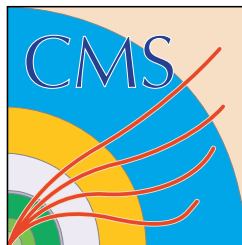
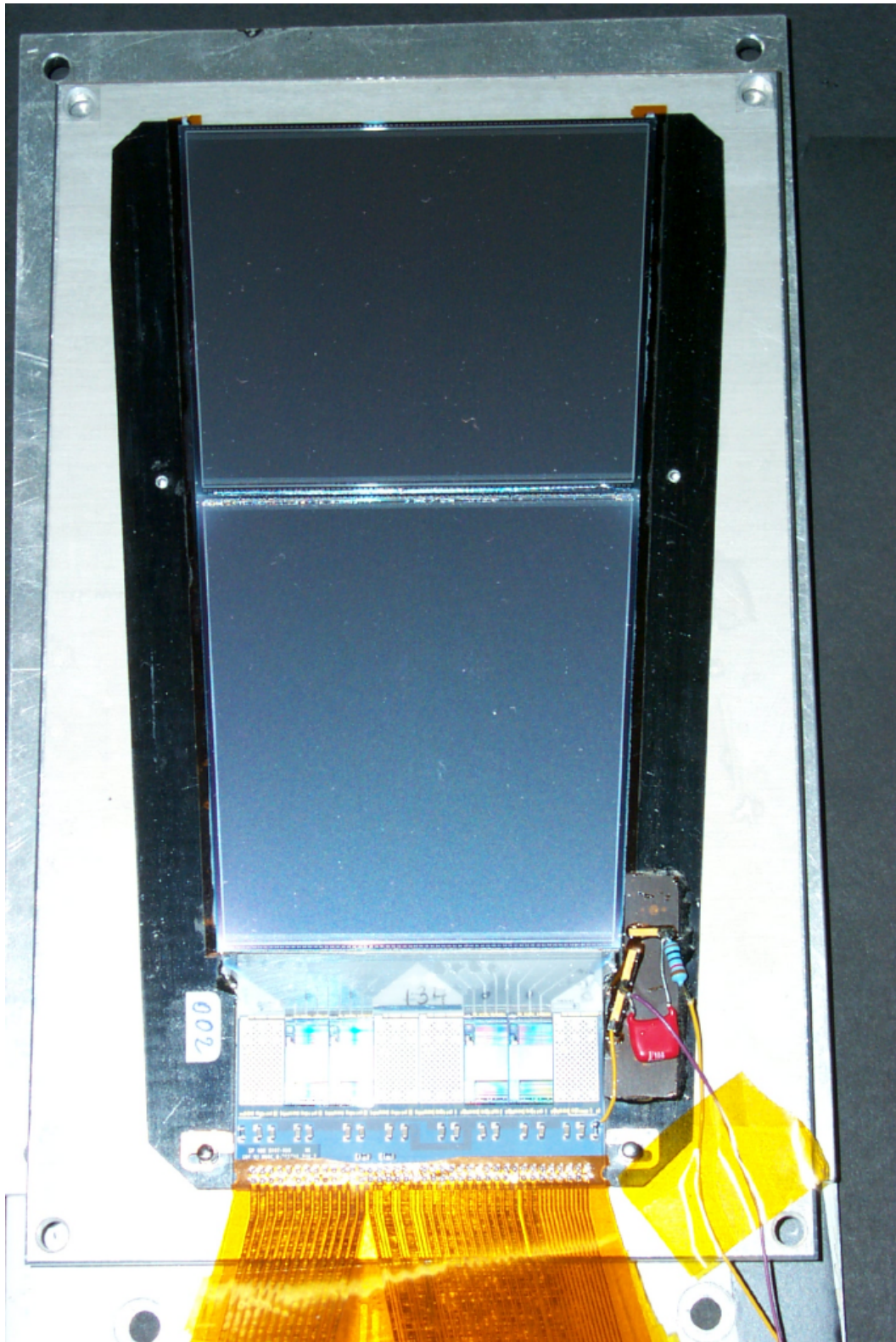


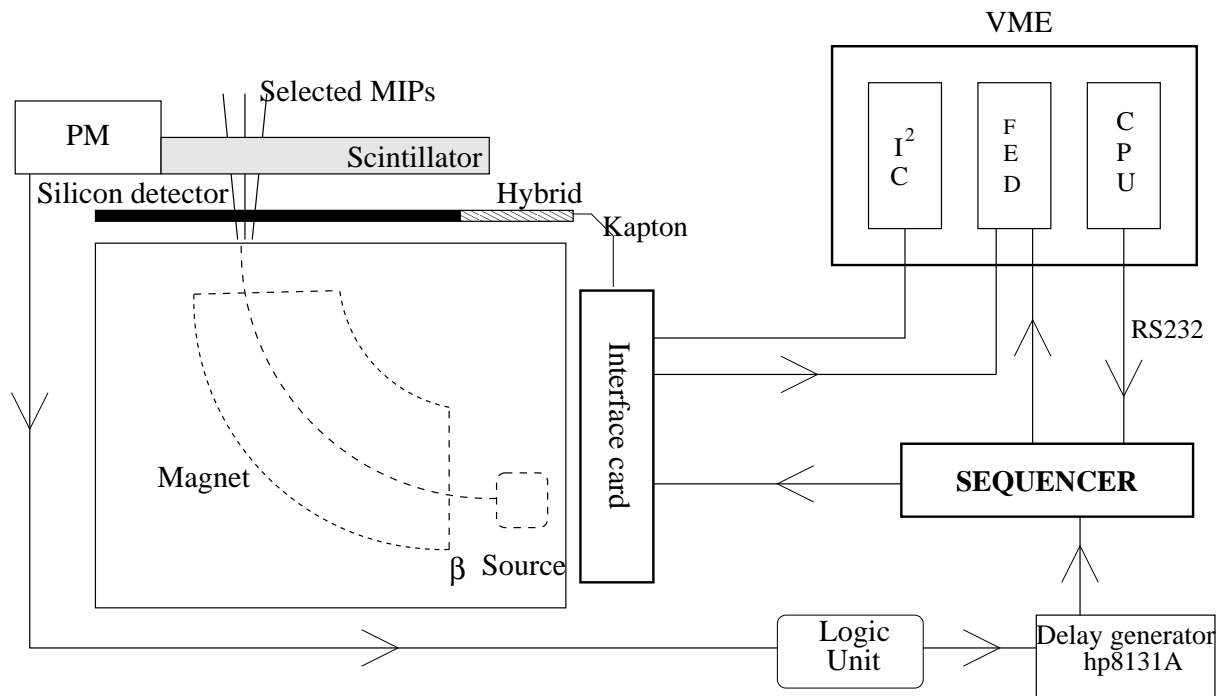
# Preliminary Results of 25 ns Test Beam on Florence Detector

Simone Busoni - INFN Firenze  
for CMS Florence group



## Milestone detector





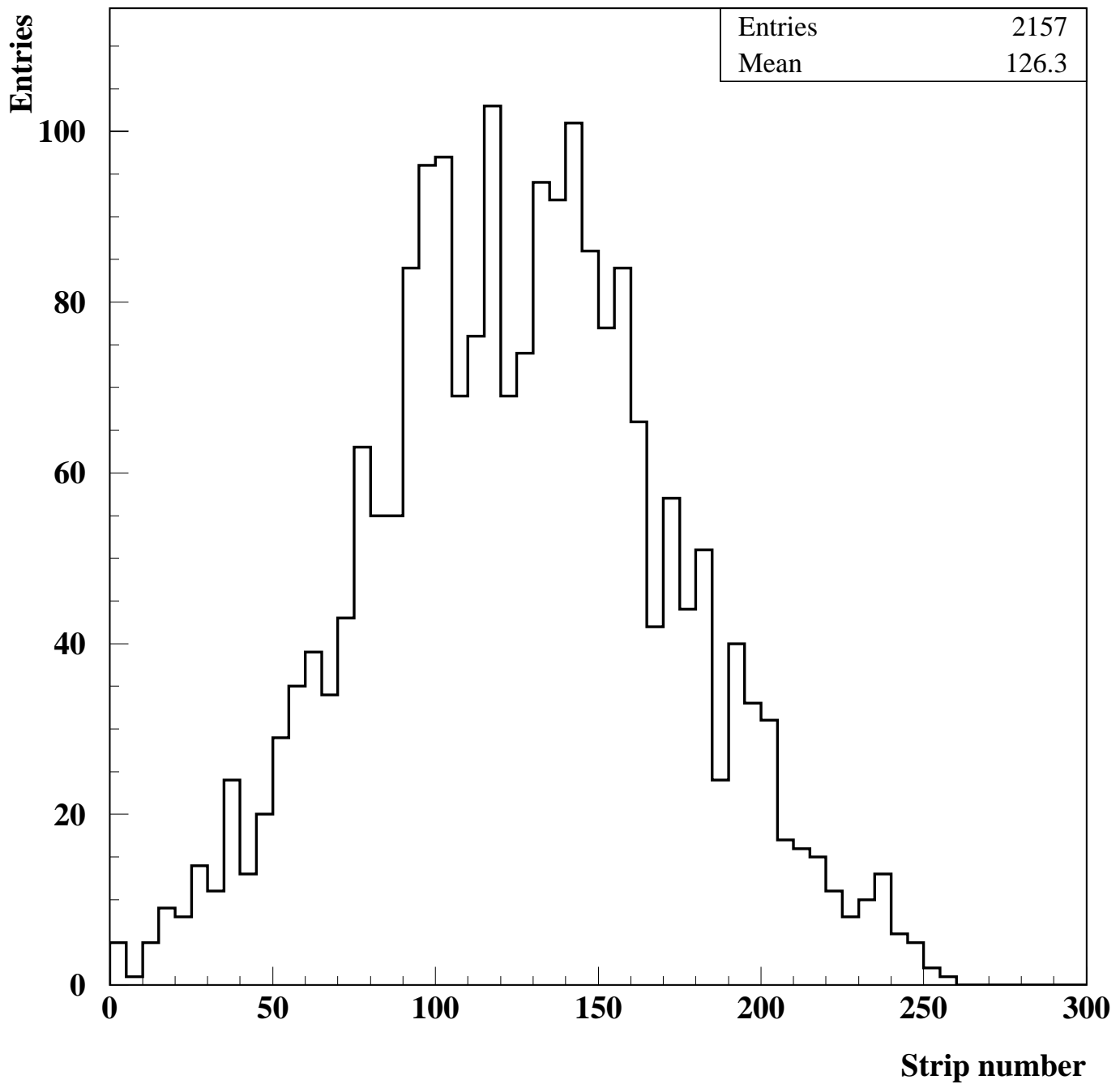
## Detector characteristics:

- Single sided wedge detector
- 512  $p^+$  strips with pitch from  $108.5 \mu\text{m}$  to  $137.4 \mu\text{m}$
- Strip width  $25 \mu\text{m}$
- Dimensions: overall length 137 mm,  
shorter side 58 mm, longer side 73 mm
- Bonded to hybrid 134

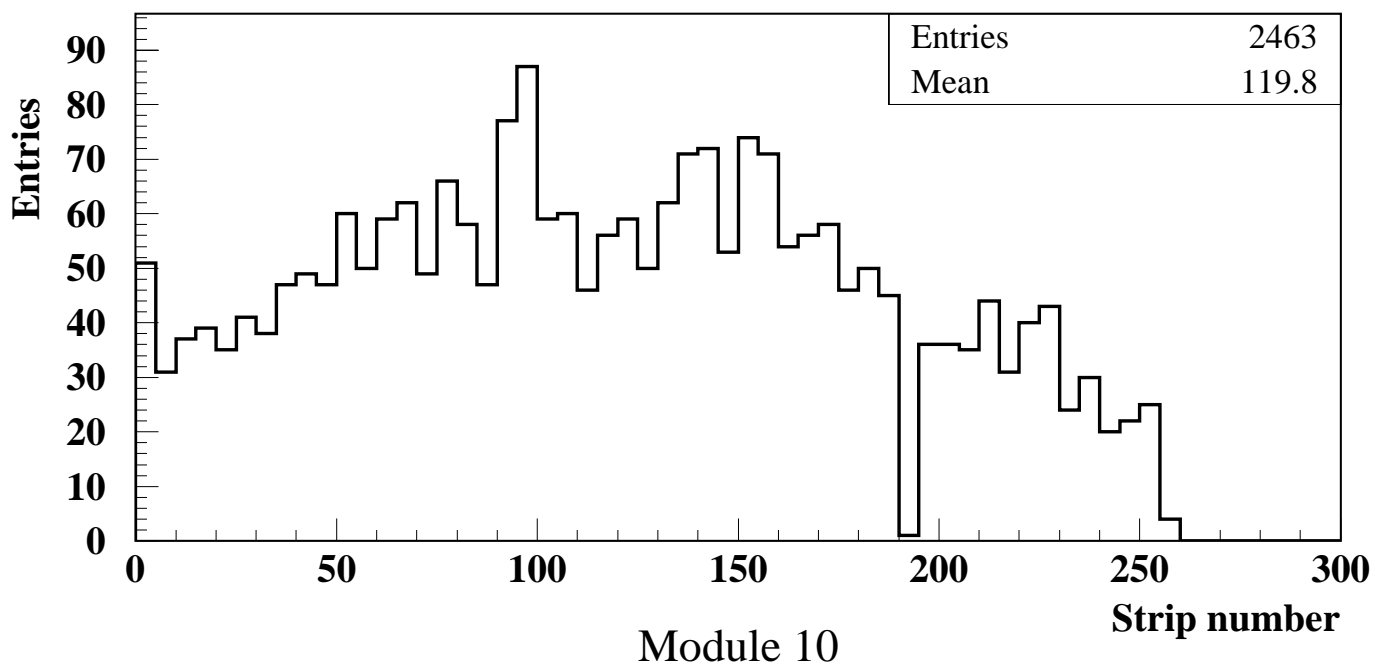
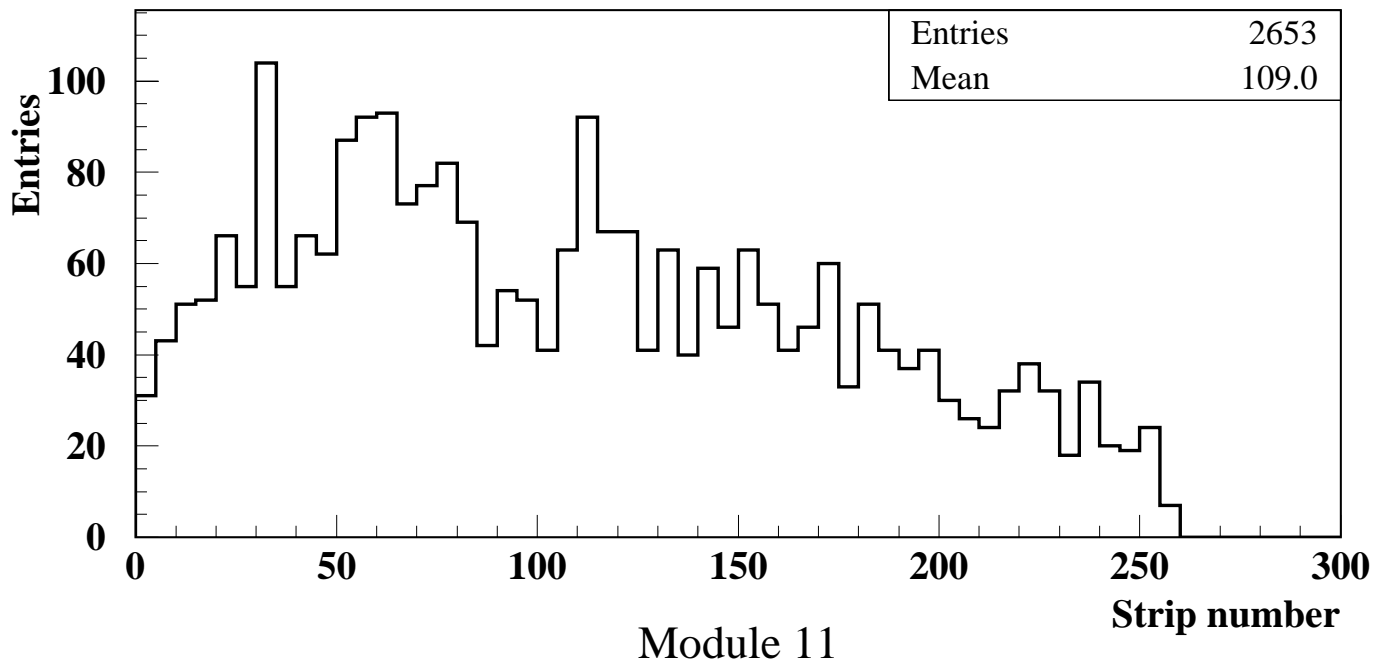
Laboratory performances ( $\beta$  source) for Florence detector (unchanged before and after TB).

APV chip	Mode	Signal (ADC counts)	Noise (ADC Counts)	S/N
14	Pk	35.3	1.76	20.1
1a	Pk	34.6	1.72	20.1
14	De	28.6	2.37	12.1
1a	De	28.0	2.36	11.9

## Beam profile for Florence detector

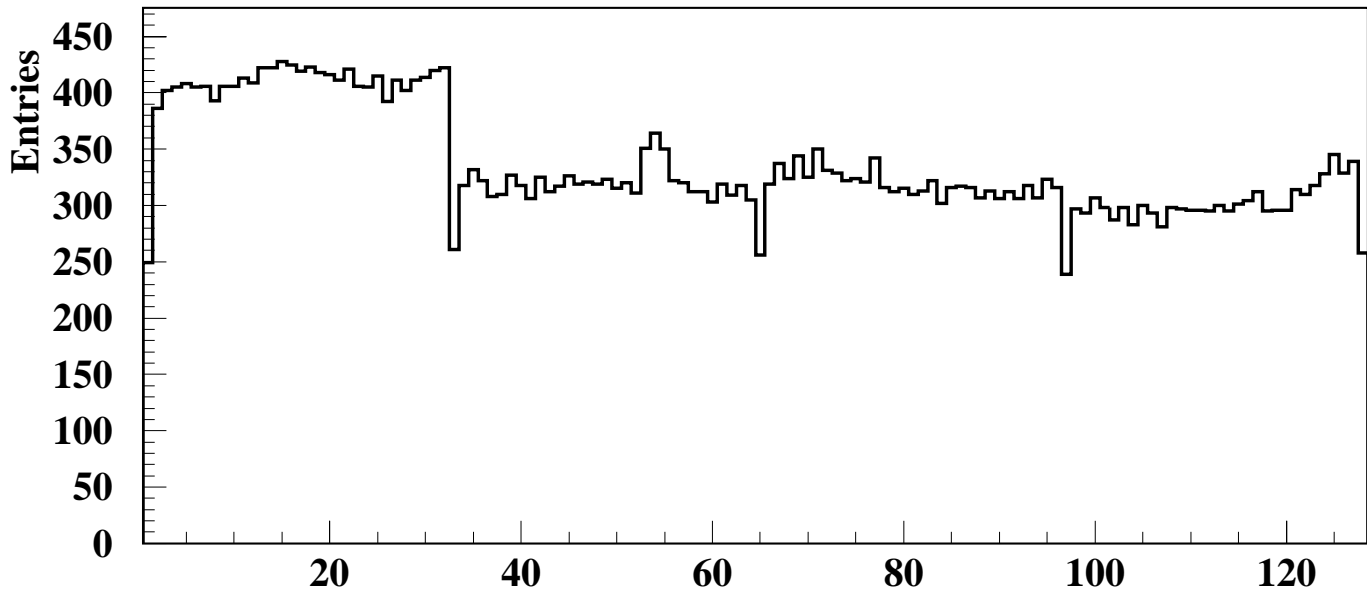


## Beam profile for Module 11 and Module 10



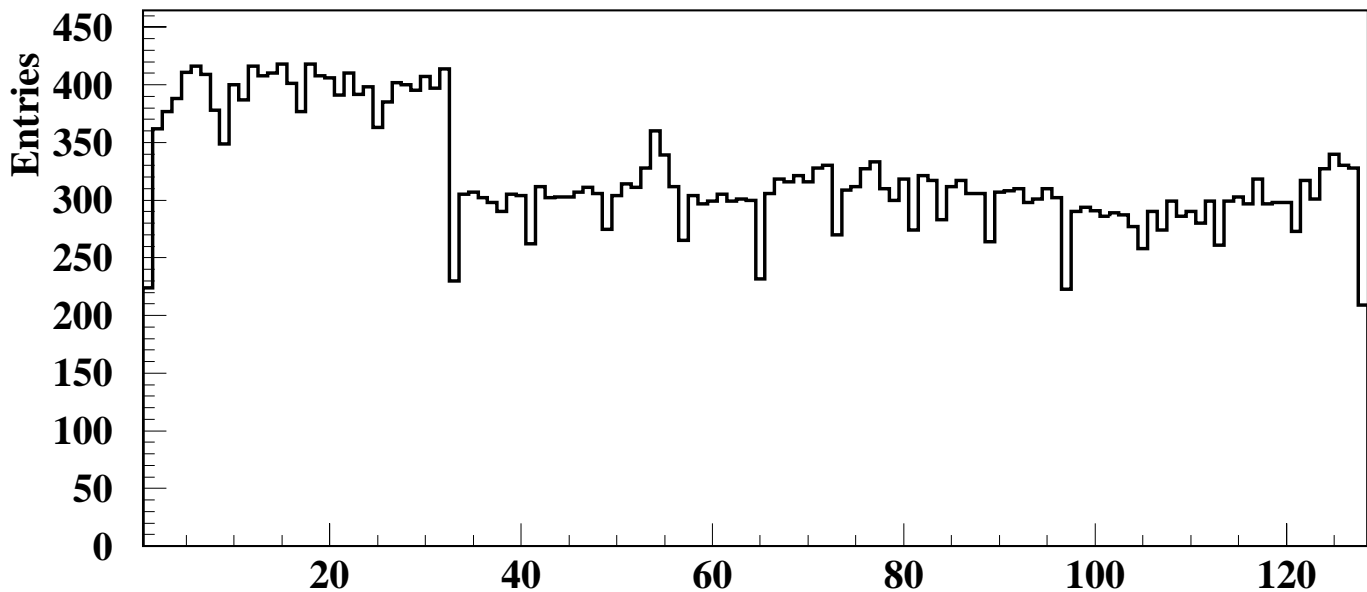
## comb pattern every second event

Raw events display



profilo evnt=1 chip=1

Strip number

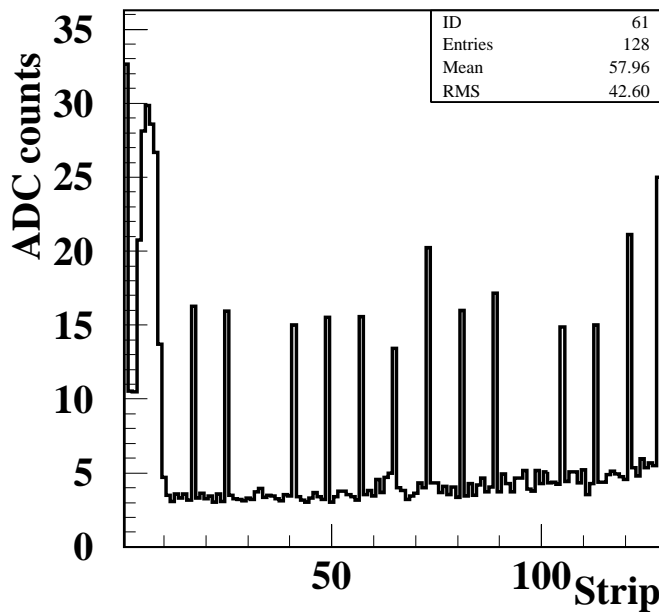


profilo evnt=2 chip=1

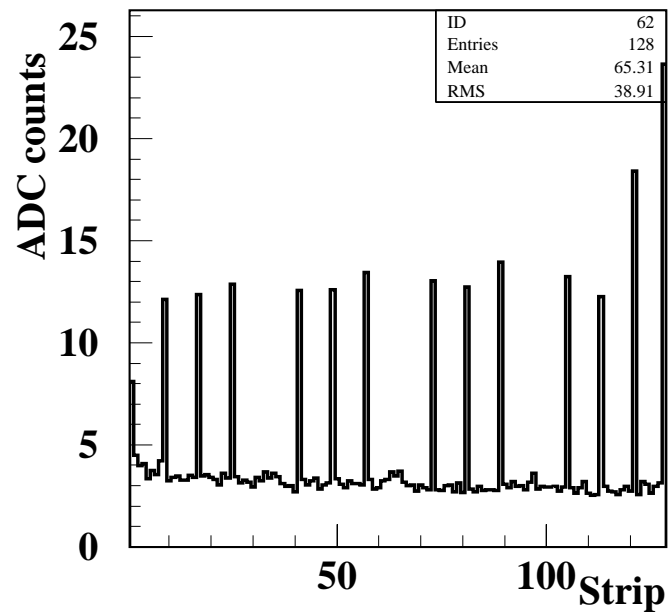
Strip number

## Florence detector noise Peak mode

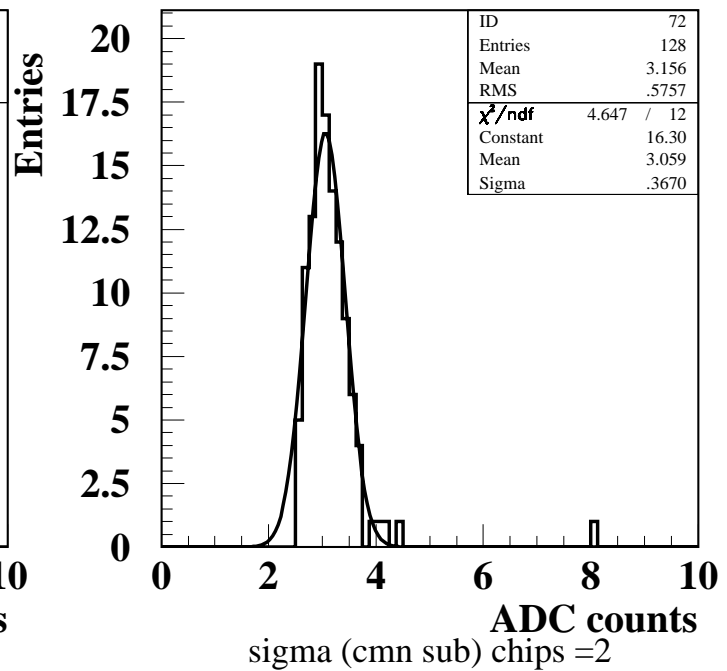
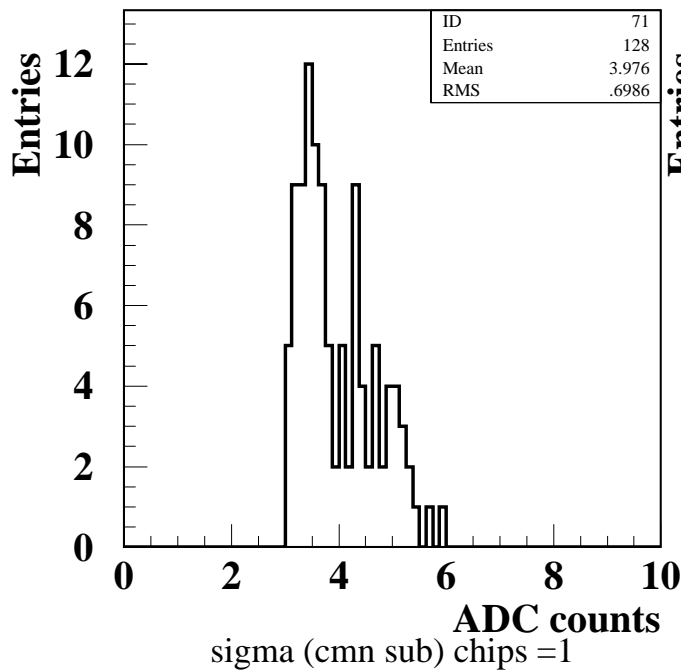
Noise – Pk mode



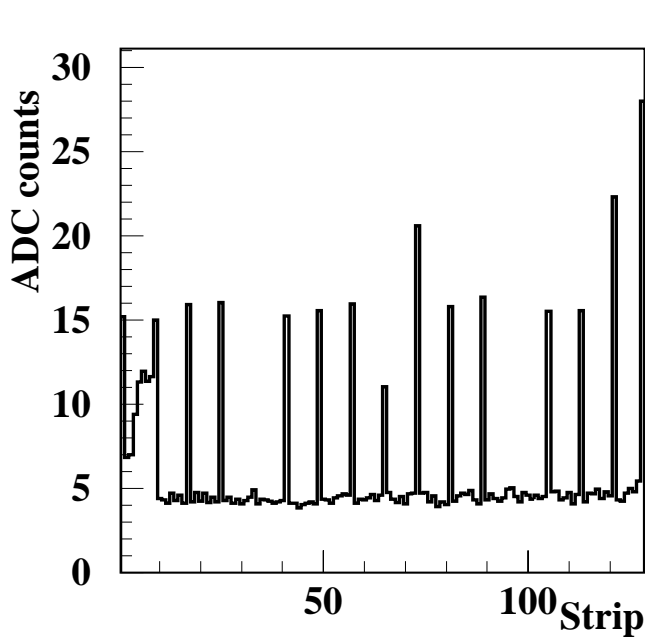
profilo sigma (cmn sub) chips =1



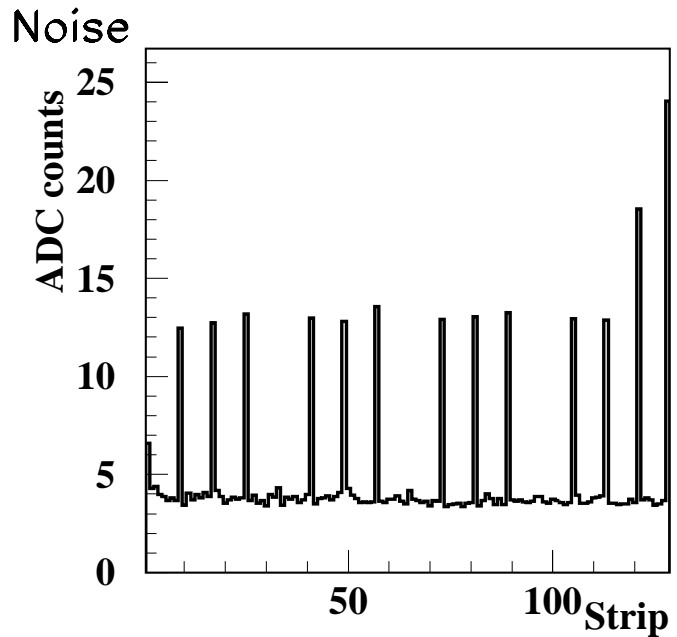
profilo sigma (cmn sub) chips =2



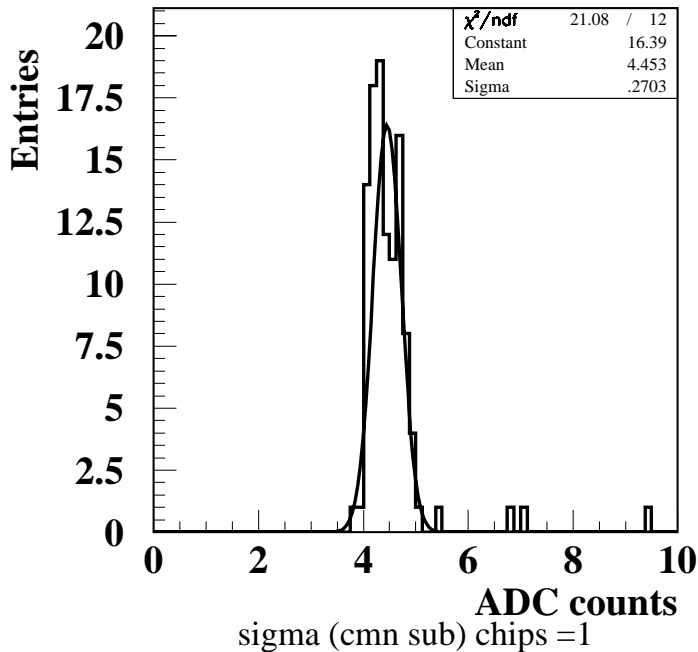
## Florence detector noise Deconvolution mode



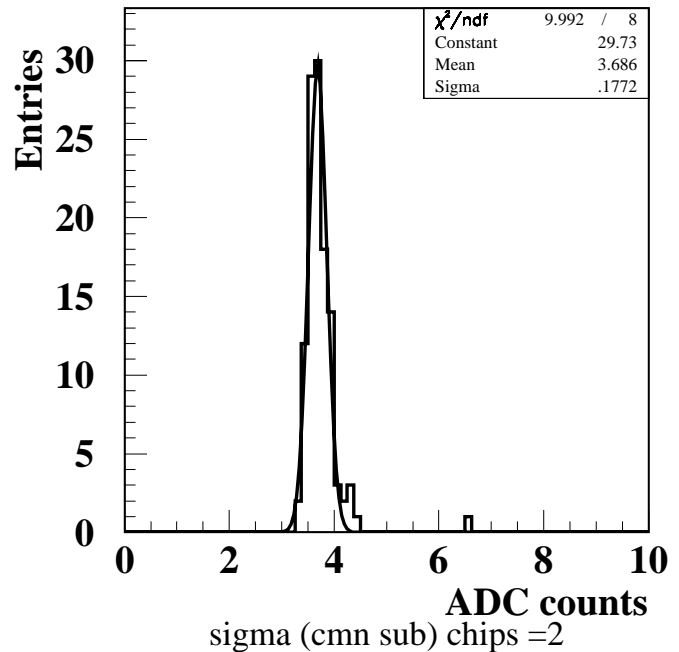
profilo sigma (cmn sub) chips =1



profilo sigma (cmn sub) chips =2

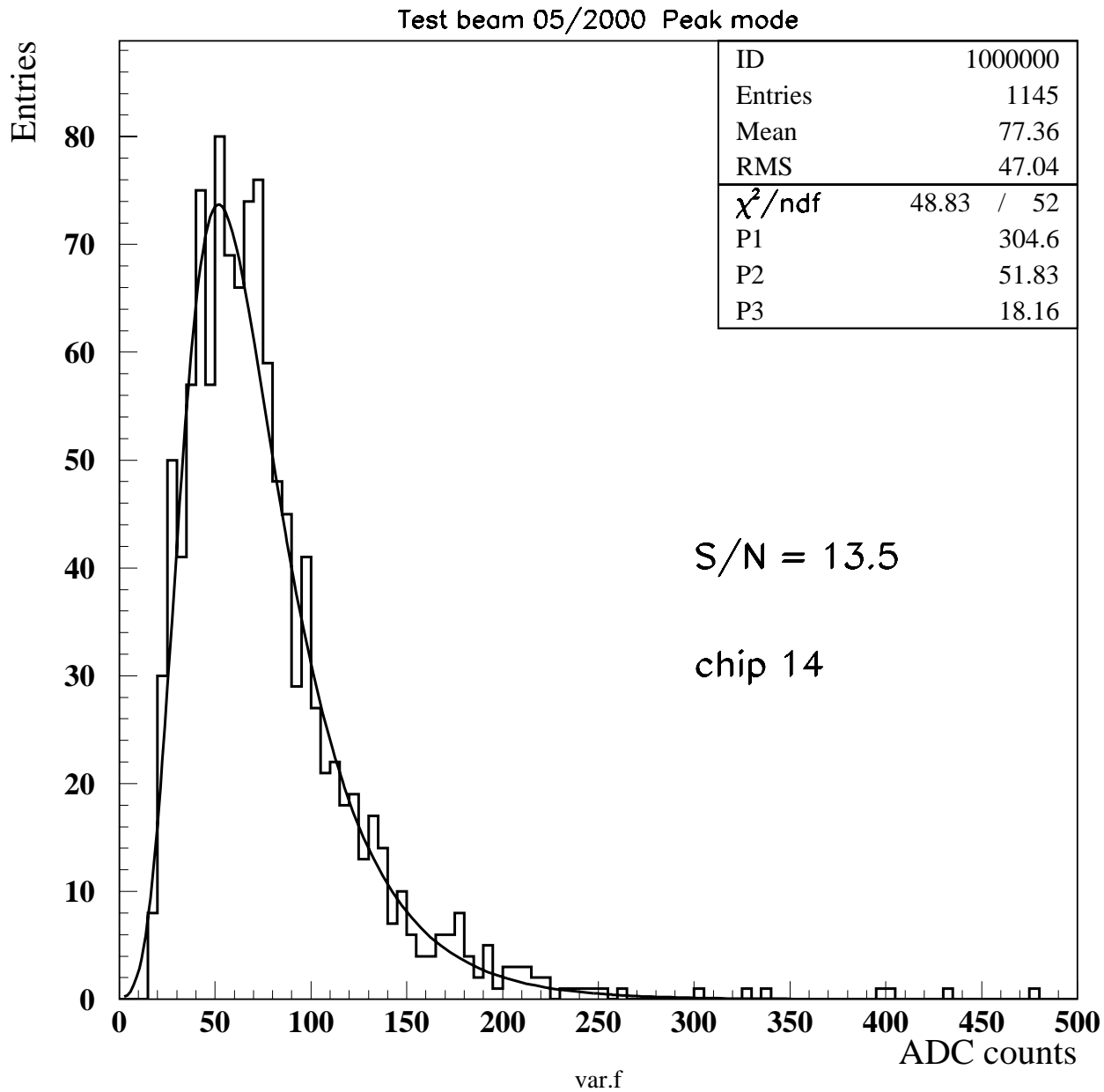


sigma (cmn sub) chips =1

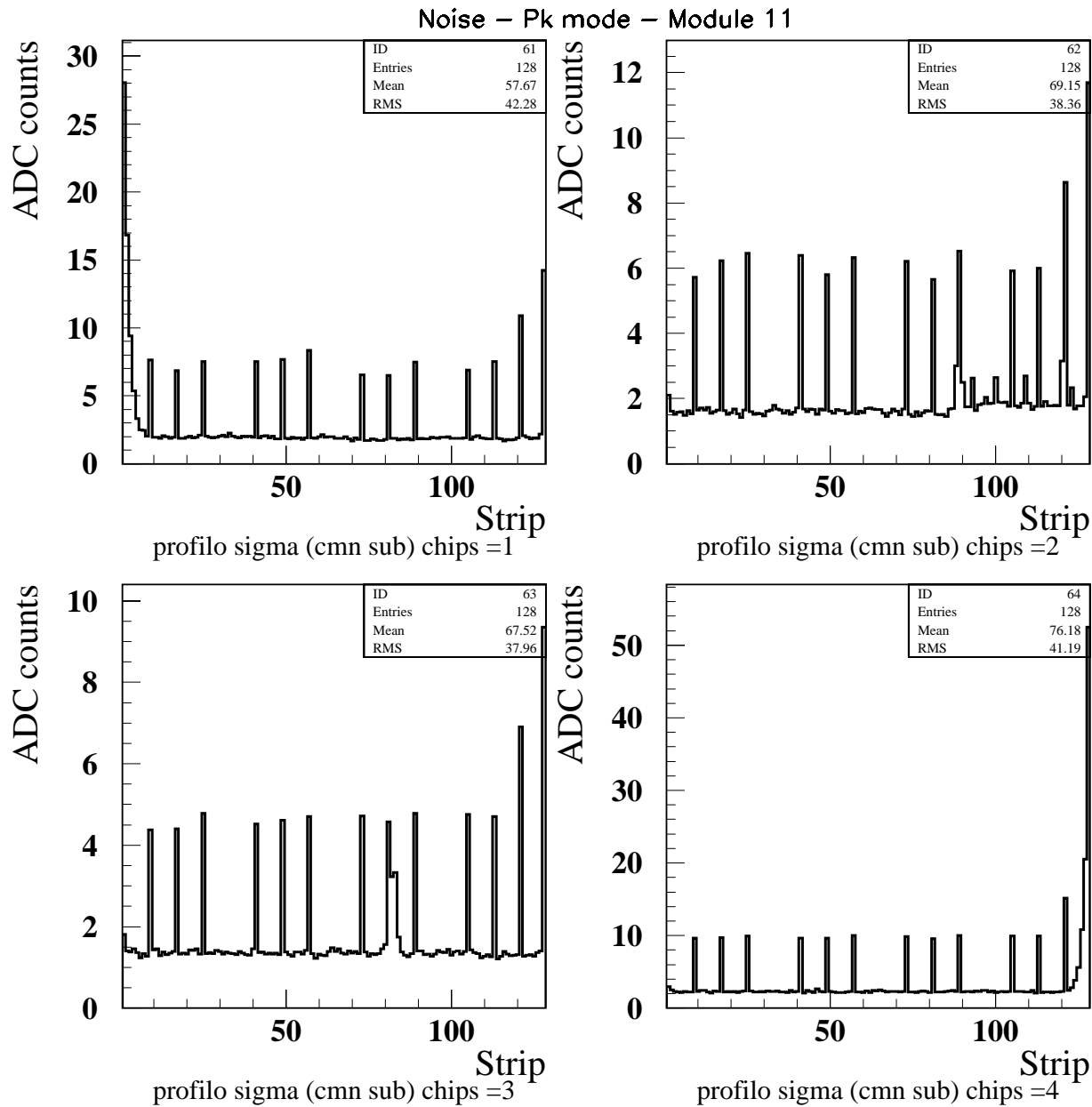


sigma (cmn sub) chips =2

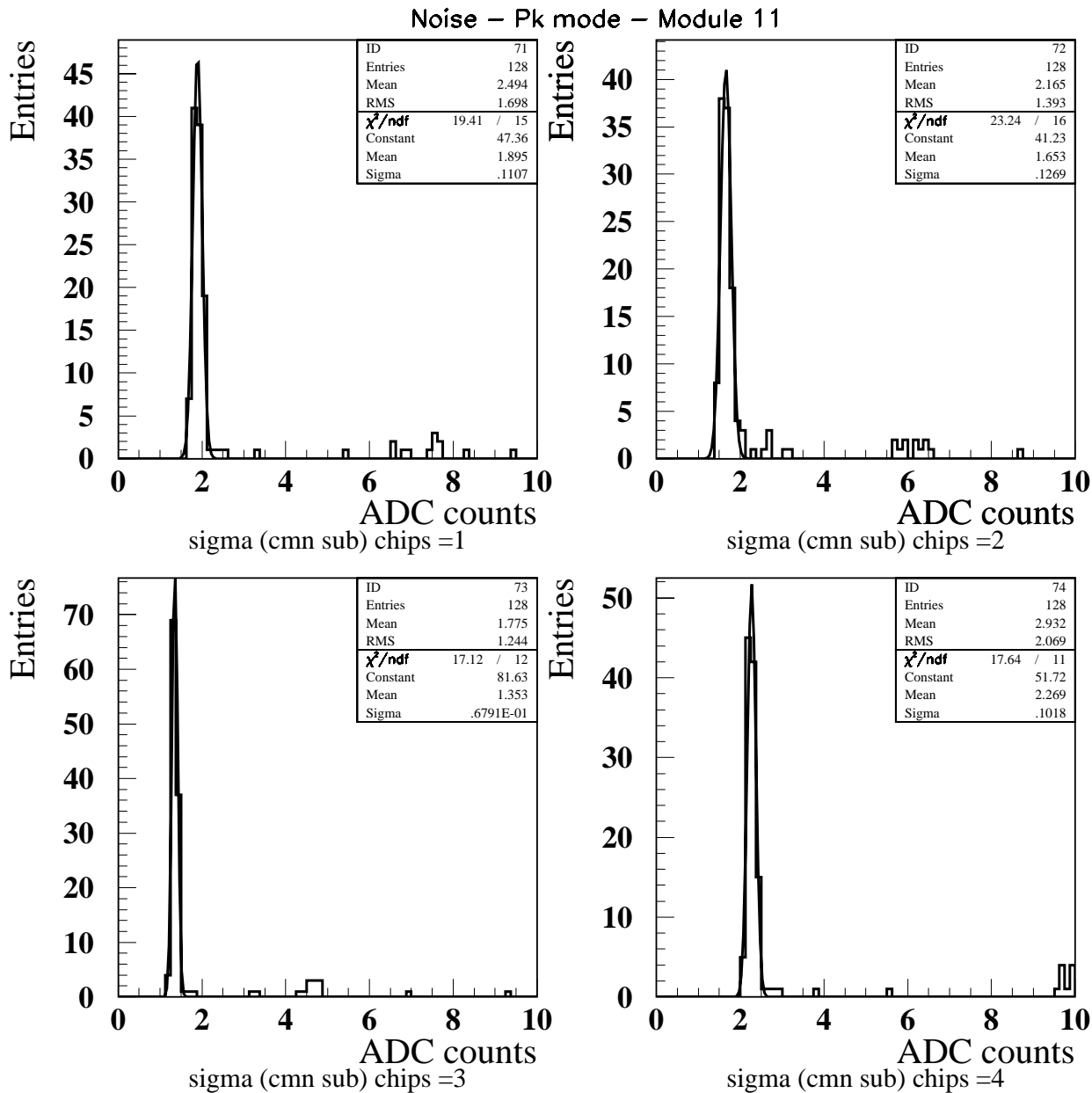
## Landau distribution for our second chip



## Module 11 noise Peak mode

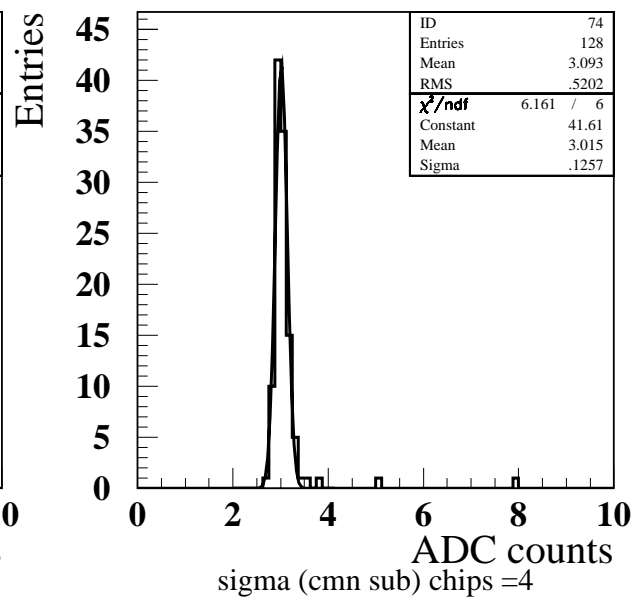
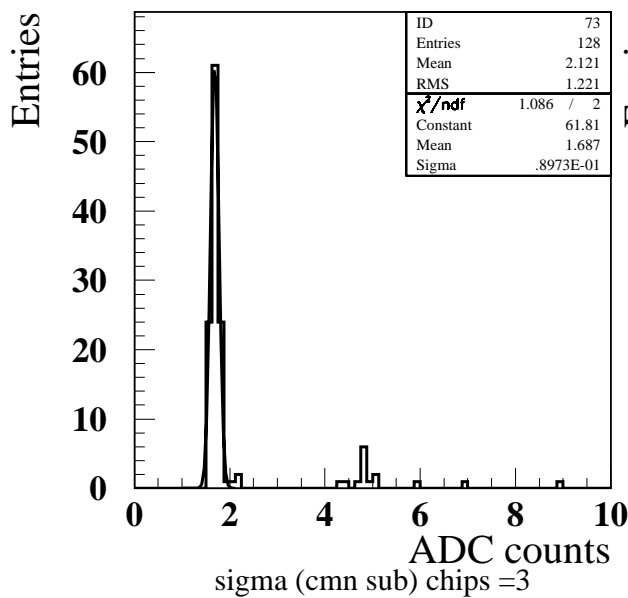
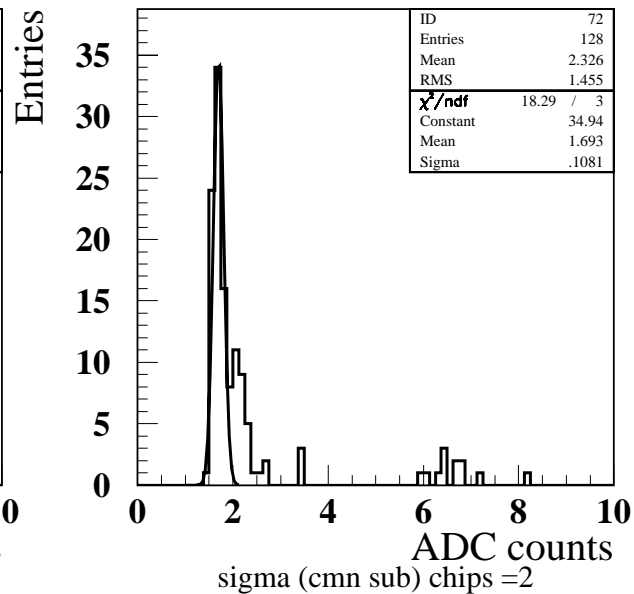
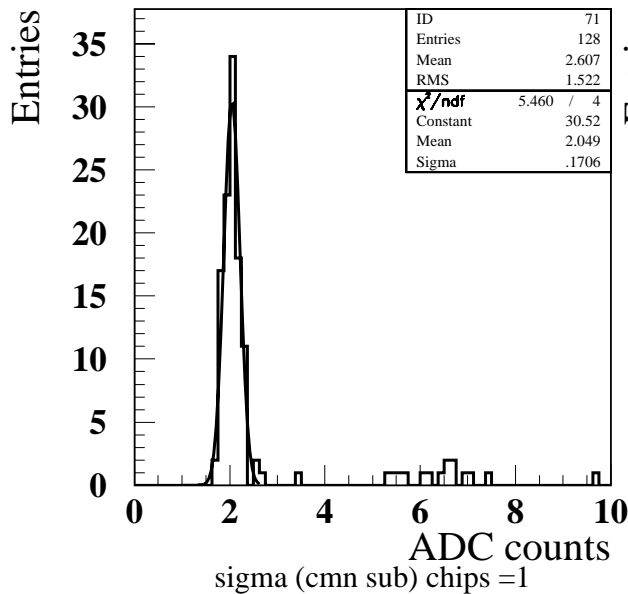


## Module 11 noise Peak mode



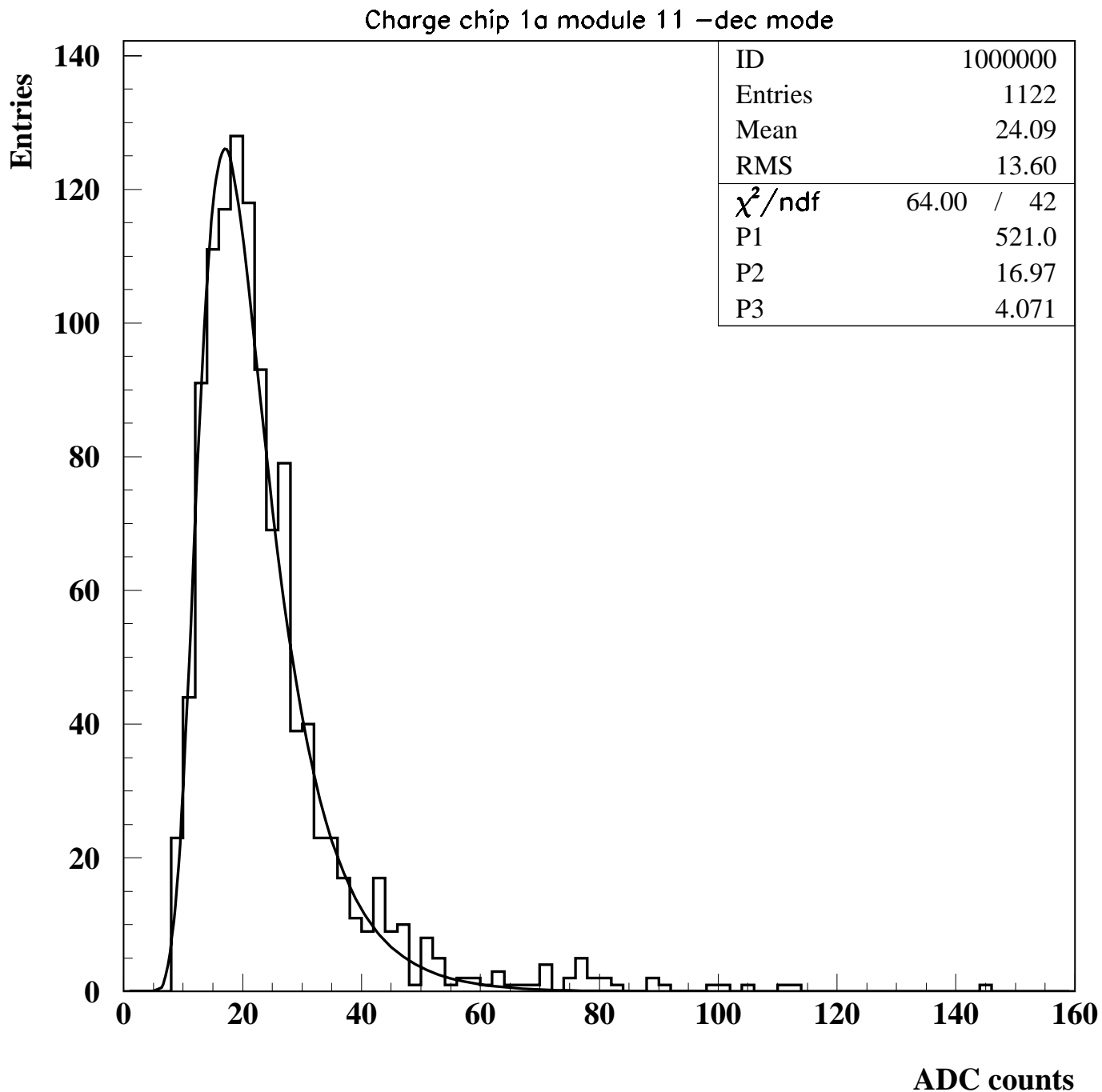
## Module 11 noise Deconvolution mode

Noise – De mode – Module 11

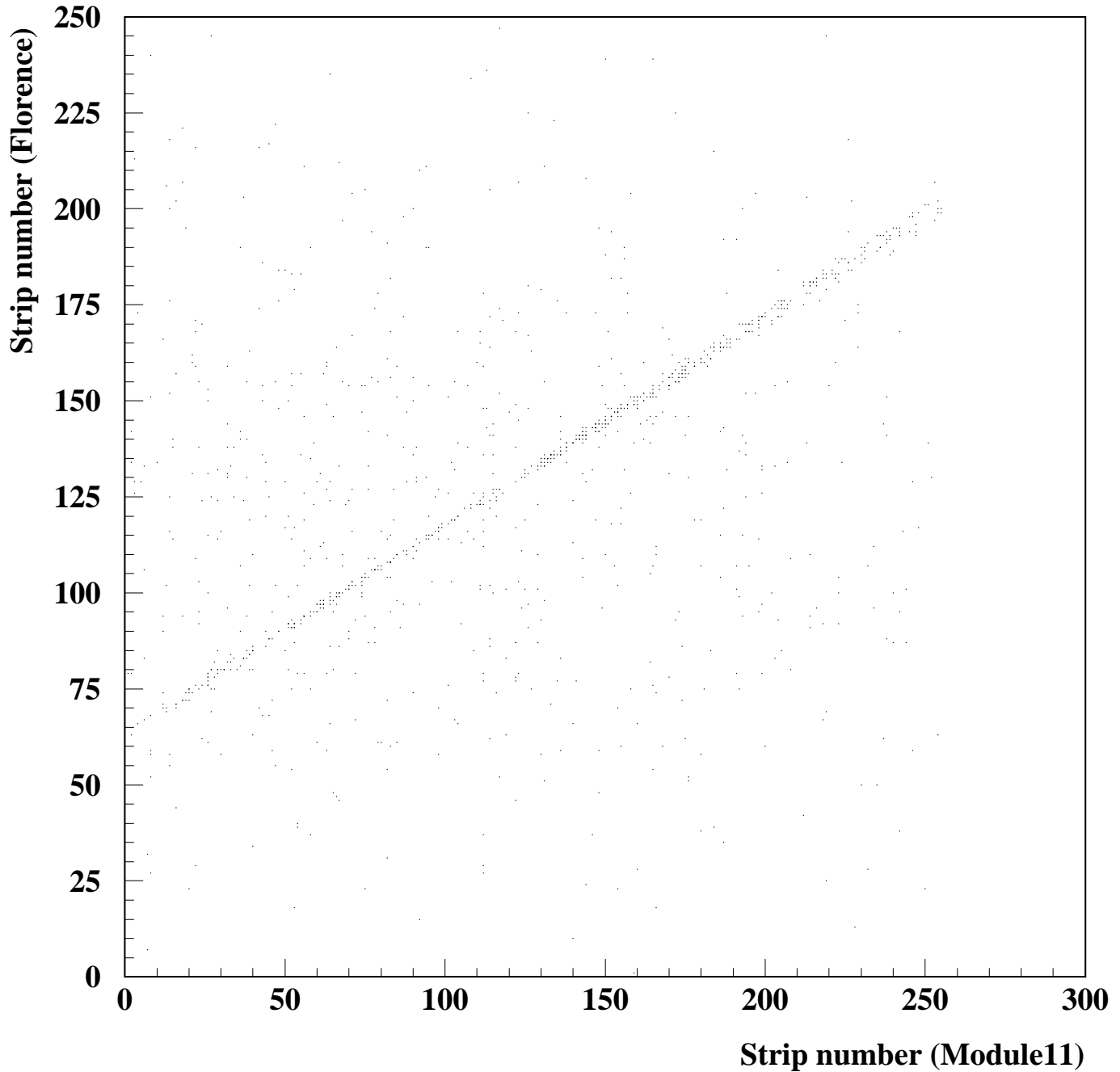


## Module 11 Signal - Dec. mode

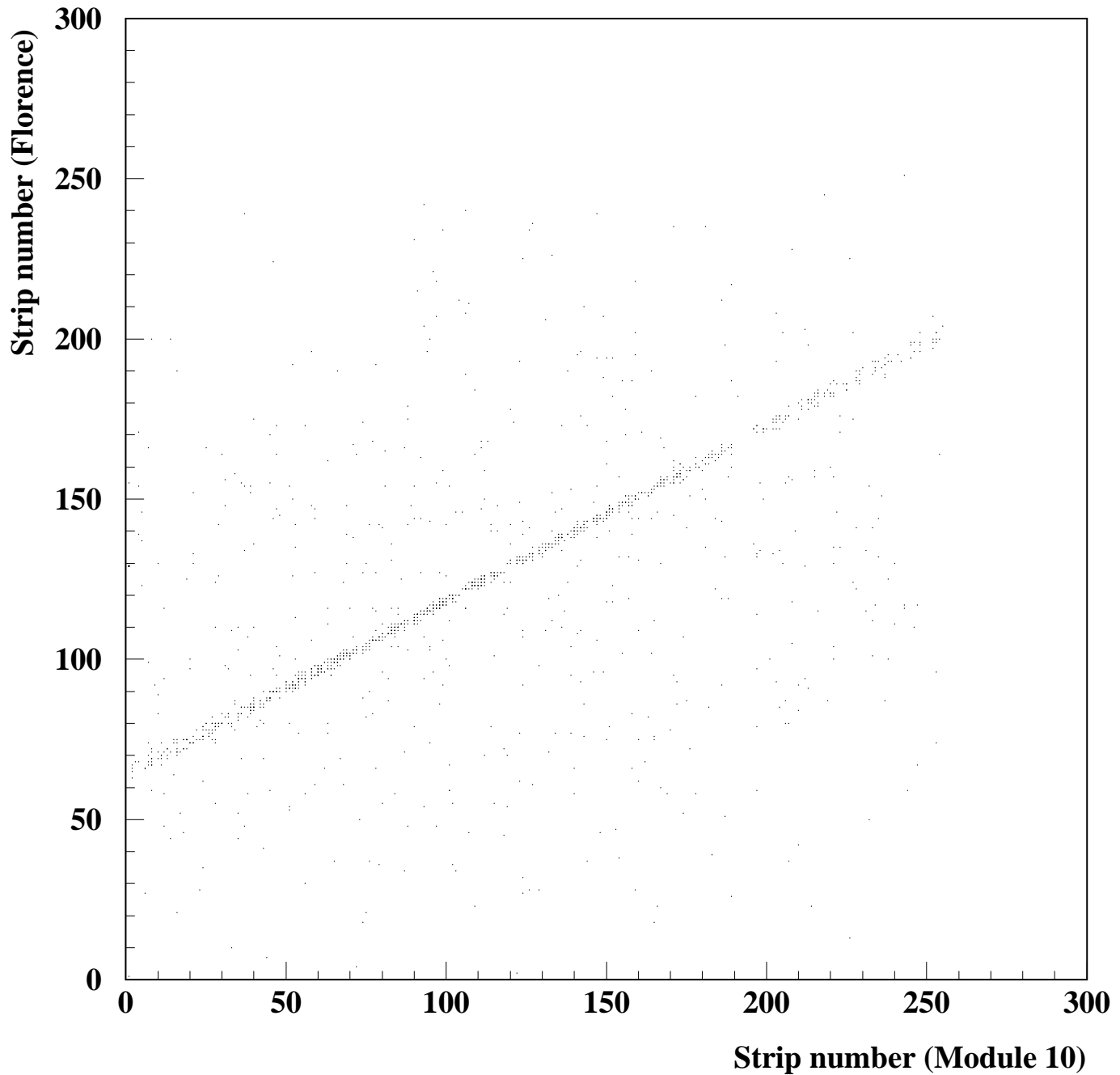
S/N ~ 12.5



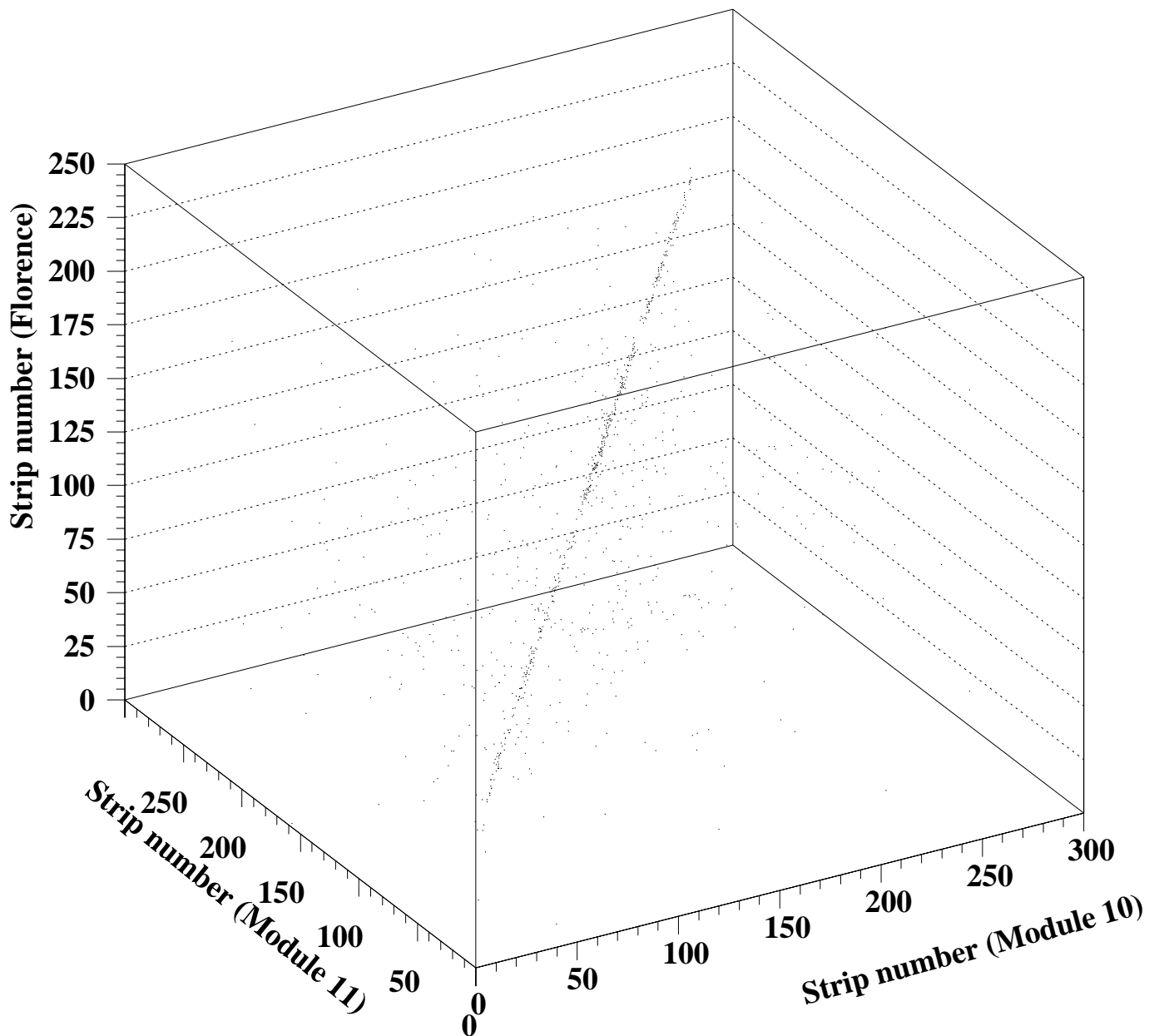
## Position of Florence cluster Vs. Module 11 cluster



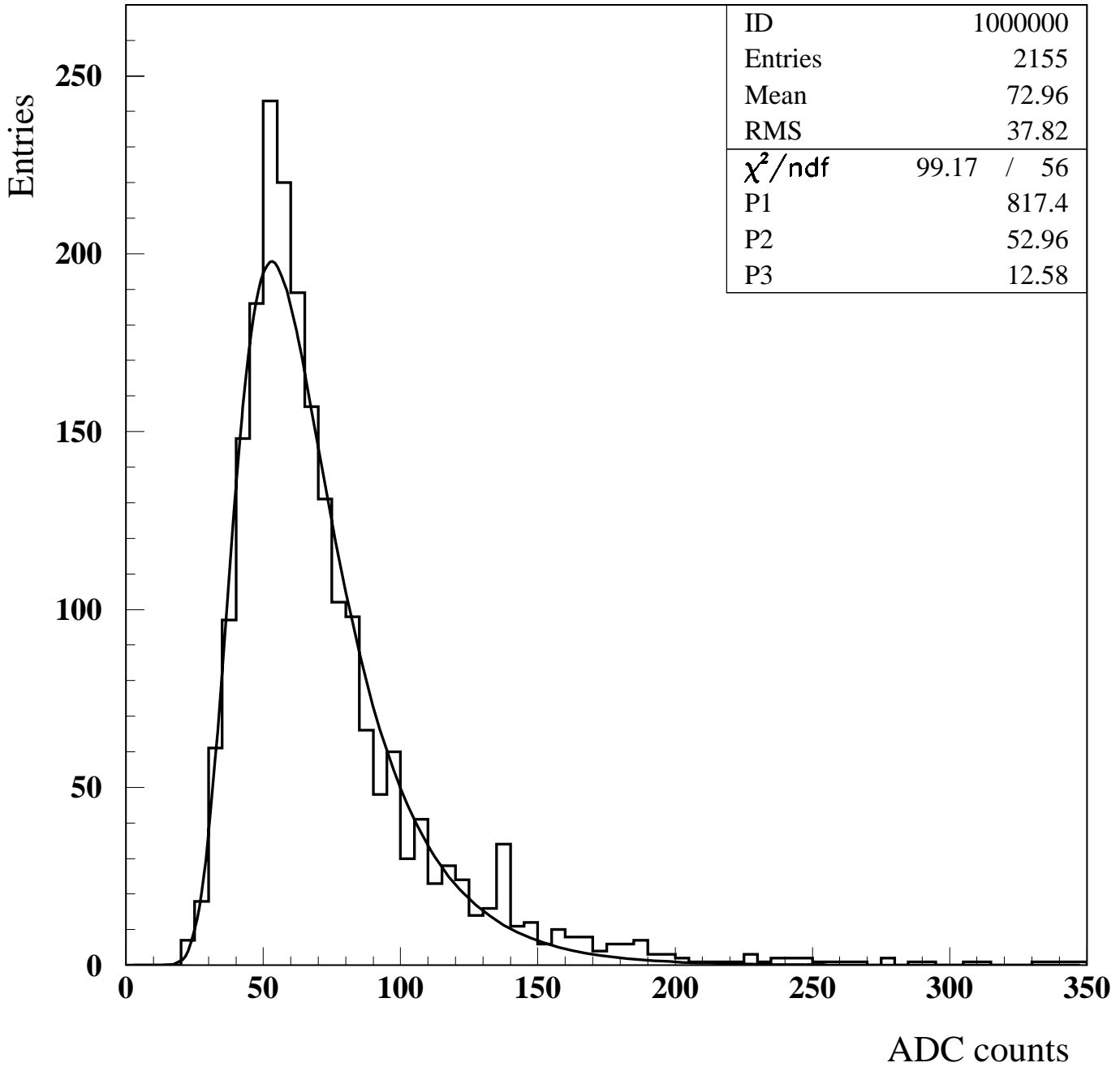
## Position of Florence cluster Vs. Module 10 cluster



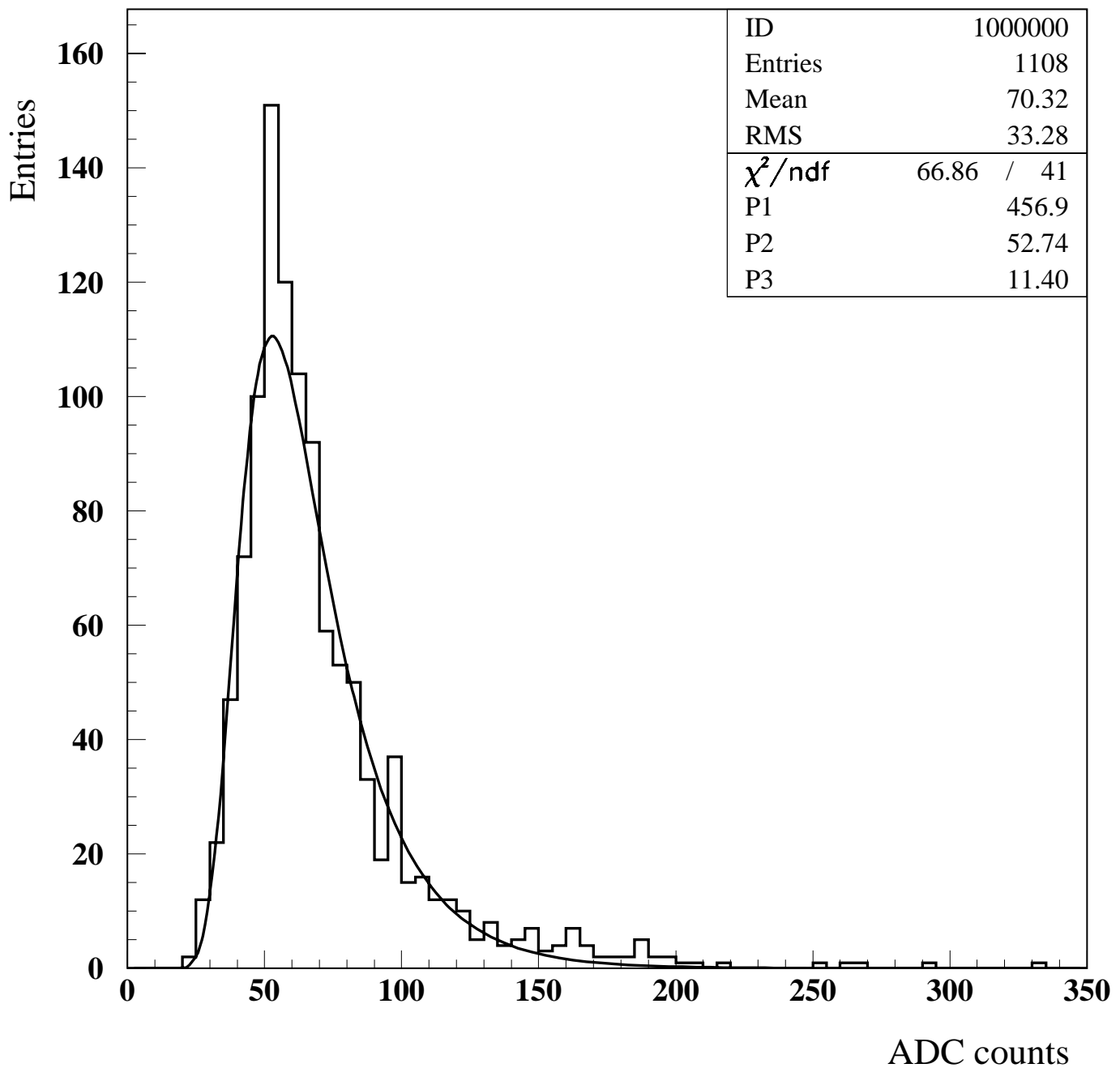
## Position of Florence cluster Vs. Module 11 and Module 10 cluster



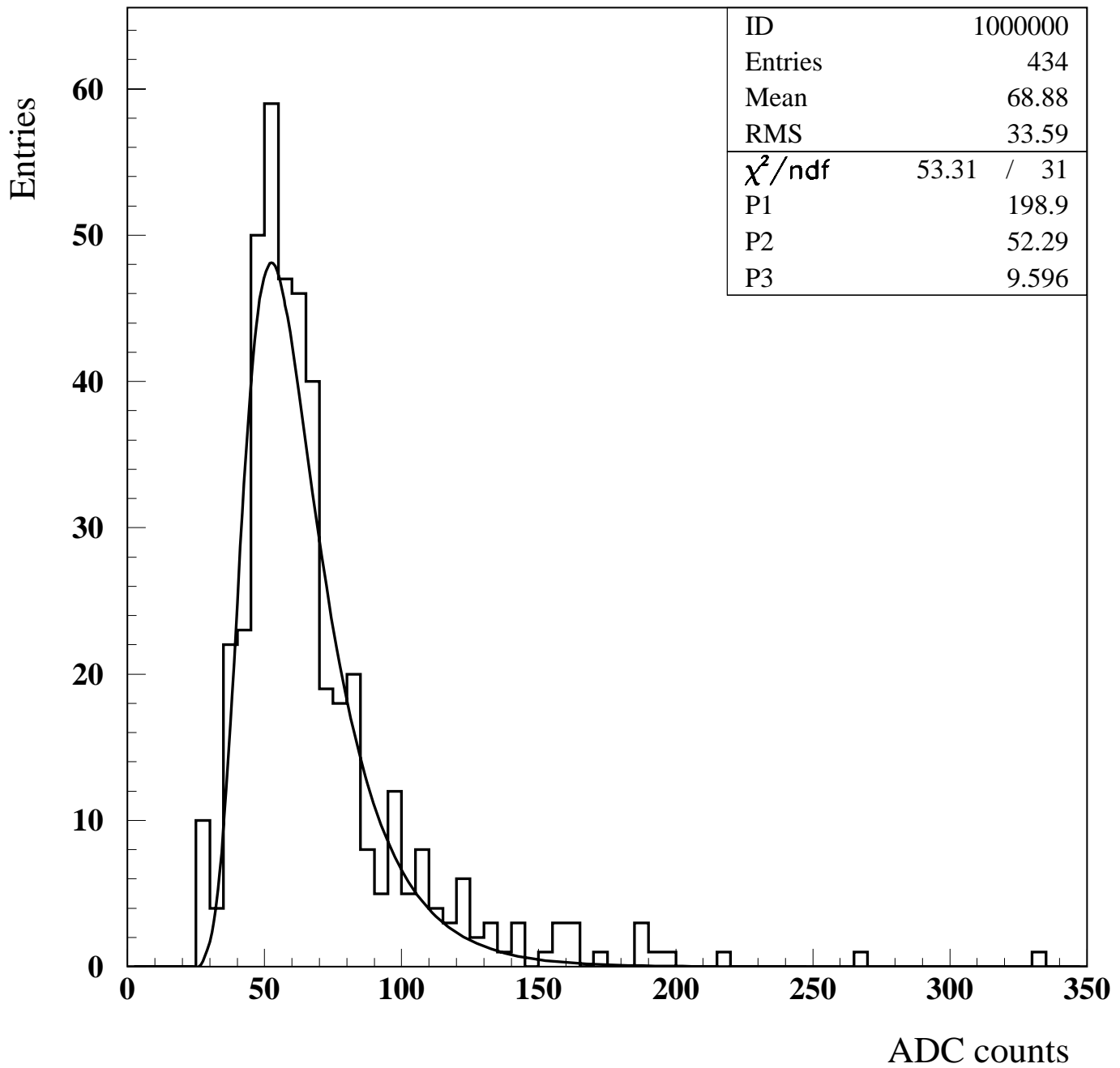
## Landau distribution for Florence detector without cut on correlated clusters



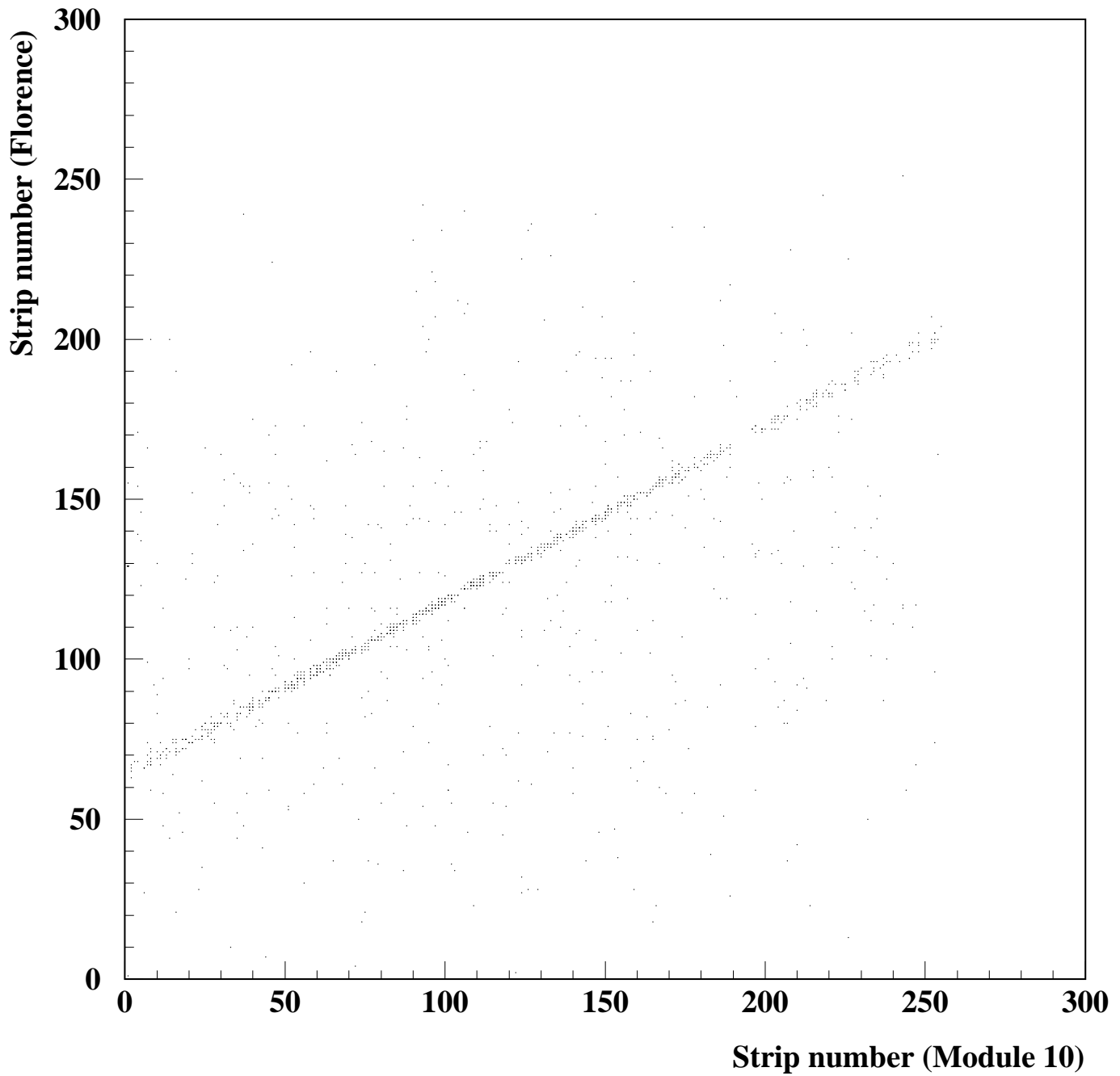
## Landau distribution for Florence detector with cut on correlated clusters of Module 10 OR Module 11



## Landau distribution for Florence detector with cut on correlated clusters of Module 10 **AND** Module 11

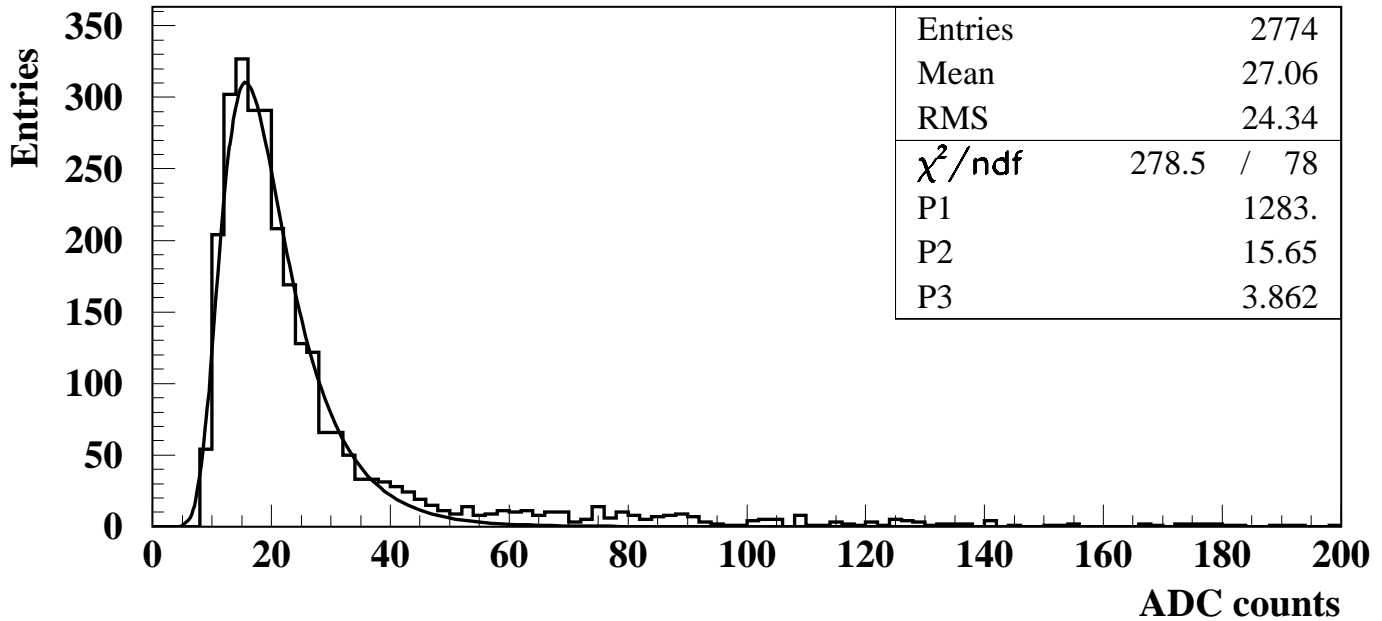


- cluster 1
- cluster 2

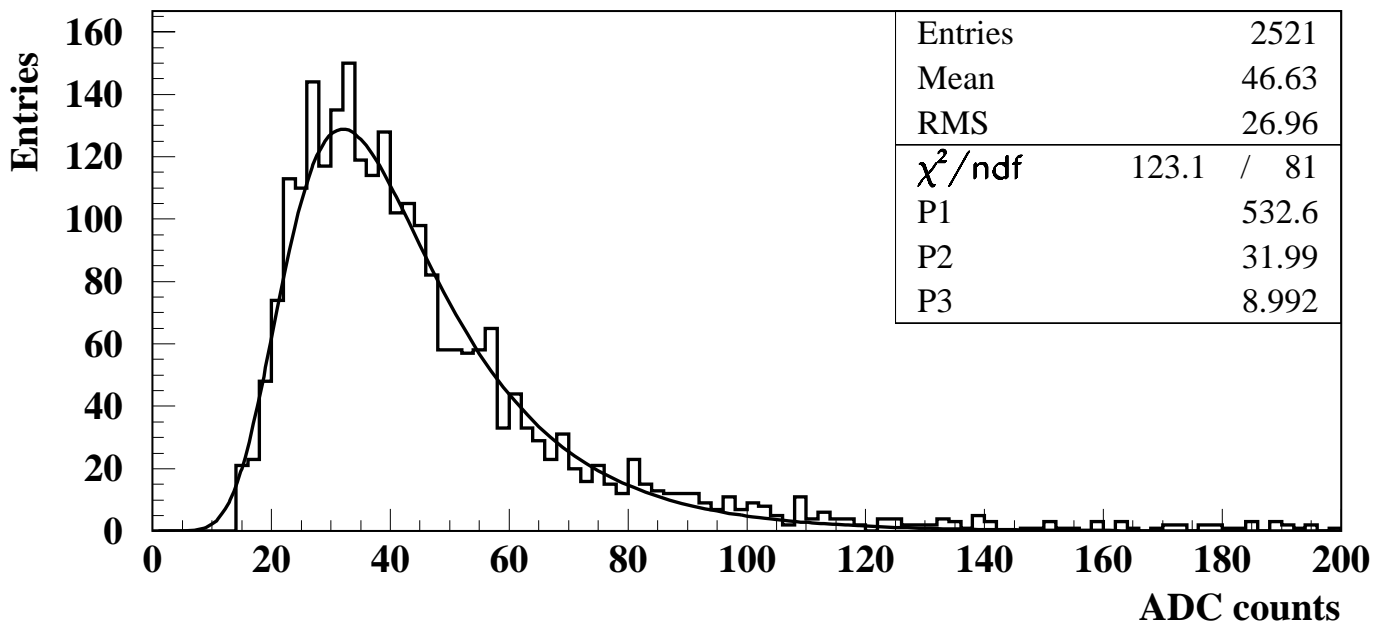


## Landau distribution for Module 10 and Module 11 Deconvolution mode

**Module 11**



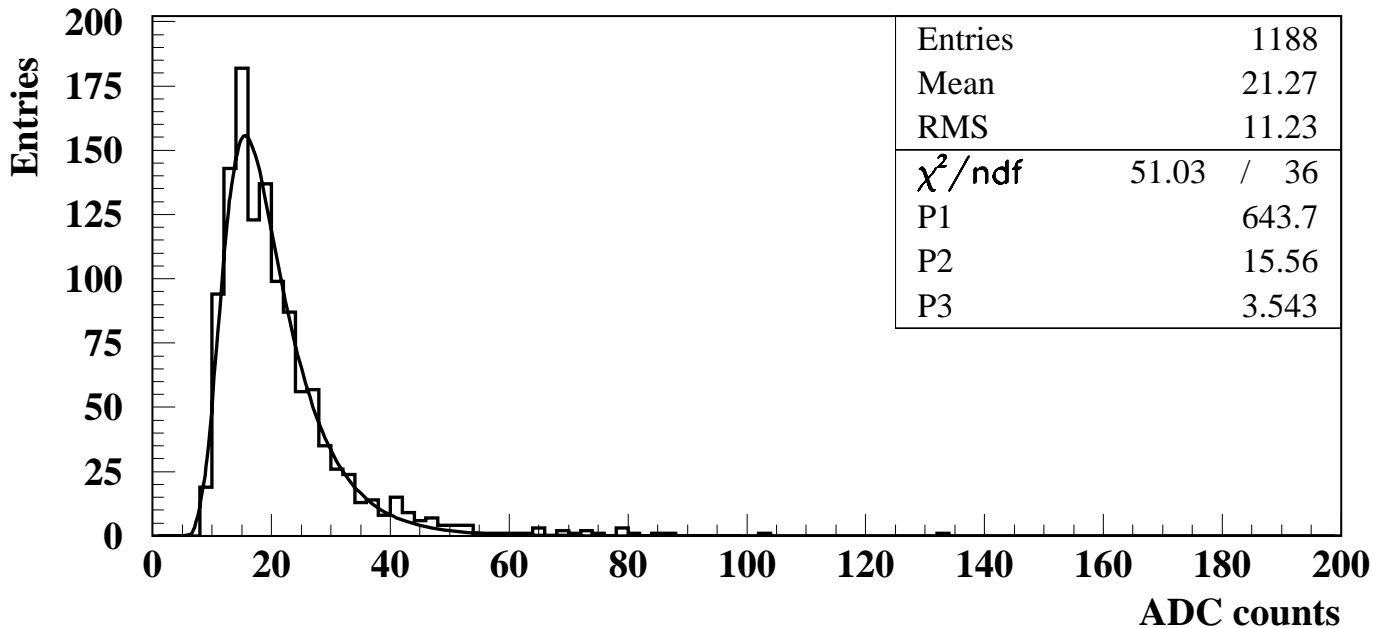
**Module 10**



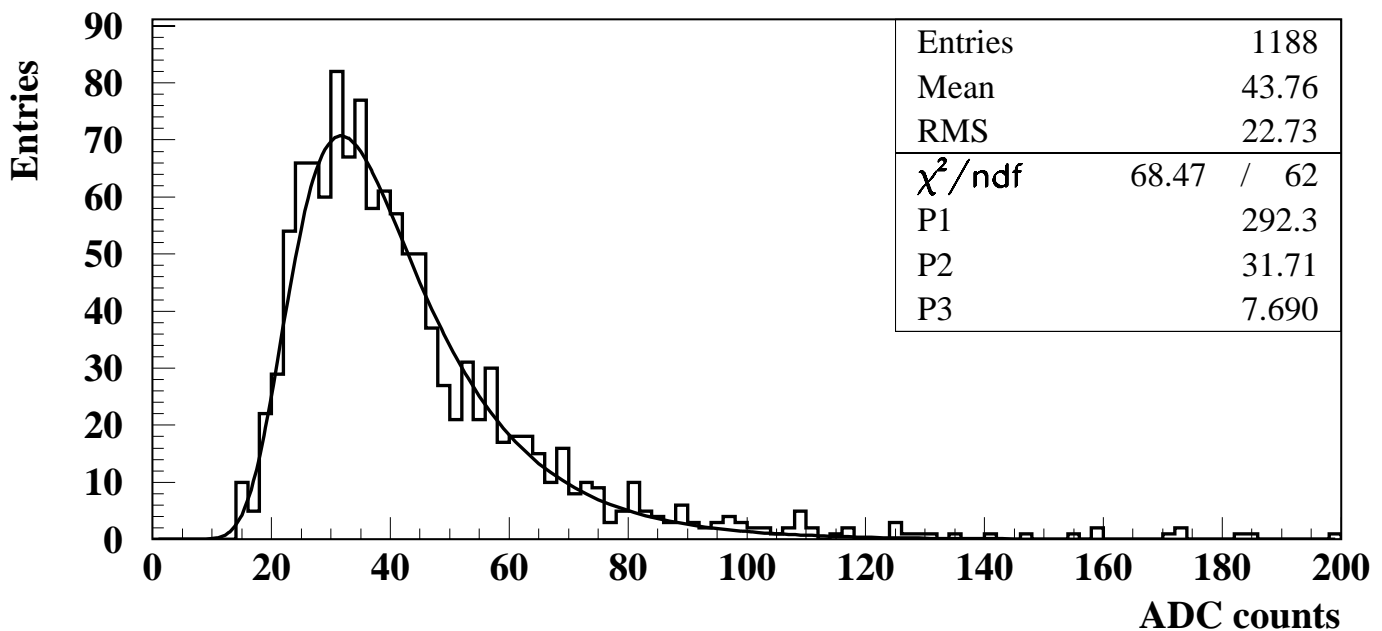
## Landau distribution for Module 10 and Module 11 with 1 cluster correlation

### Deconvolution mode

**Module 11**



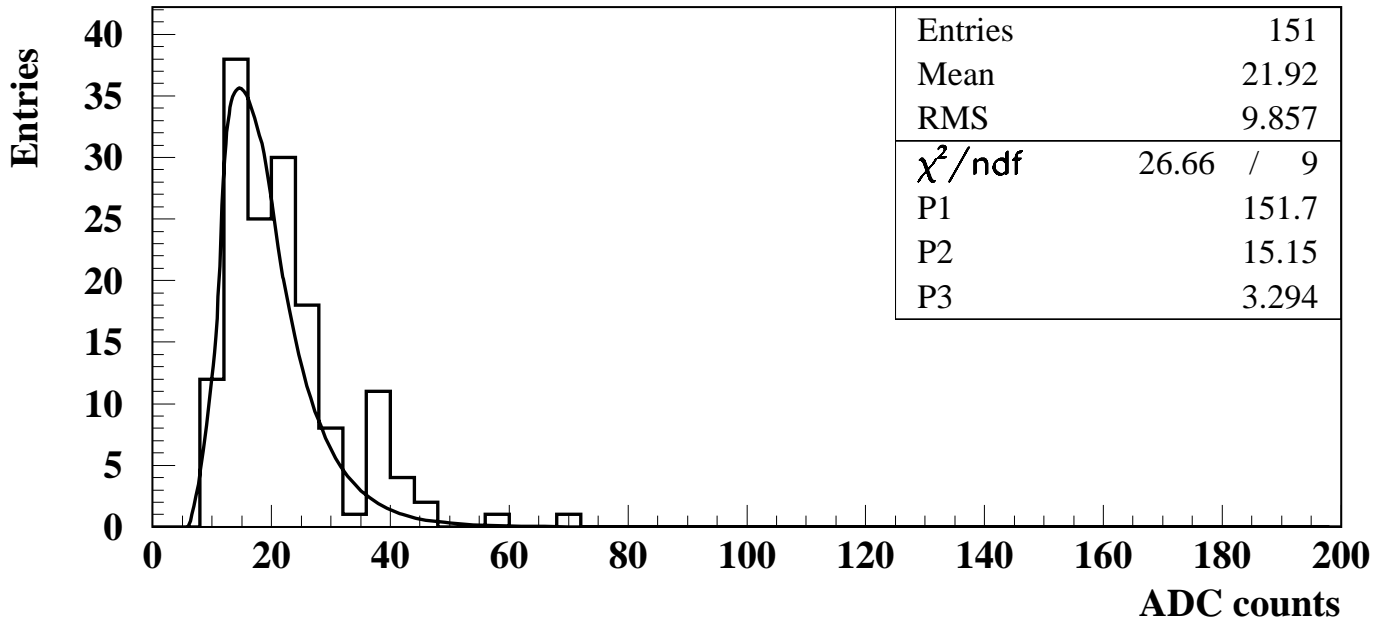
**Module 10**



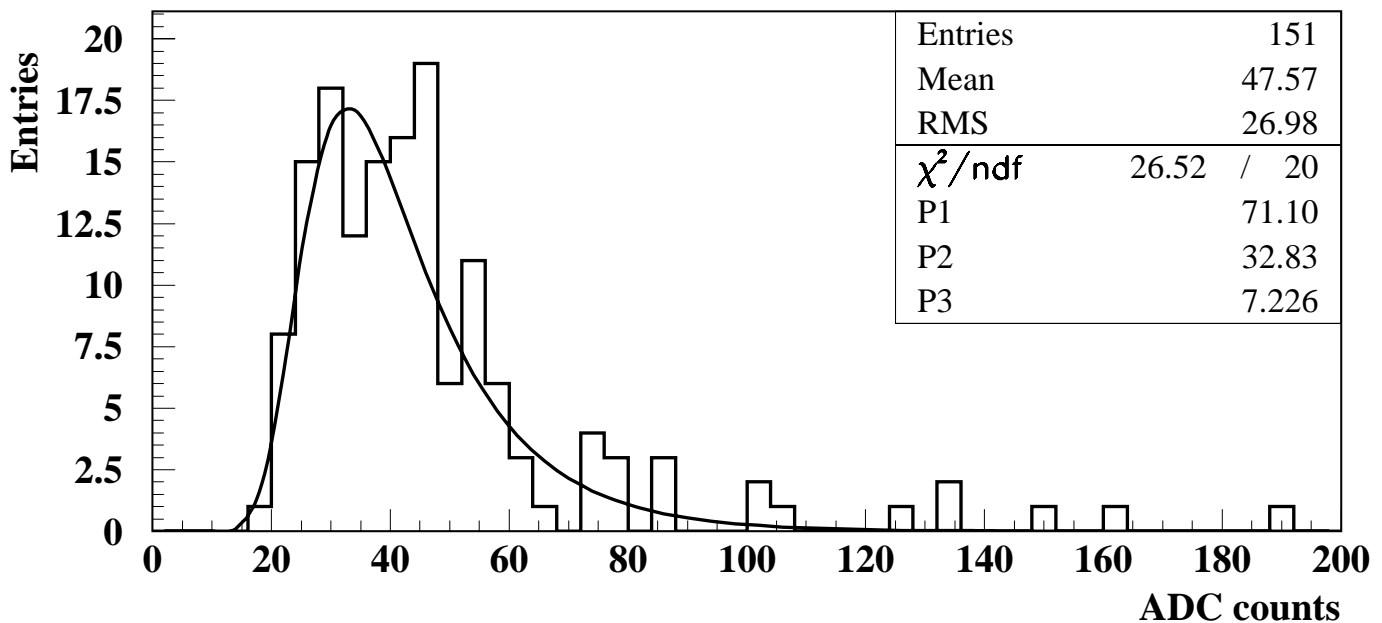
## Landau distribution for Module 10 and Module 11 with 2 cluster correlation

### Deconvolution mode

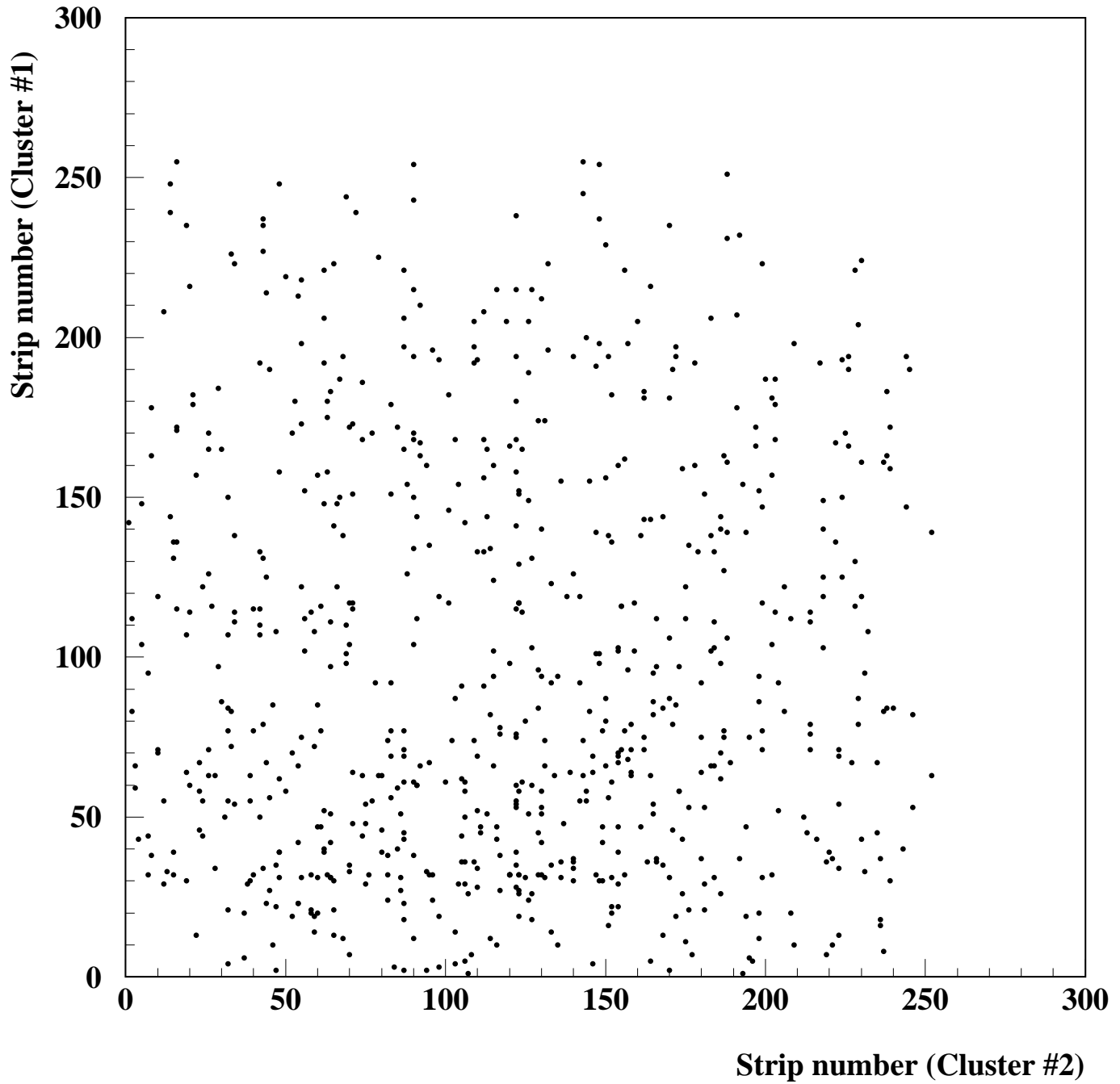
**Module 11**



**Module 10**



## Cluster1 vs. cluster2



## Florence wedge detector

Tick marks amplitude ( $\pm 5$  ADC channels):

APV	14	1a	1c
Florence setup	70	70	70
Test beam setup	120	110	125

Signal to noise ratio for Florence wedge:

APV chip	Mode	Signal (ADC counts)	Noise (ADC Counts)	S/N
14	Pk	49.3	3.6	13.7
1a	Pk	38.6	3.0	12.9
14	De	56.0	4.43	12.6
1a	De	48.2	3.80	12.7