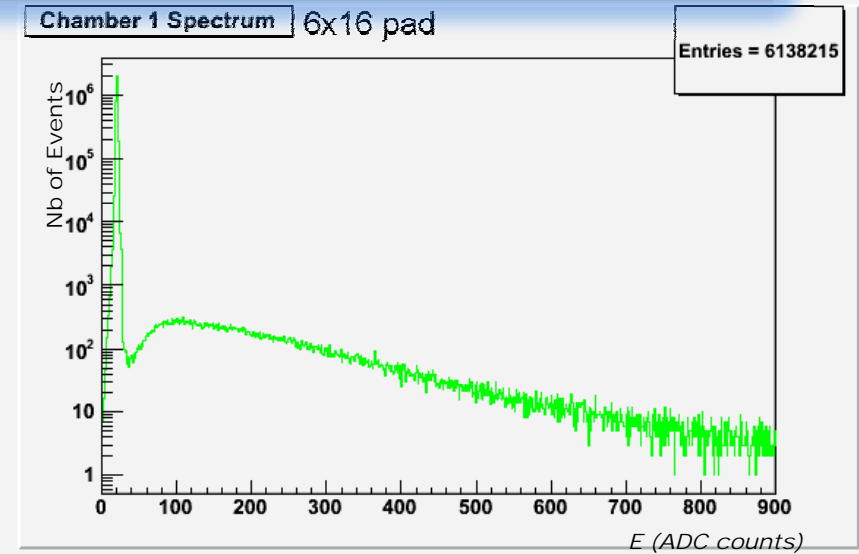
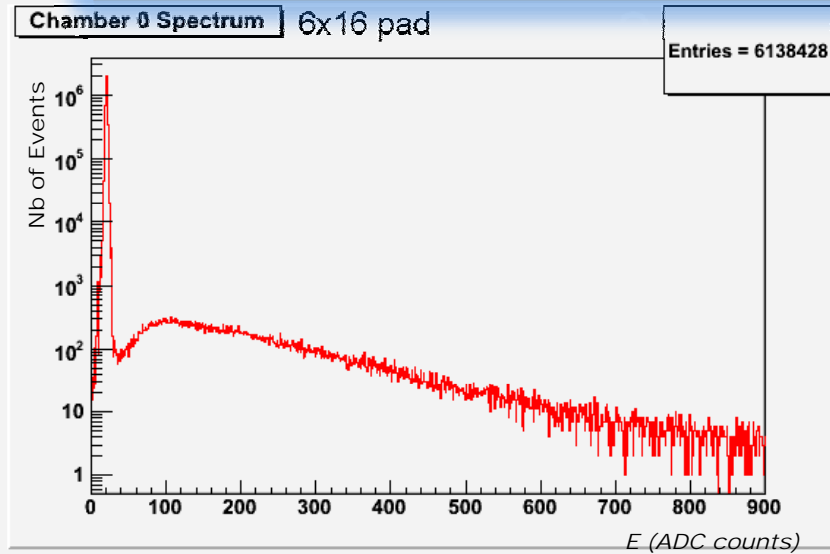


Gold events

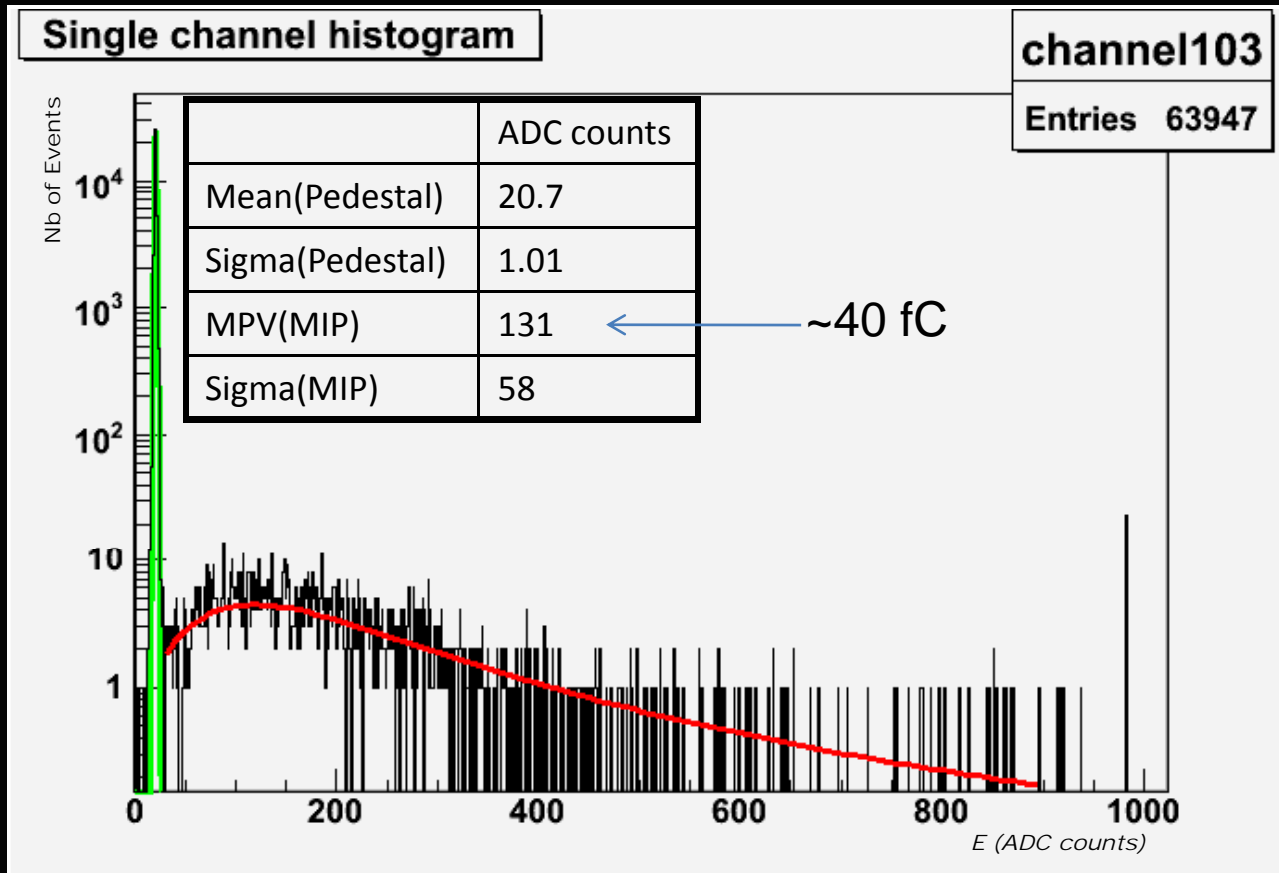
- One single hit for at least 3 chambers
⇒ Clean events
- Efficiency & Xtalk studies for the last chamber



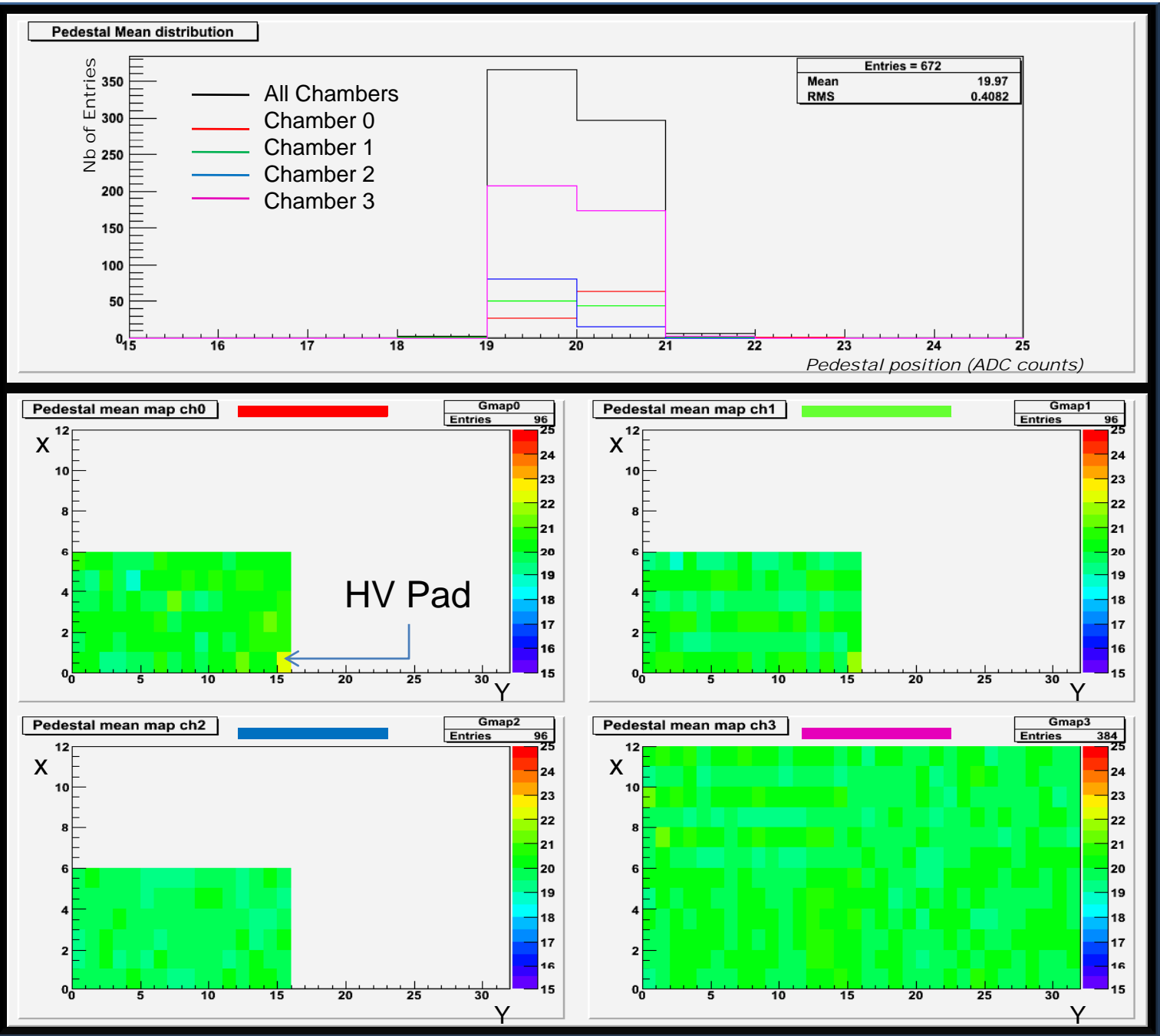
MIP signal in Platinum events



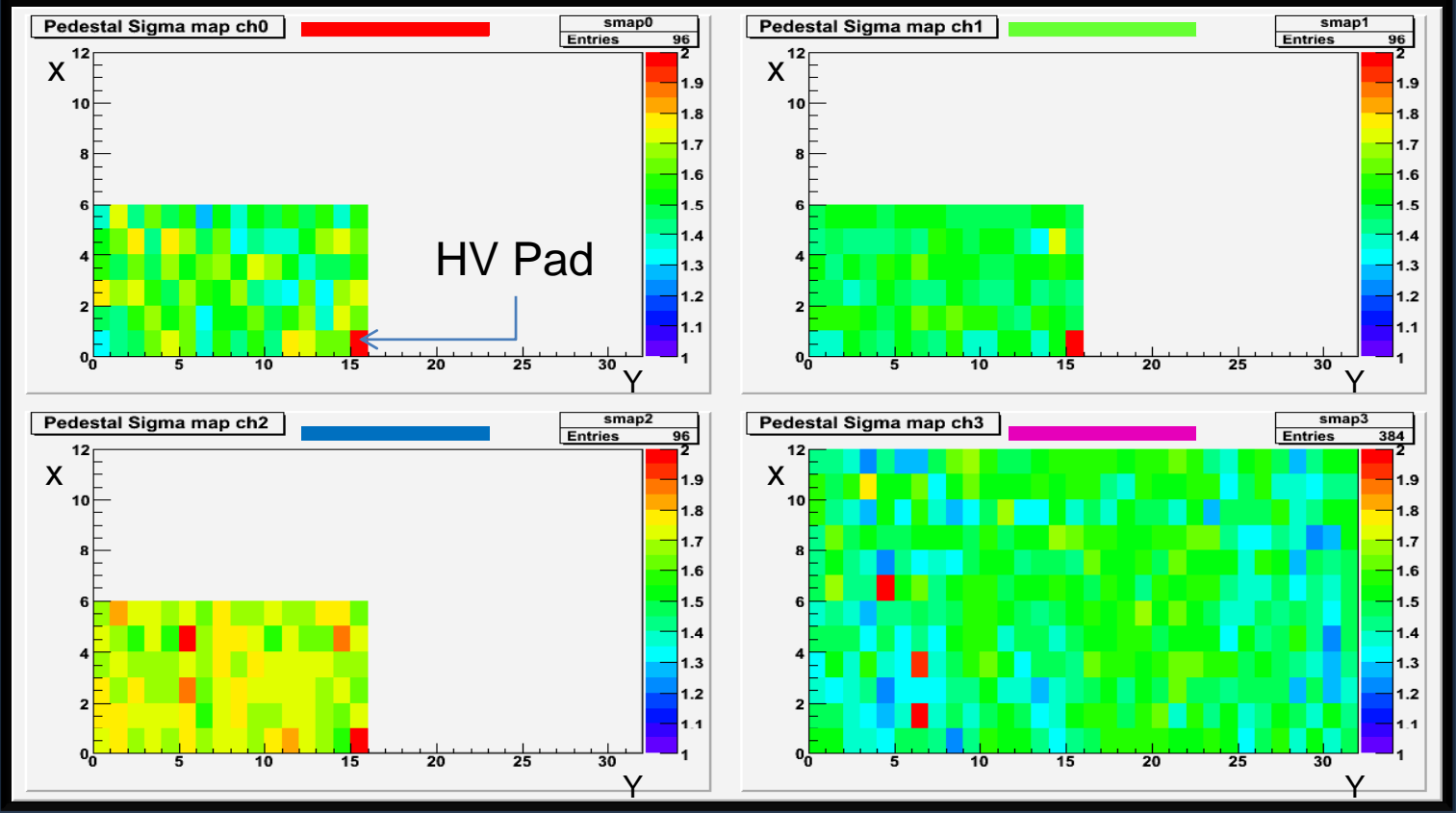
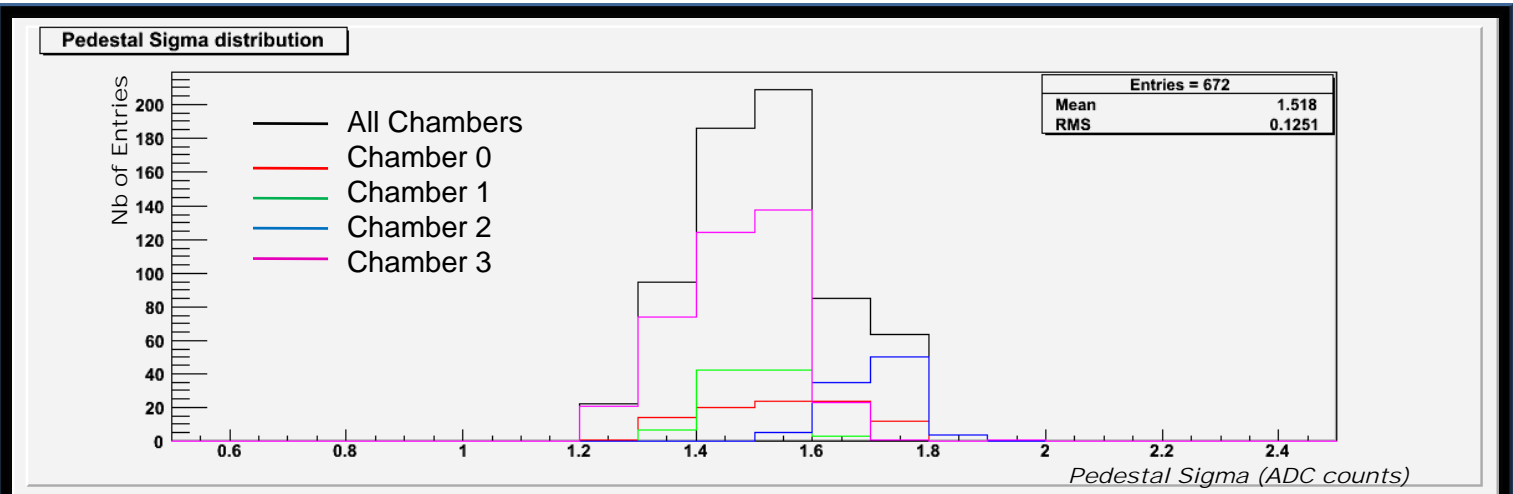
MIP signal observed on every single channel



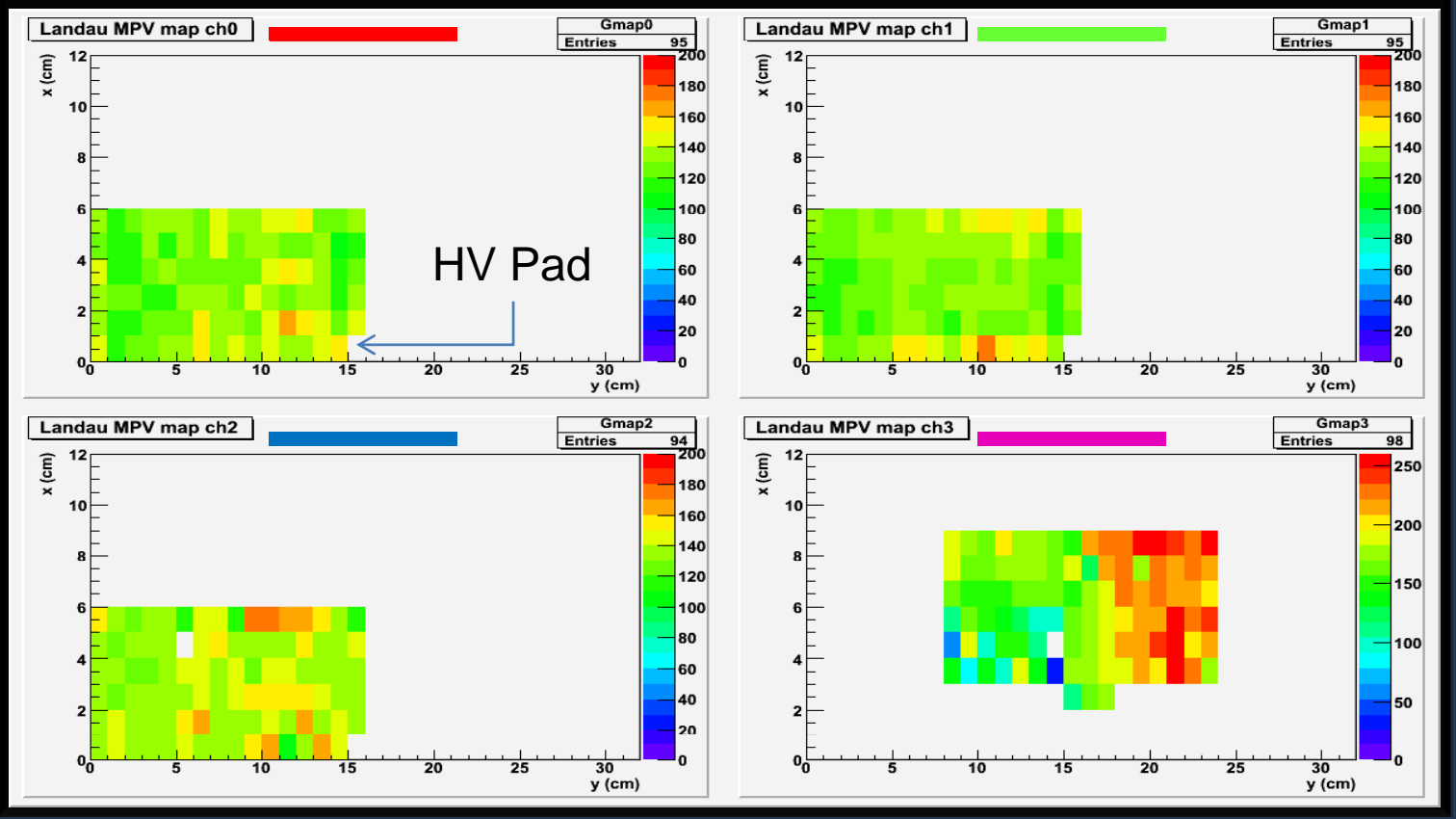
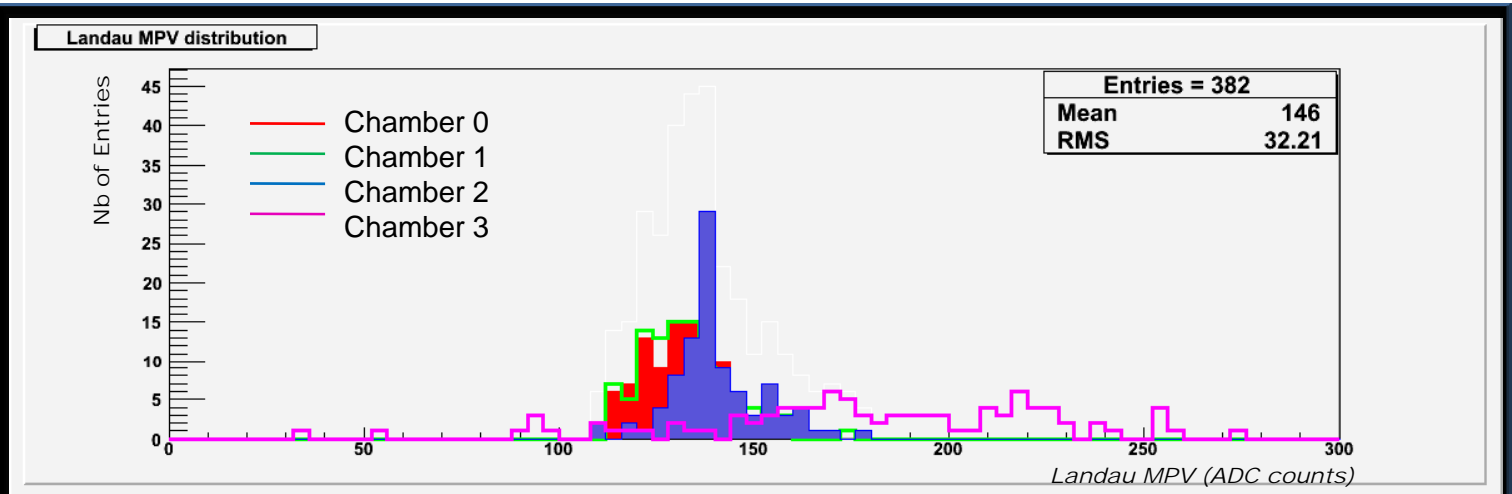
➤ Pedestal means :
aligned and
constant over
time



➤ Pedestal Sigma :
Small and constant over time
⇒ good noise conditions !

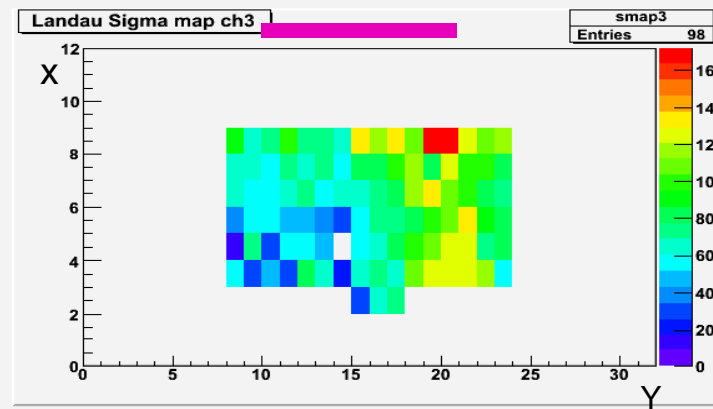
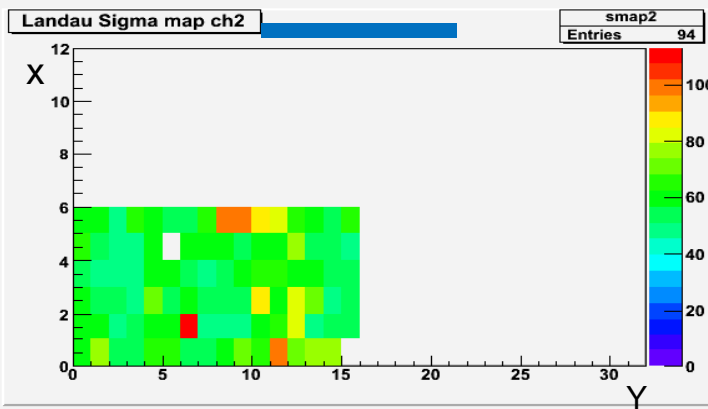
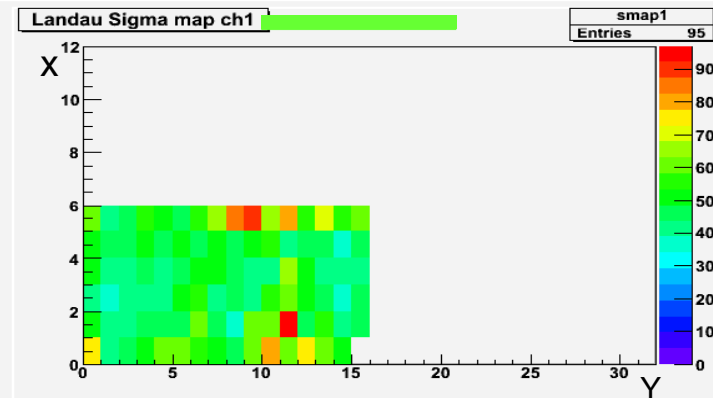
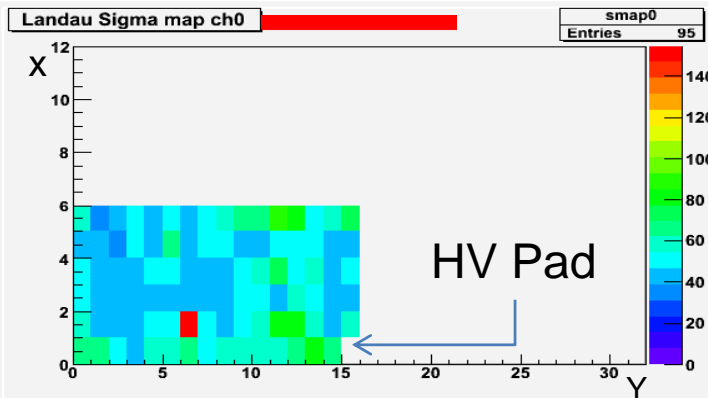
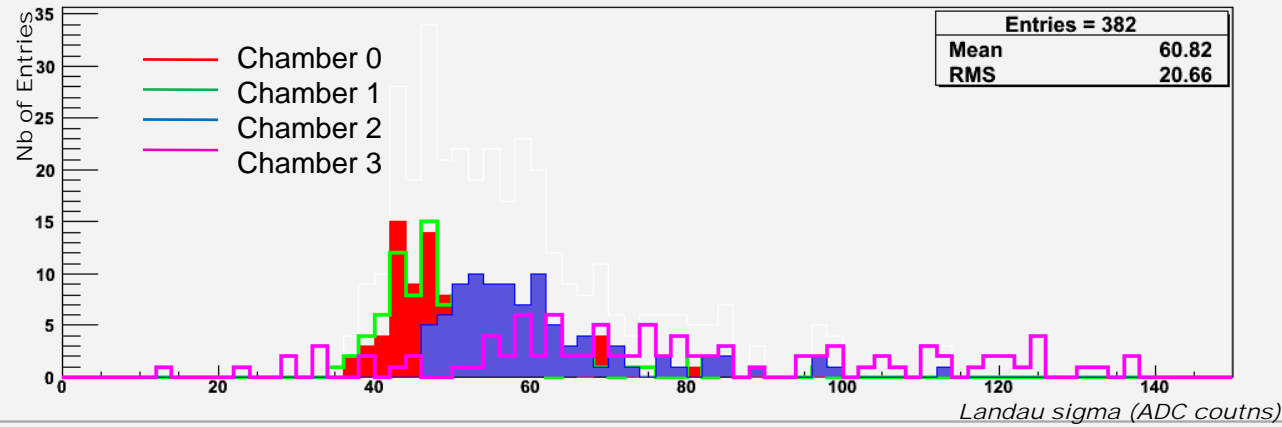


- Indication of gain variation
- Under study:
 - Electronics channels disparity
 - statistics and fit dependency
 - Drift space homogeneity



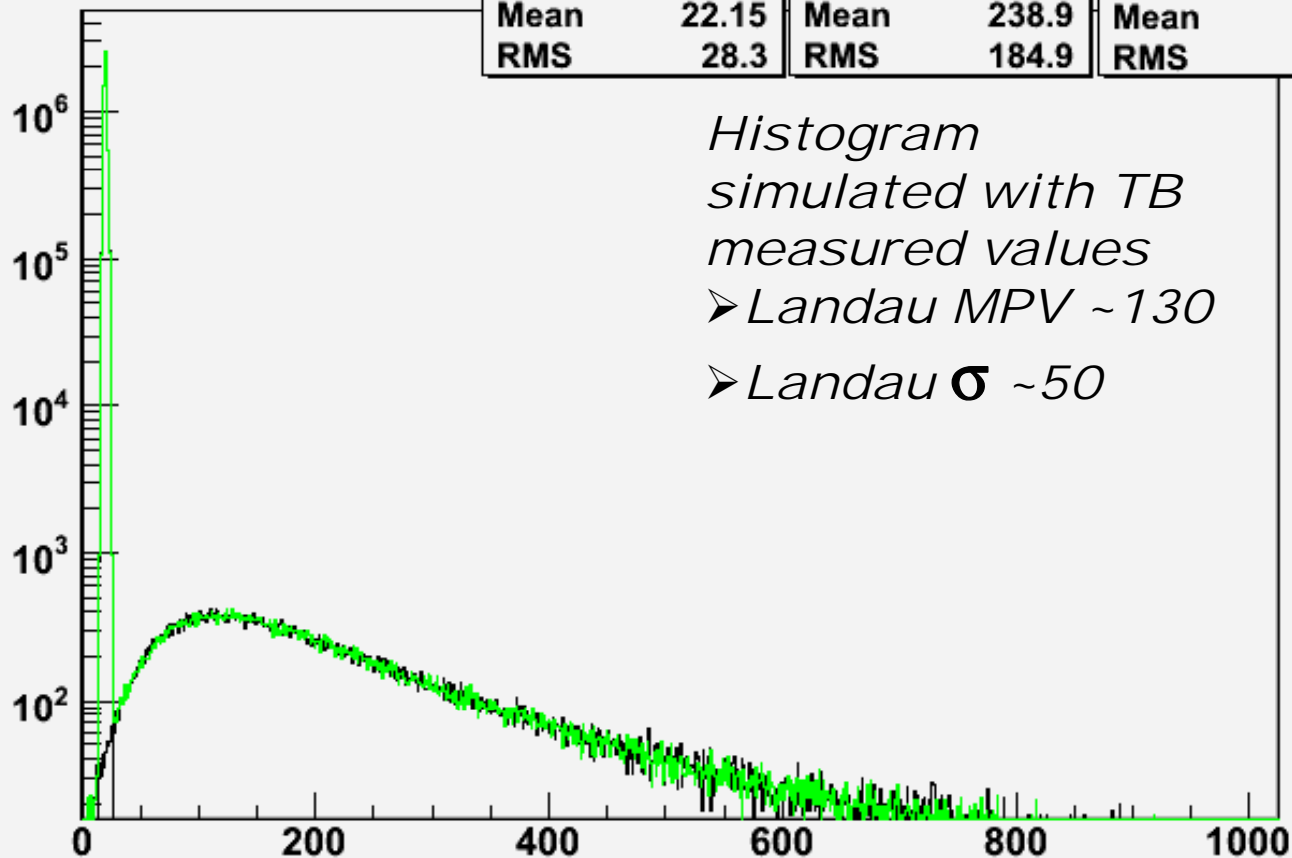
Landau Sigma Distribution

Landau Sigma distribution

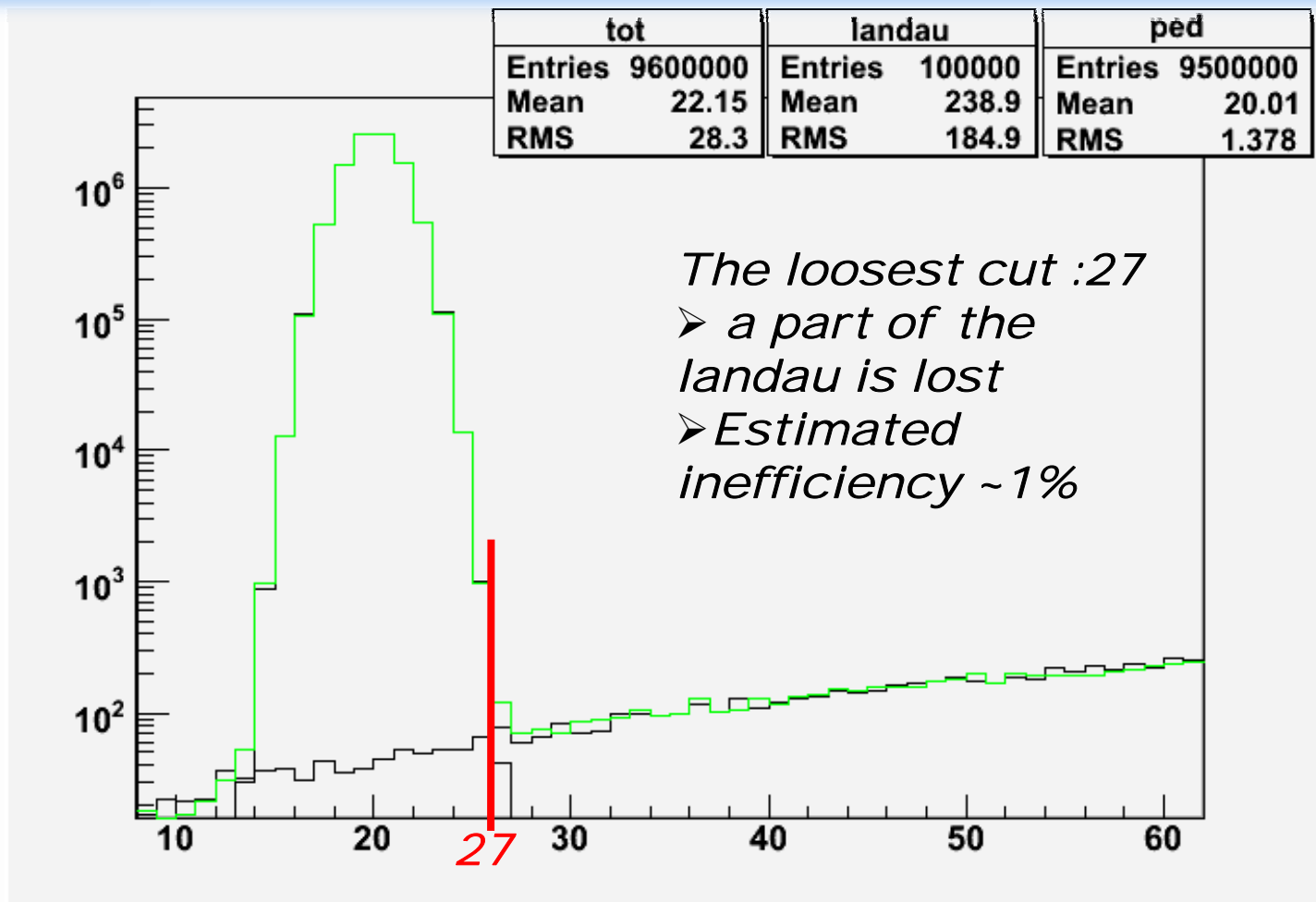


Efficiency simulation for a typical channel

	tot	landau	ped
Entries	9600000	100000	9500000
Mean	22.15	238.9	20.01
RMS	28.3	184.9	1.347



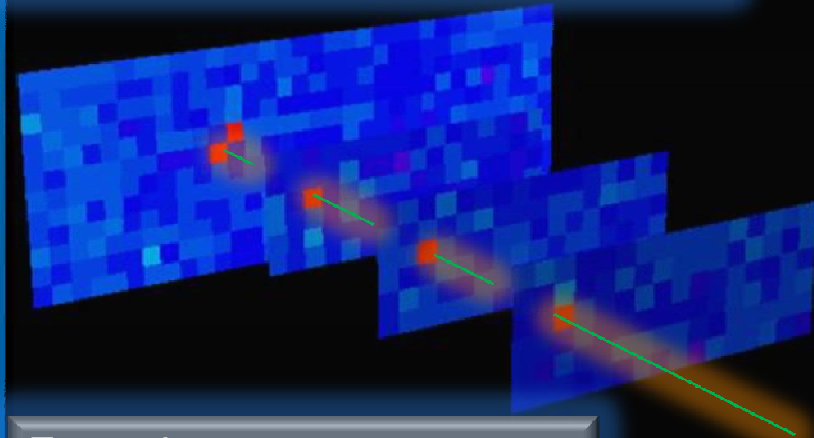
Efficiency simulation for a typical channel



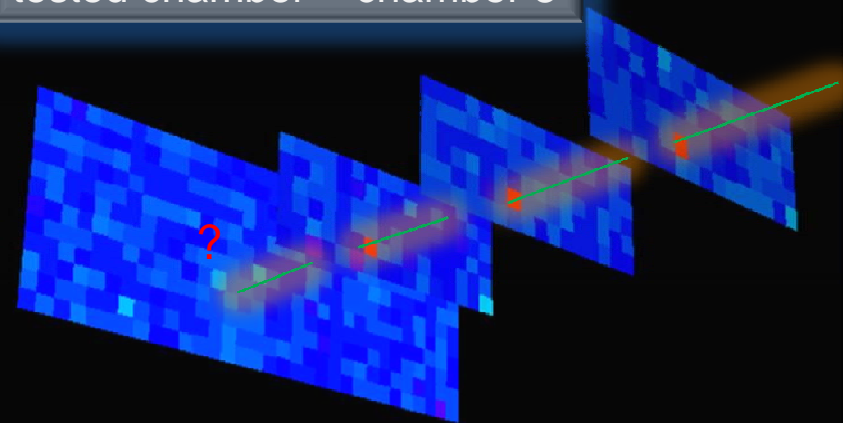
Efficiency Measurements

Using Gold events

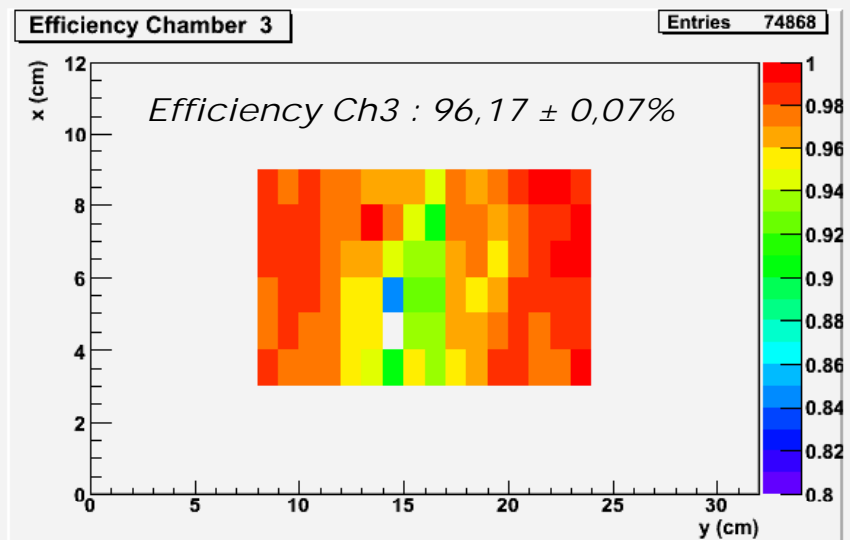
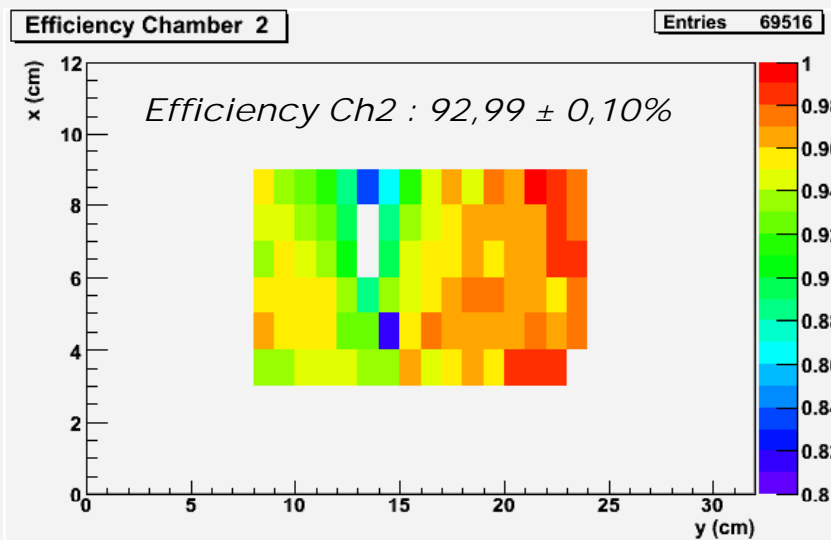
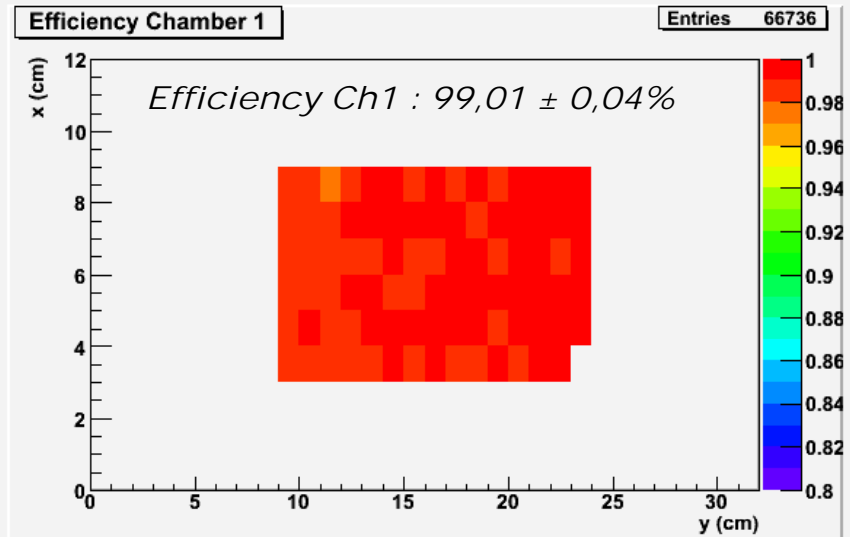
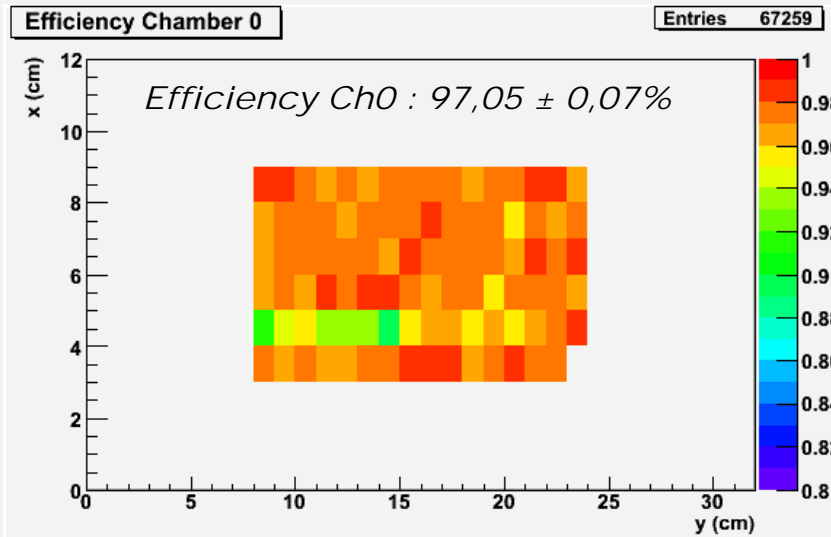
- Prerequisite : Offline alignment with Platinum events
- One single hit for at least 3 chambers
- Check if the three reference hits form a straight line
- Check if the tested chamber shows some hit(s) in a 3x3 square centred on the expected hit



Example :
tested chamber = chamber 3



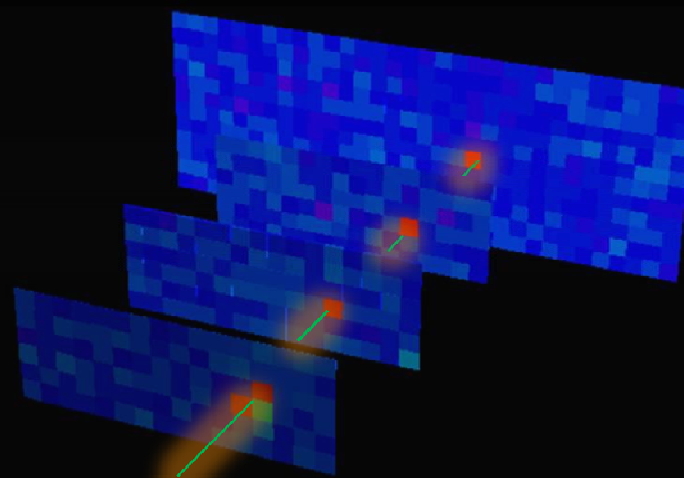
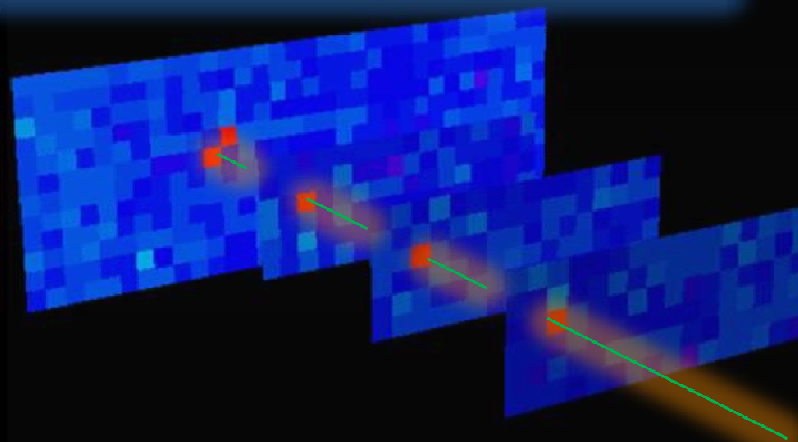
Efficiency Maps



Multiplicity Measurements

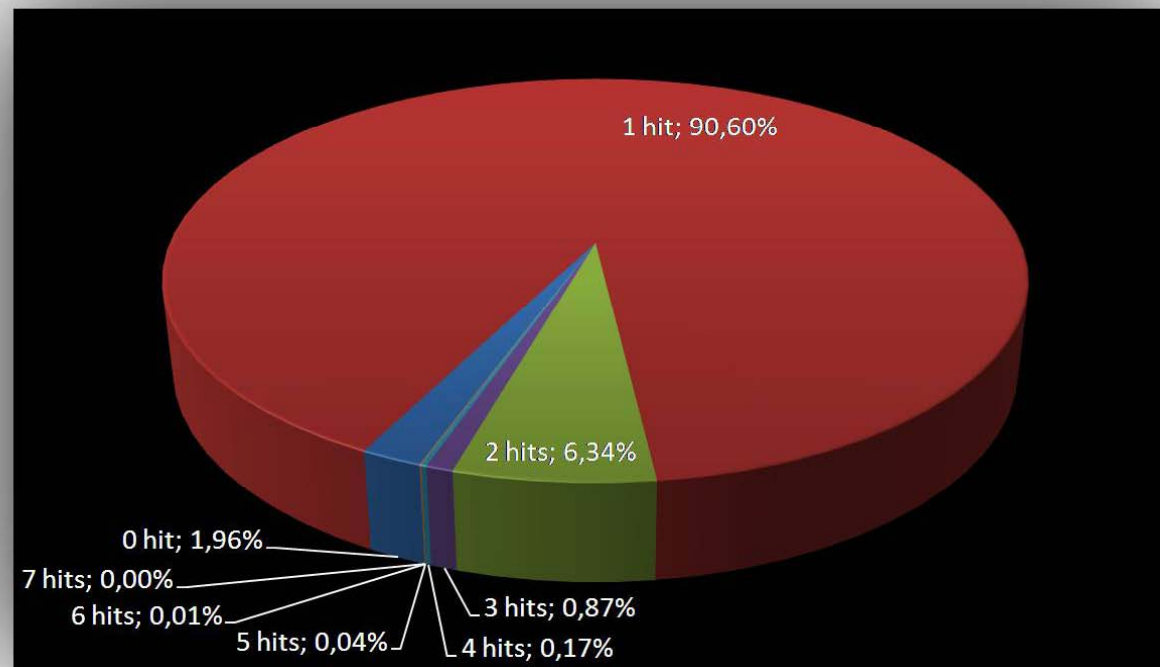
Using Gold events

- One single Hit for at least 3 chambers
- Check if the three reference hits form a straight line
- Check if the tested chamber shows a hit in the expected area
- Count the Number of hits in the 3x3 square around expected pad



Multiplicity Measurements

Results for 76500 events in one Chamber



Further Analysis

- Compare pions data with muons' (~180 000 events)
- Improve every study and refine results
- Analyse the effects of showers in our MicroMegs
- ...