

DHCAL-MicroMegas Very Preliminary TB Analysis and Results

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The Data

- The data

- 6th and 7th August

- 50k Muons @ ~200 GeV

- 250k Pions @ 50 and 200 GeV

- (adjustment, gain calibration)

- 7th and 14th August

- 200k Pions @ 200 GeV** (+ 50k to check electronics HOLD)

- 14th August

- 200k Muons @ ~200 GeV**

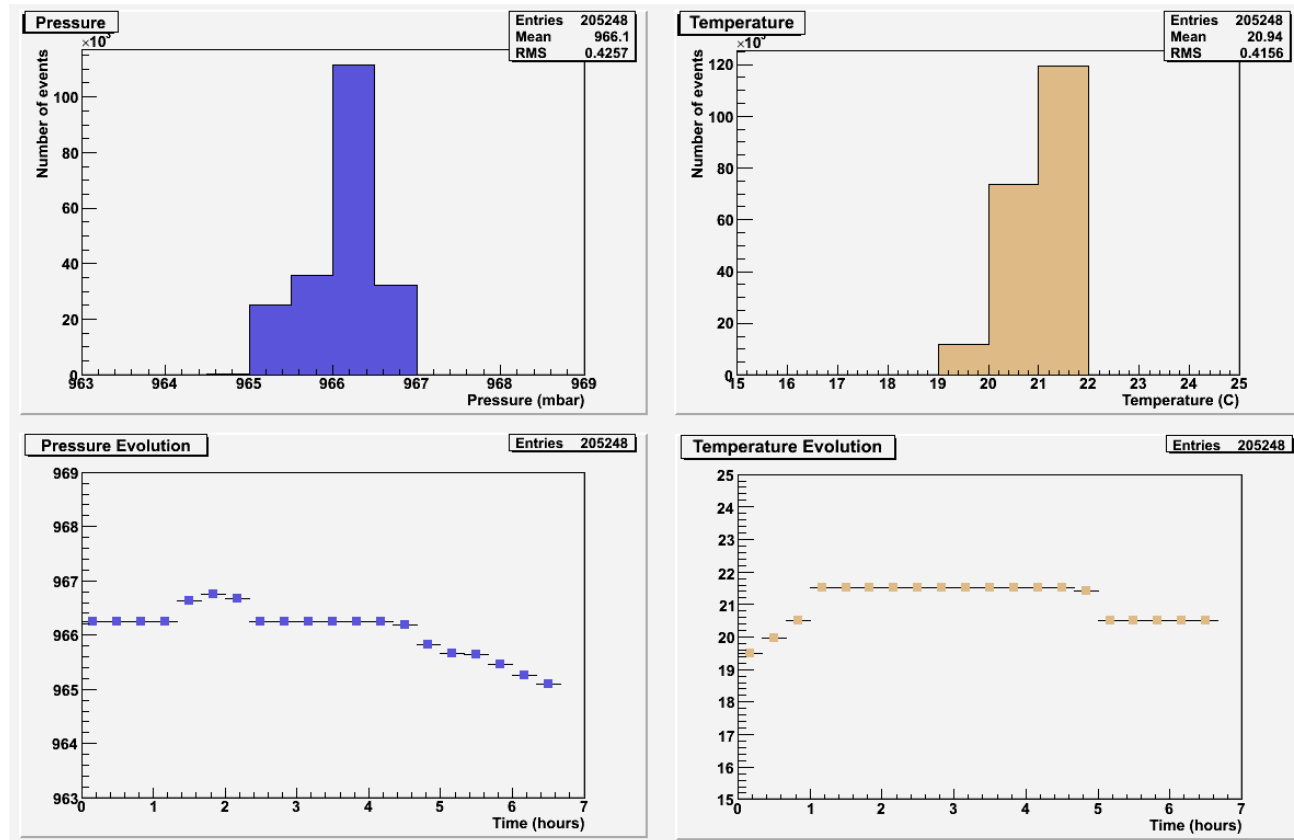
This Very Preliminary Analysis and Results
(A. ESPARGILIÈRE)

- 15th August

- 250k Pions with 1 steel bloc + absorbers**

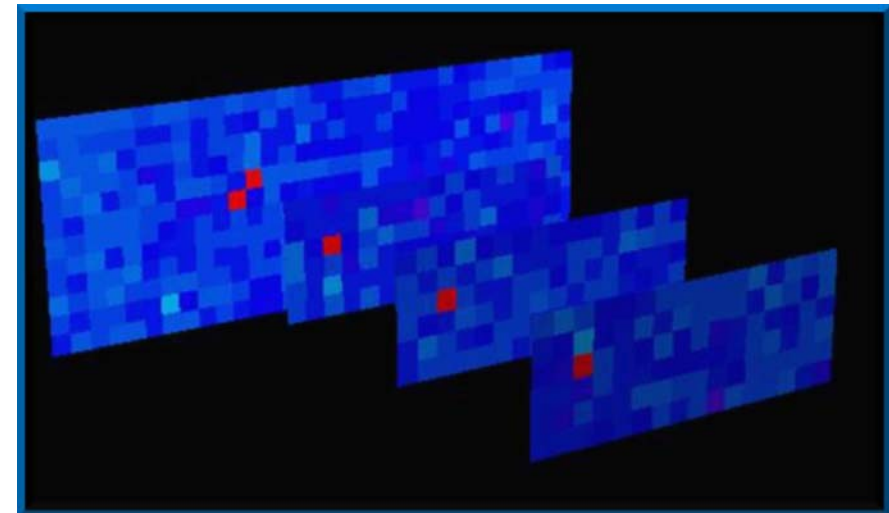
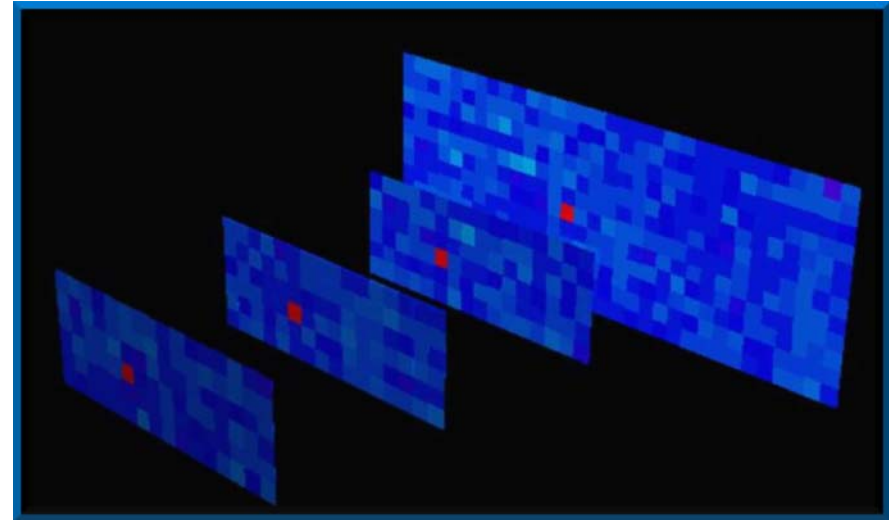
Temperature and Pressure

- Shows little variations
 - Previous results :
 - Pressure dependency < 5 ADC/mbar
 - No temperature dependency observed
- No correction for a first step**

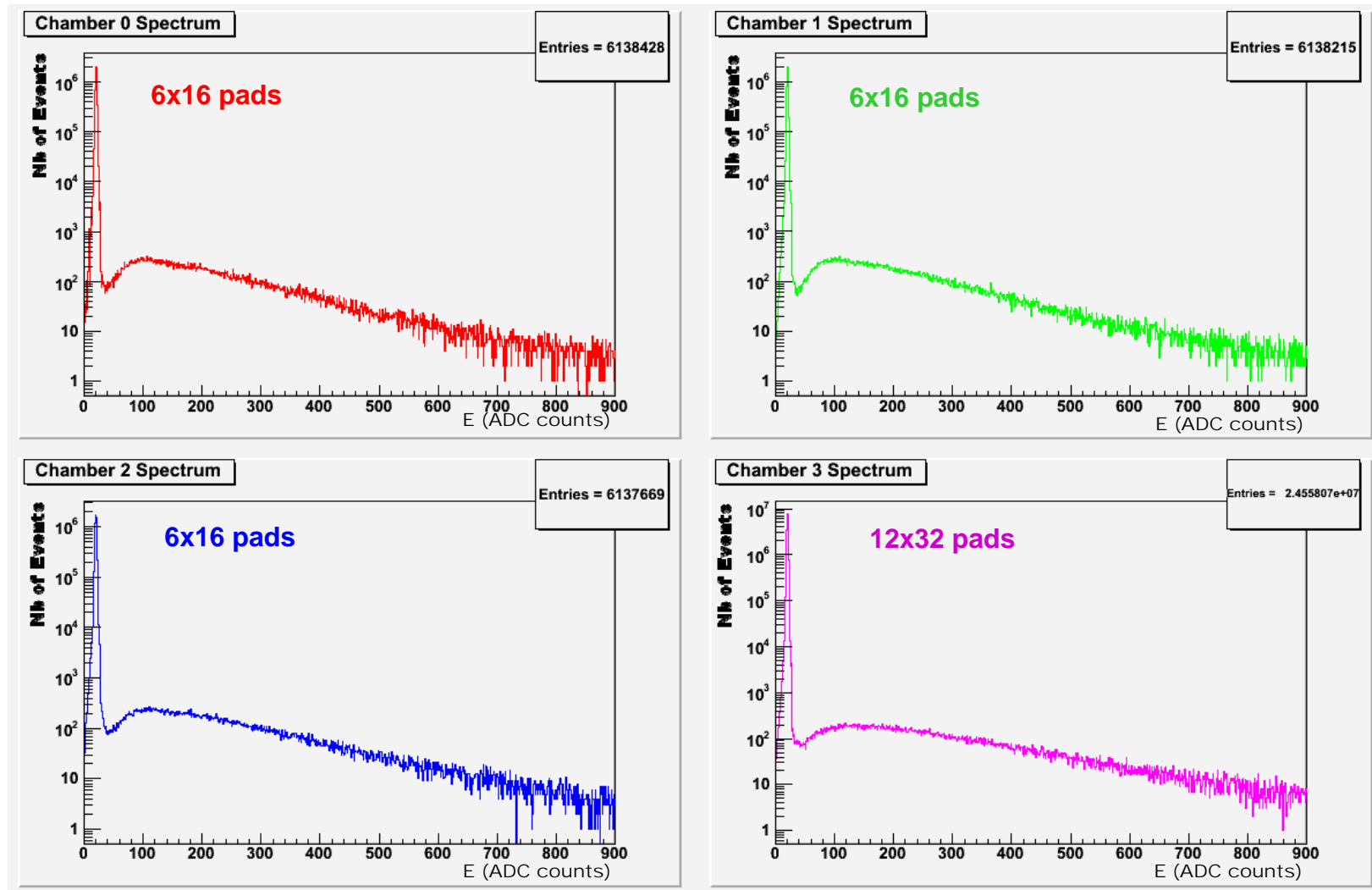


Event tags

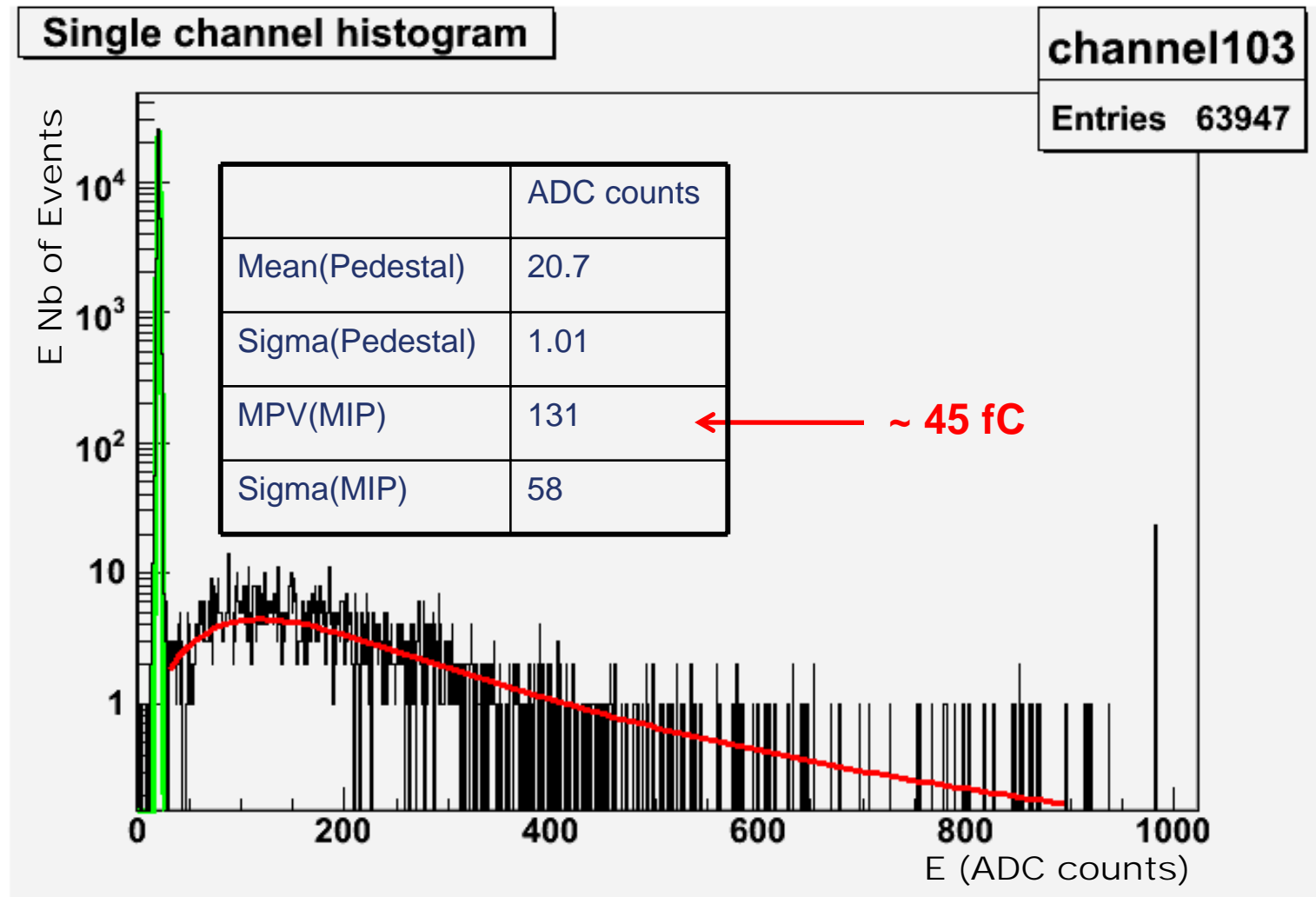
- Platinum Events (~30%)
 - One single hit per chamber
⇒ the cleanest events
 - Pedestal & gain studies
- Gold Events (~70%)
 - One single hit for at least 3 chambers
⇒ clean events
 - Efficiency & Multiplicity studies for the last chamber



MIP Signal for Platinum Events (all pads)

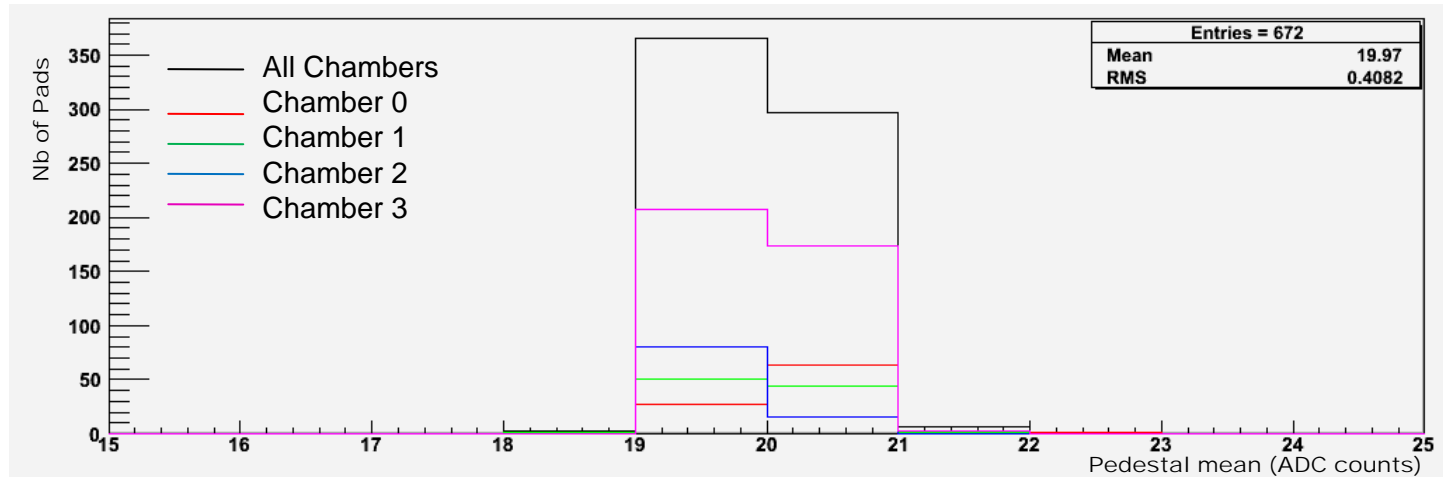


MIP Signal observed on every Single Channel



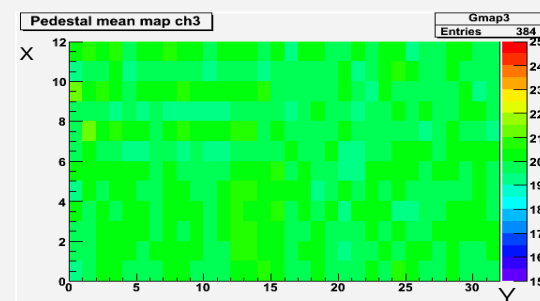
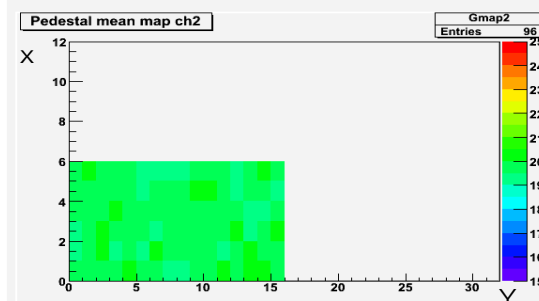
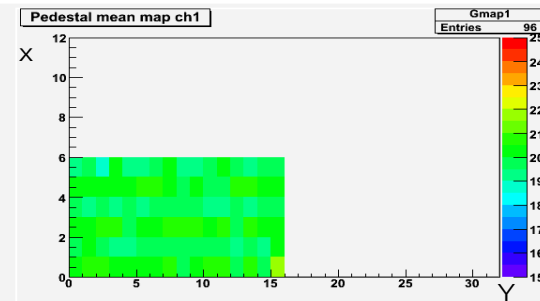
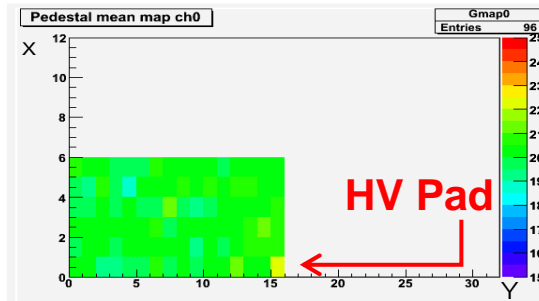
Pedestal per pad

- Mean



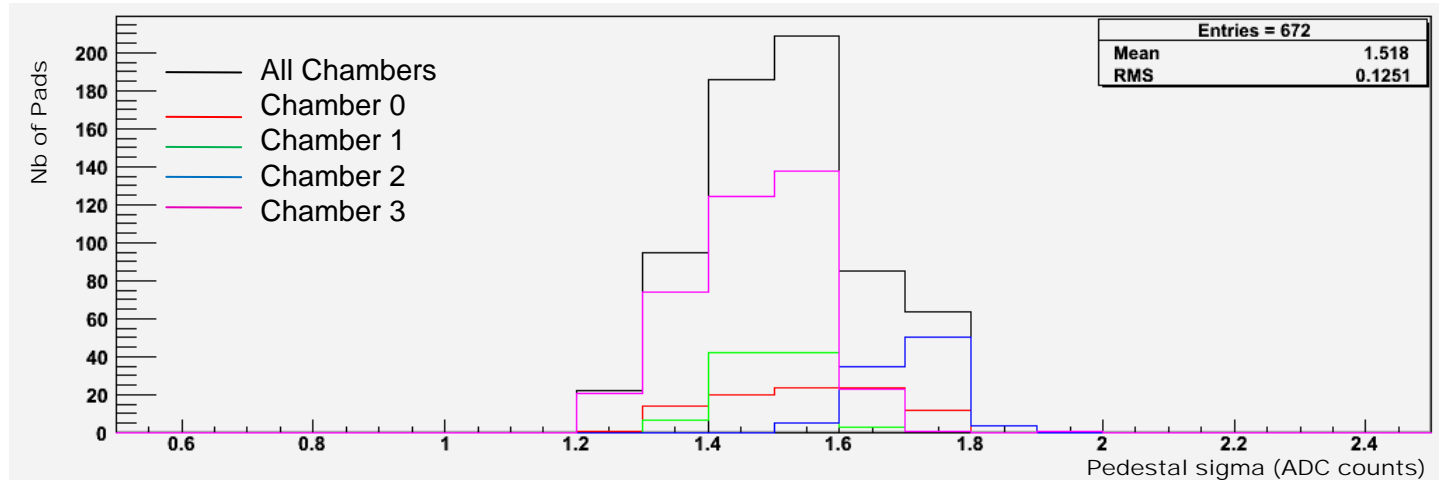
- Pedestal mean

- aligned online at 20
- constant over time

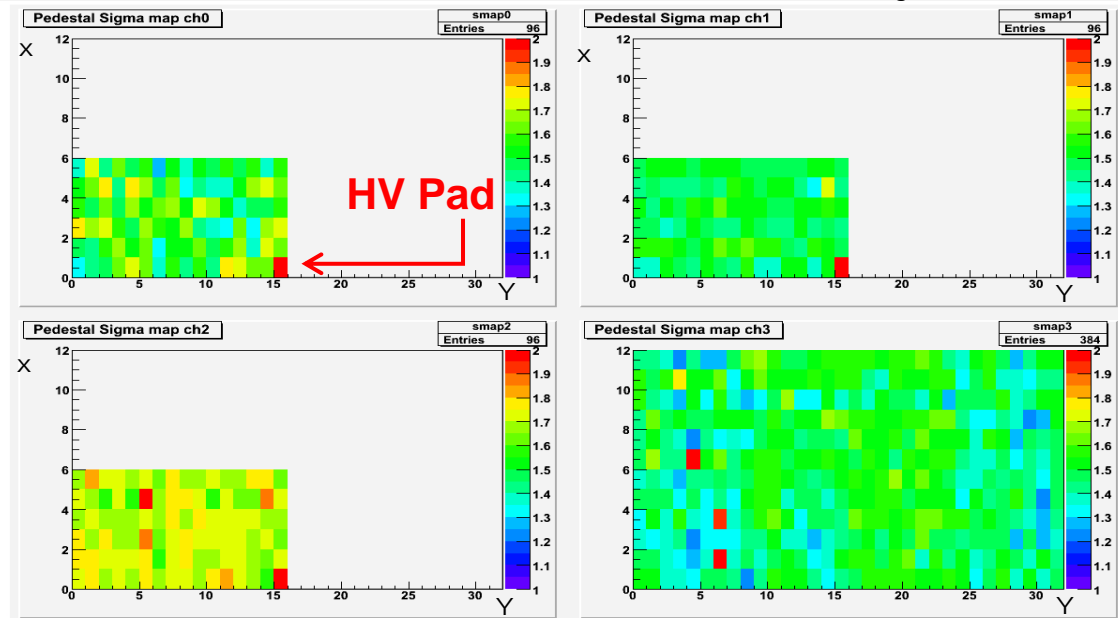


Pedestal per pad

- Sigma

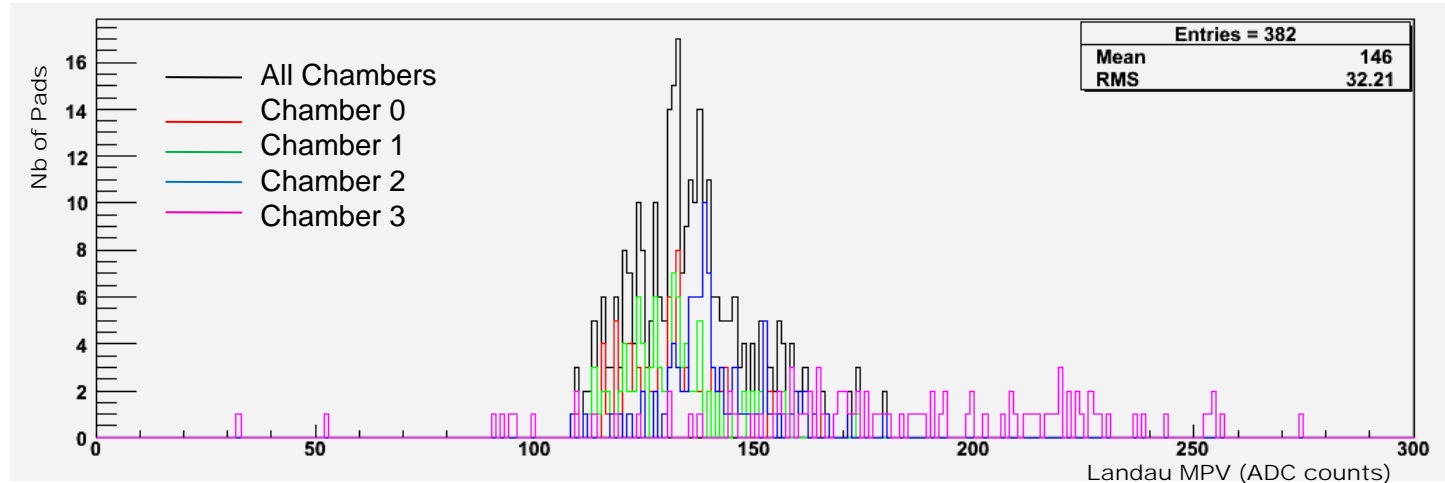


- Pedestal Sigma :
small and constant
over time
⇒ Good noise
conditions!

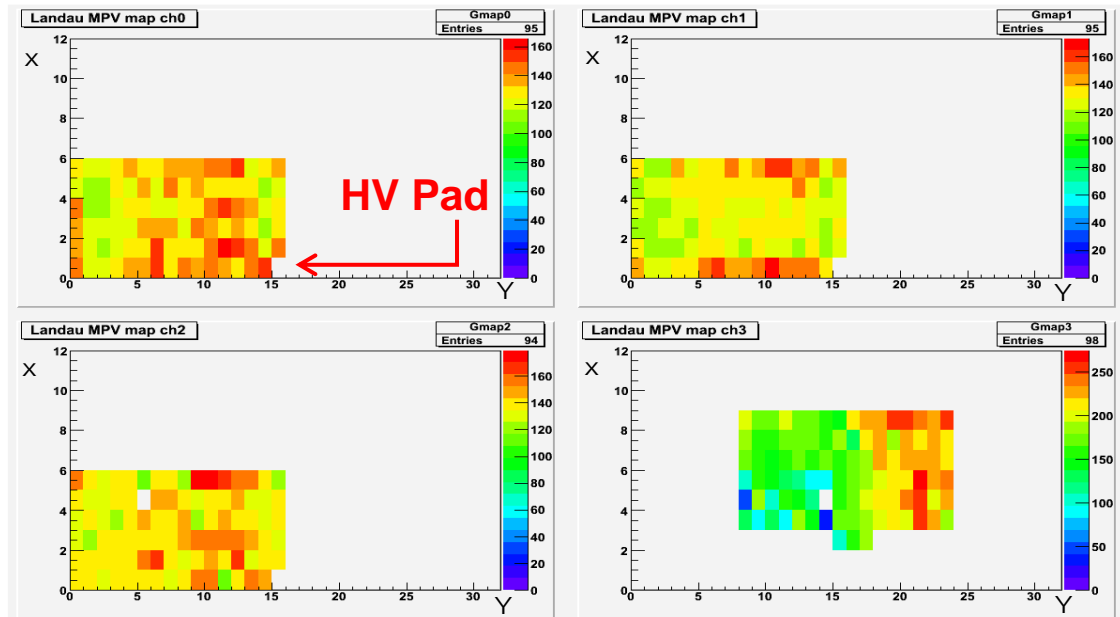


Landau Most Probable Value per pad

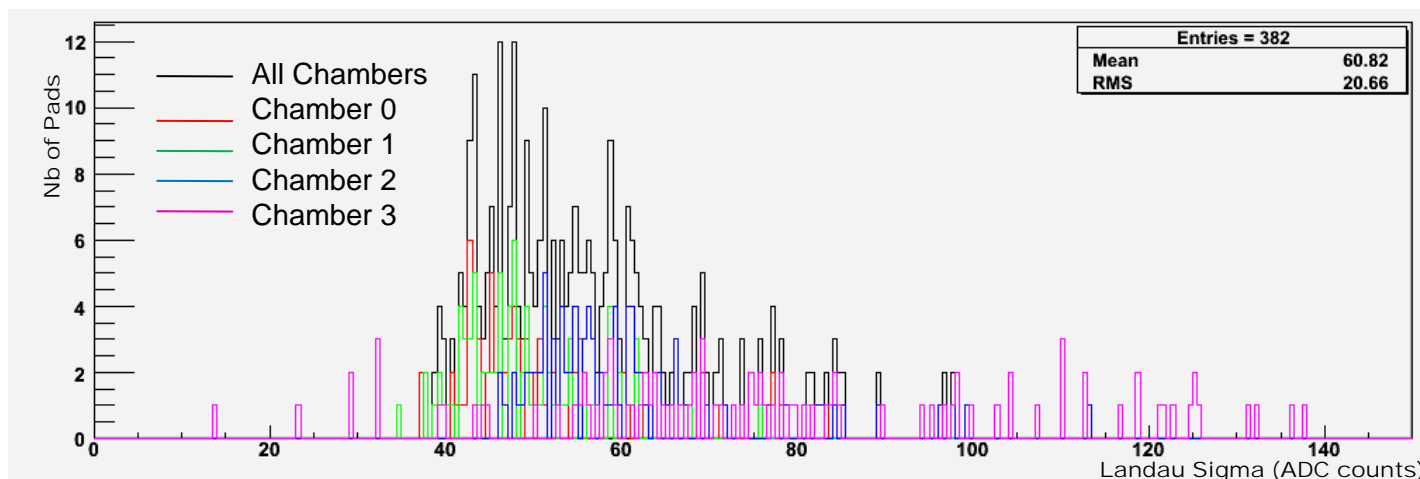
- MIP distribution



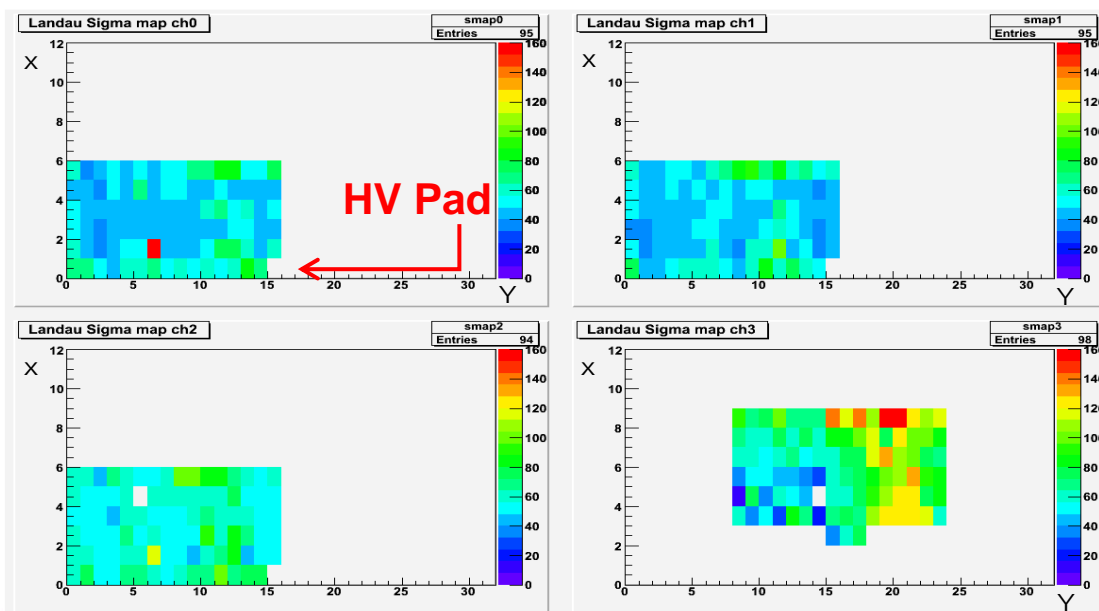
- Indication of variation from pad to pad
- Under study:
 - Electronics channels disparity
 - Statistics and fit dependency
 - Drift space homogeneity



Landau Sigma per pad



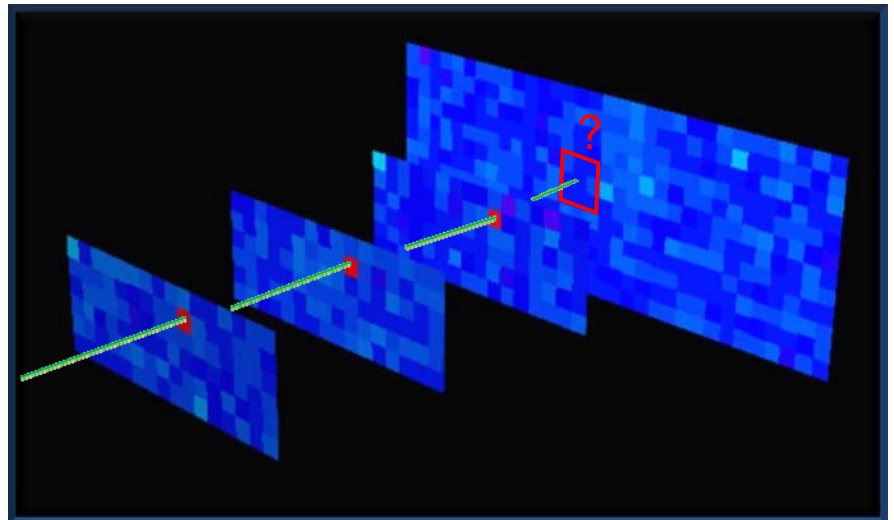
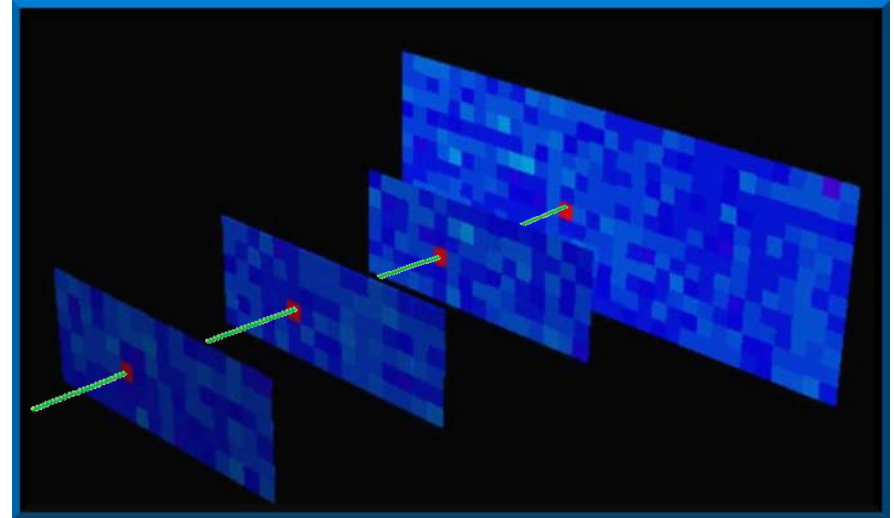
- 12x32 pads MicroMegas shows a larger sigma disparity



Efficiency Measurements

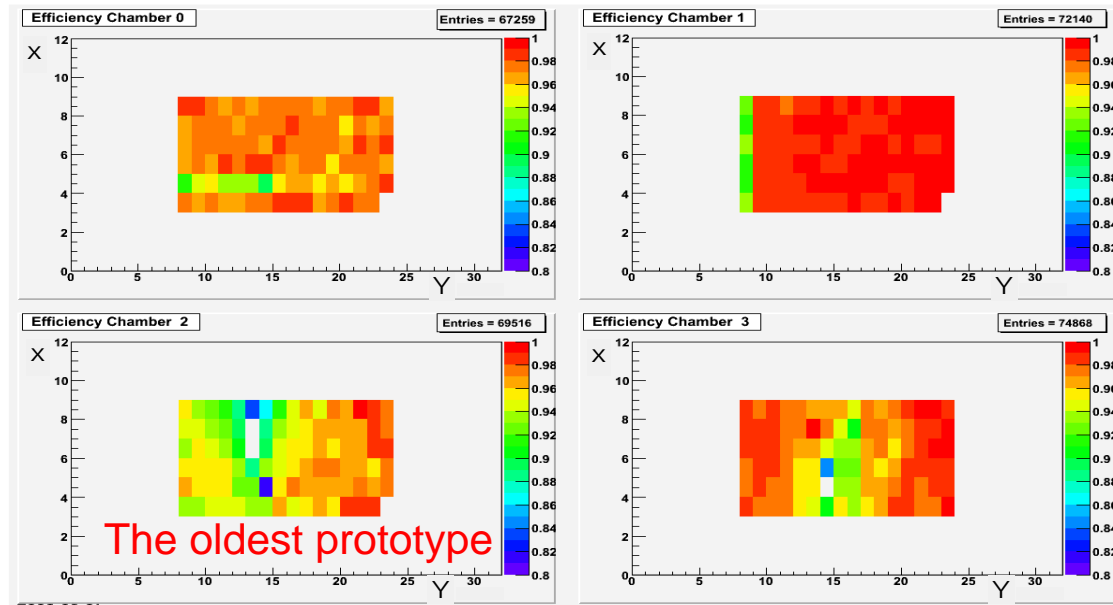
- Using Gold events

- Prerequisite :
offline geometrical 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



Efficiency Measurements

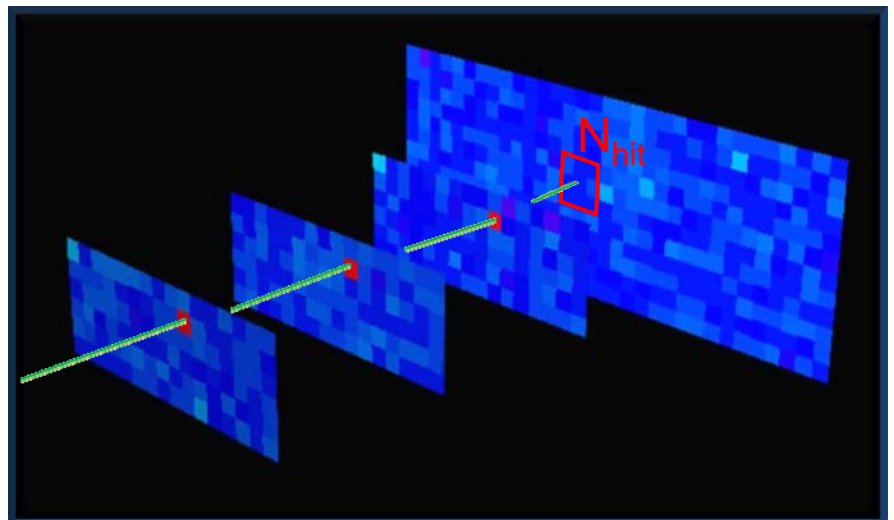
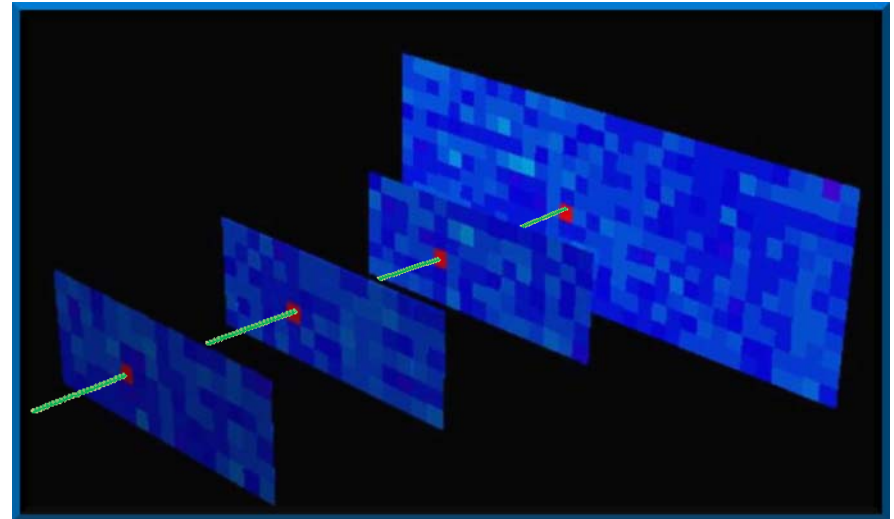
	Efficiency
Chamber 0	$97,05 \pm 0,07\%$
Chamber 1	$98,54 \pm 0,05\%$
Chamber 2	$92,99 \pm 0,10\%$
Chamber 3	$96,17 \pm 0,07\%$



Multiplicity Measurements

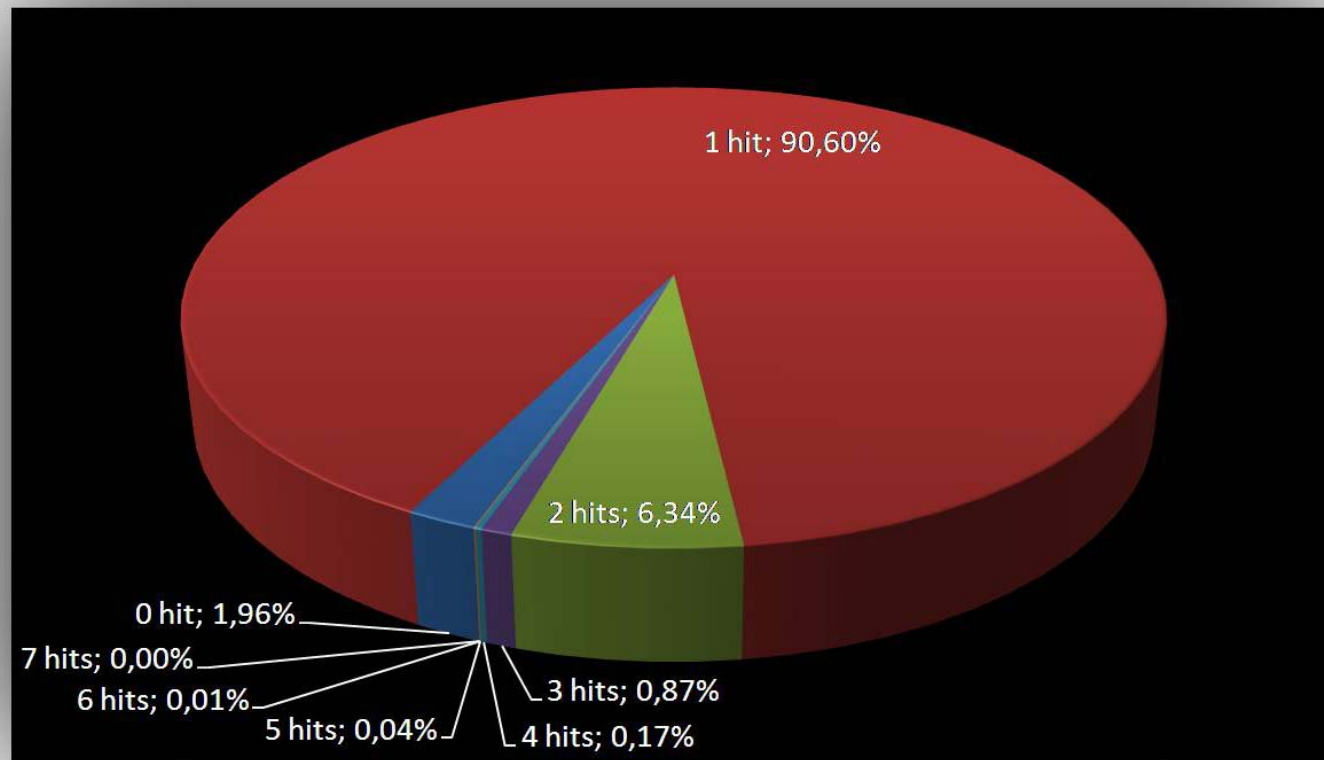
- Using Gold events

- Prerequisite :
offline geometrical alignment
with Platinum events
- One single hit for at least 3 chambers
- Check if the three reference hits form
a straight line
- Count the Number of hit(s) in a **3x3**
square centred on the expected hit



Multiplicity Measurements

- Multiplicity < 1.1
(1 chamber 75k Gold events)



Conclusion



- Good data taken at the TB in August 2008
- Very Preliminary Results on
 - **prototypes disparity**
 - **pad homogeneity**
 - **multiplicity, efficiency**
- Still a lot to check and analyse