



LLR-Kyushu

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20190220

Measure with dummy signal (cross talk)

Measure cross talk on FEV11 and FEV13

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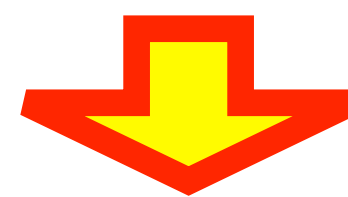
Measure cross talk on FEV11 and FEV13

Inject 5 MIP and 30 MIP and 50 MIP on FEV11
Inject 5 MIP and 15 MIP and 30 MIP on FEV13



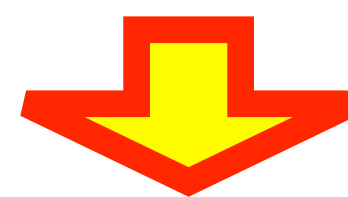
Measure cross talk

Inject into all channels in 8 times



Check side injected channels

Ex. Injection channel is 1
side injected channels are 0 and 2



Calculate \bar{M} (mean of M)

M is pedestal mean of fitted gaussian function

Channel

Injection channel

	0	1	2	3	4	5	6	7	
0	/	A	M	M	M	M	M	M	
1	A	/	A	M	M	M	M	M	
2	M	A	/	A	M	M	M	M	
3	M	M	A	/	A	M	M	M	• • •
4	M	M	M	A	/	A	M	M	
5	M	M	M	M	A	/	A	M	
6	M	M	M	M	M	A	/	A	
7	M	M	M	M	M	M	A	/	

Measure with dummy signal (cross talk)

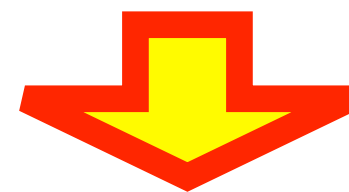
Measure cross talk on FEV11 and FEV13

Inject 5 MIP and 30 MIP and 50 MIP on FEV11
Inject 5 MIP and 15 MIP and 30 MIP on FEV13



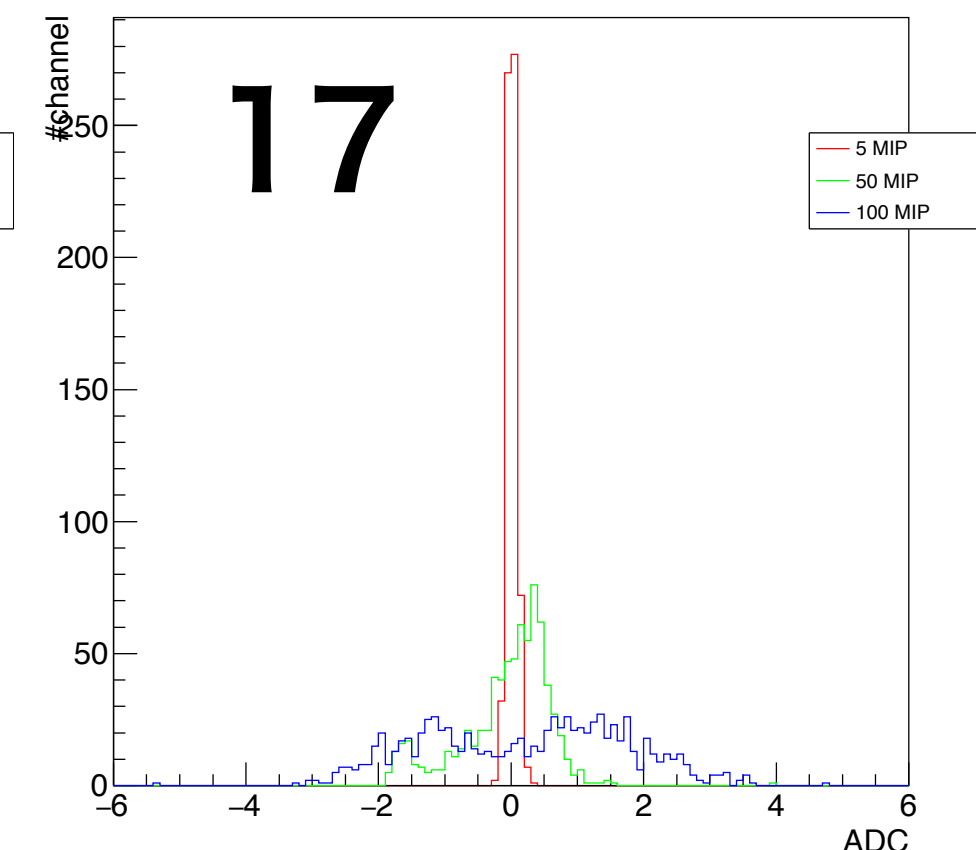
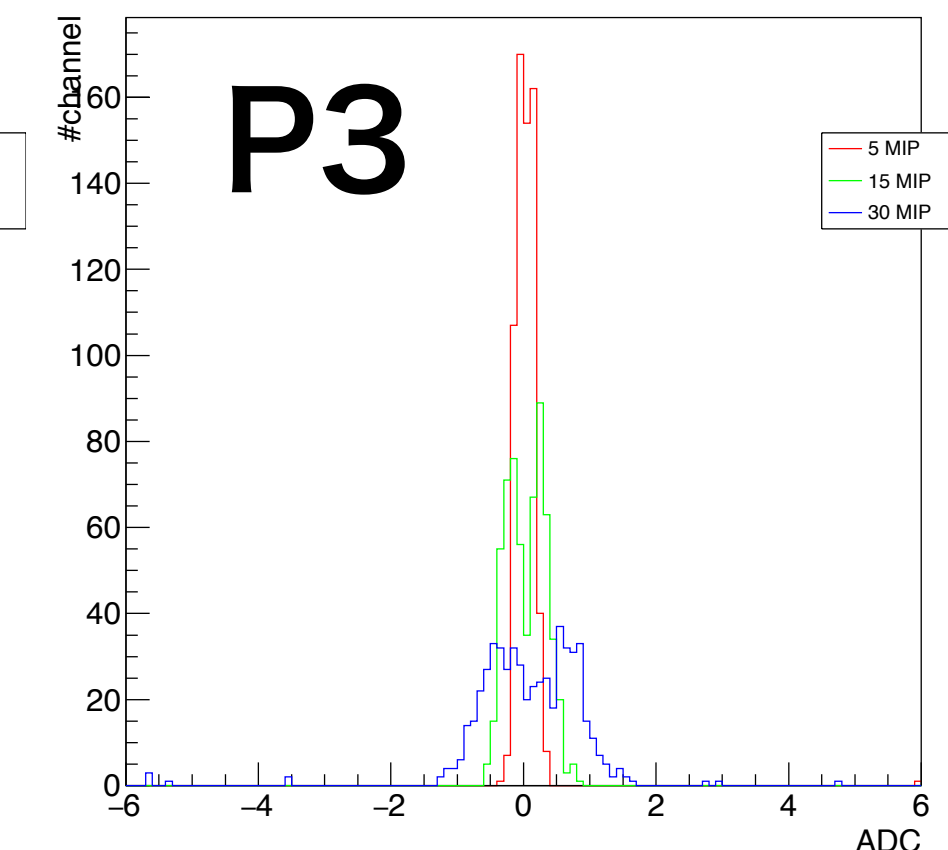
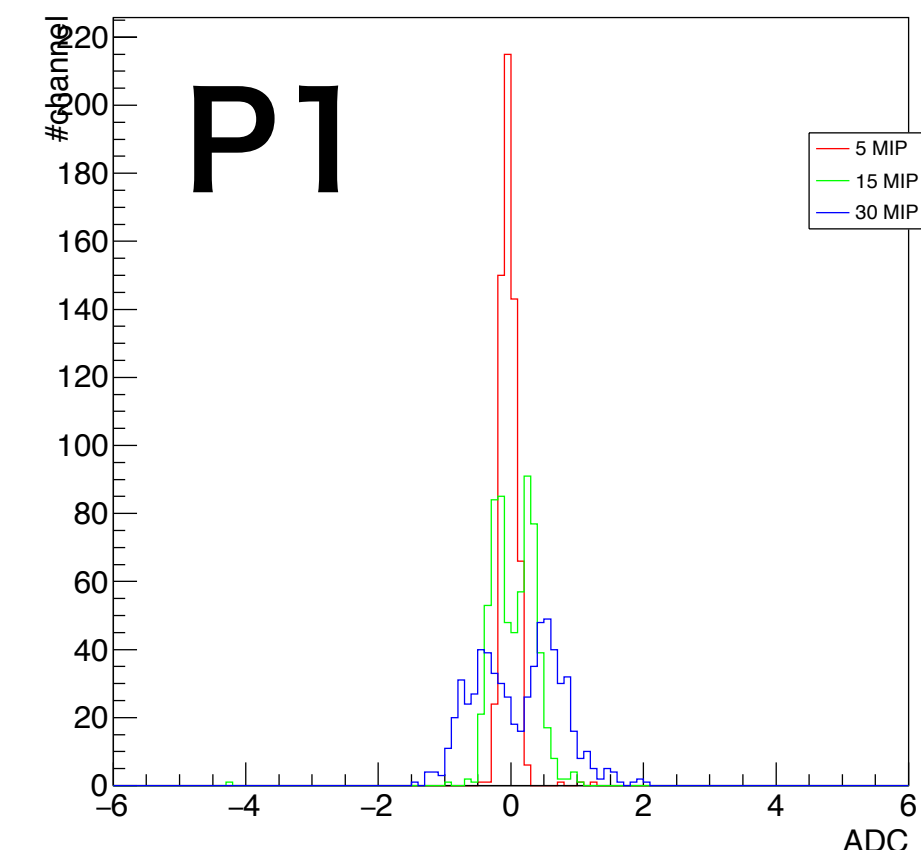
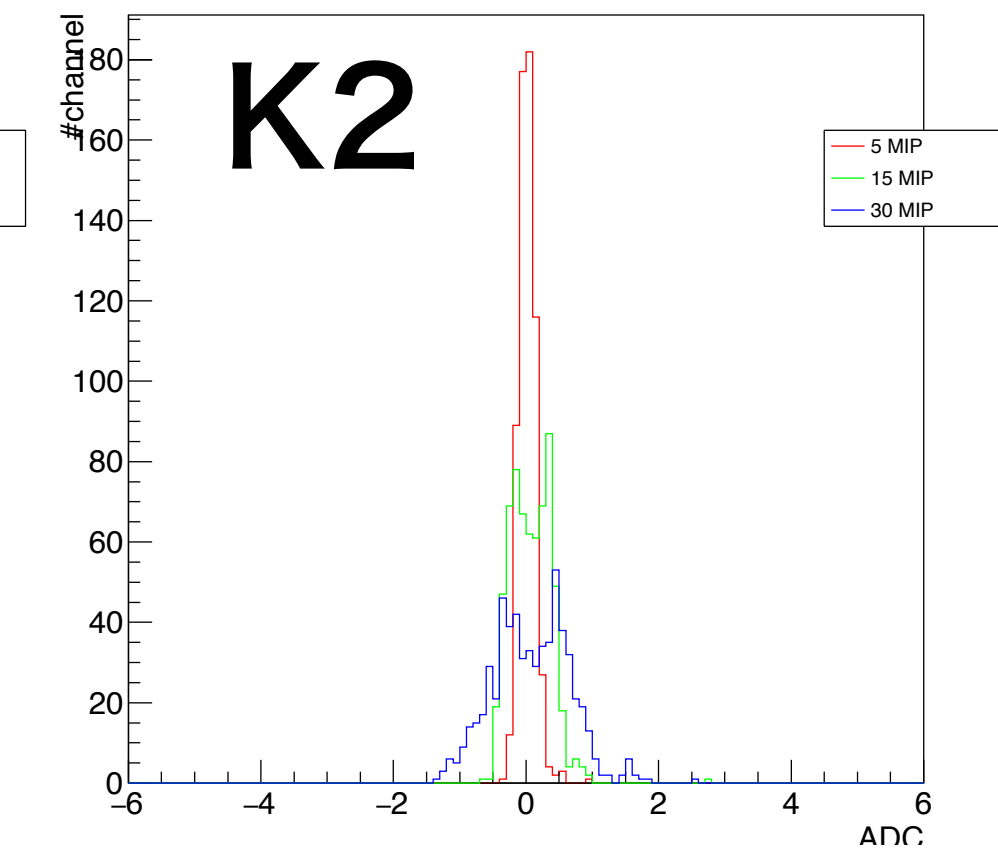
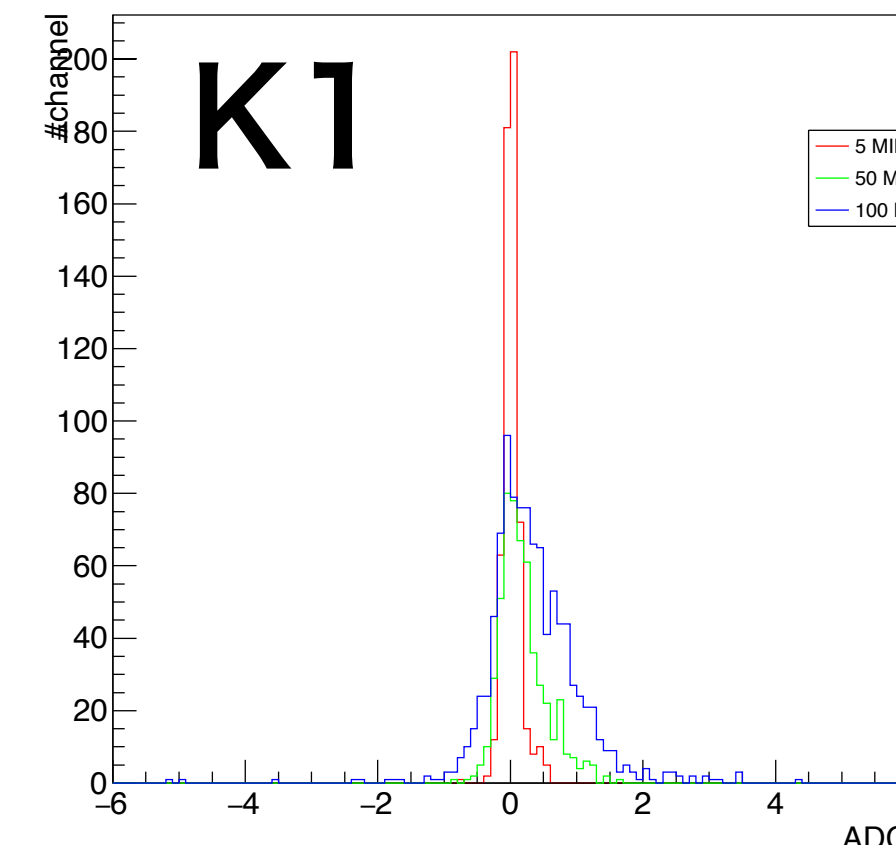
Measure cross talk

Calculate
 $A - \bar{M}$



Fill the calculated result

There are very strange



Measure with dummy signal (noise count)

Measure noise count on FEV11 and FEV13

Measure threshold on 0.5 MIP



Measure noise count

Measure with dummy signal (noise count)

Measure noise count on FEV11 and FEV13

Measure threshold on 0.5 MIP



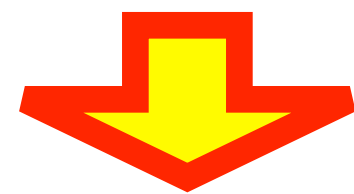
Measure noise count

Inject dummy signal of 1 MIP and 1.5 MIP

Epsilon' =

Number of detect
Number of event

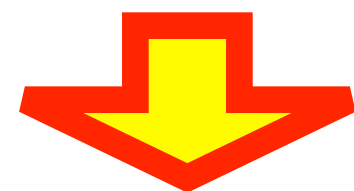
Measure Epsilon' while changing threshold



Fit with error function

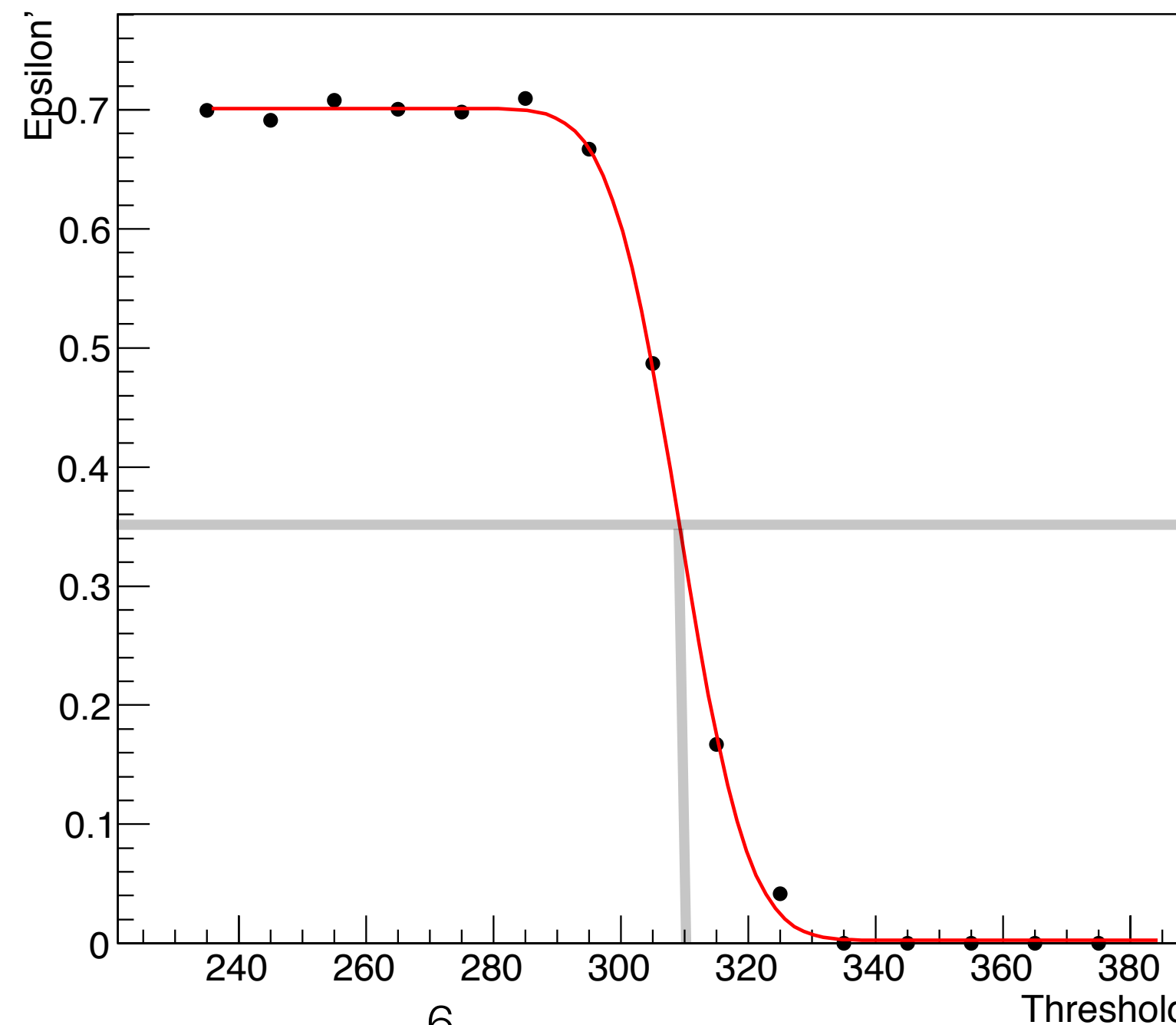
$$a \times \frac{2}{\sqrt{\pi}} \times \int_{-\frac{x-b}{c}}^{\infty} e^{-t^2} dt + d$$

a : factor of proportionality b : center value
c : width d : angle of tale

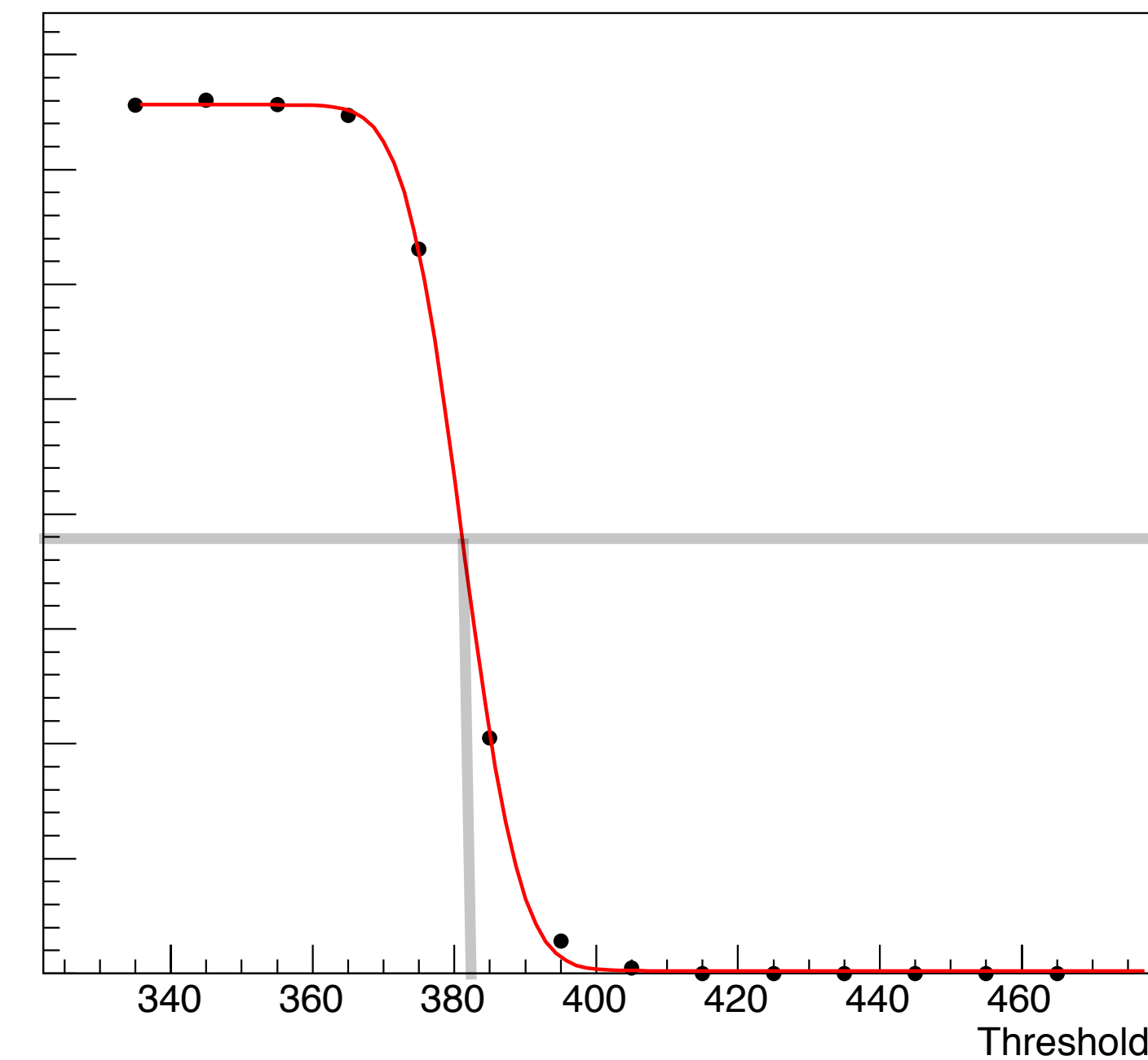


Estimate threshold of 0.5 MIP for every chip

1 MIP



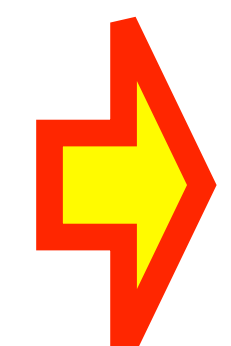
1.5 MIP



Measure with dummy signal (noise count)

Measure noise count on FEV11 and FEV13

Measure threshold on 0.5 MIP



Measure noise count

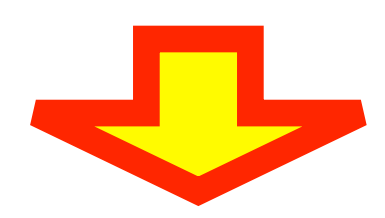
dif_k1

dif_17

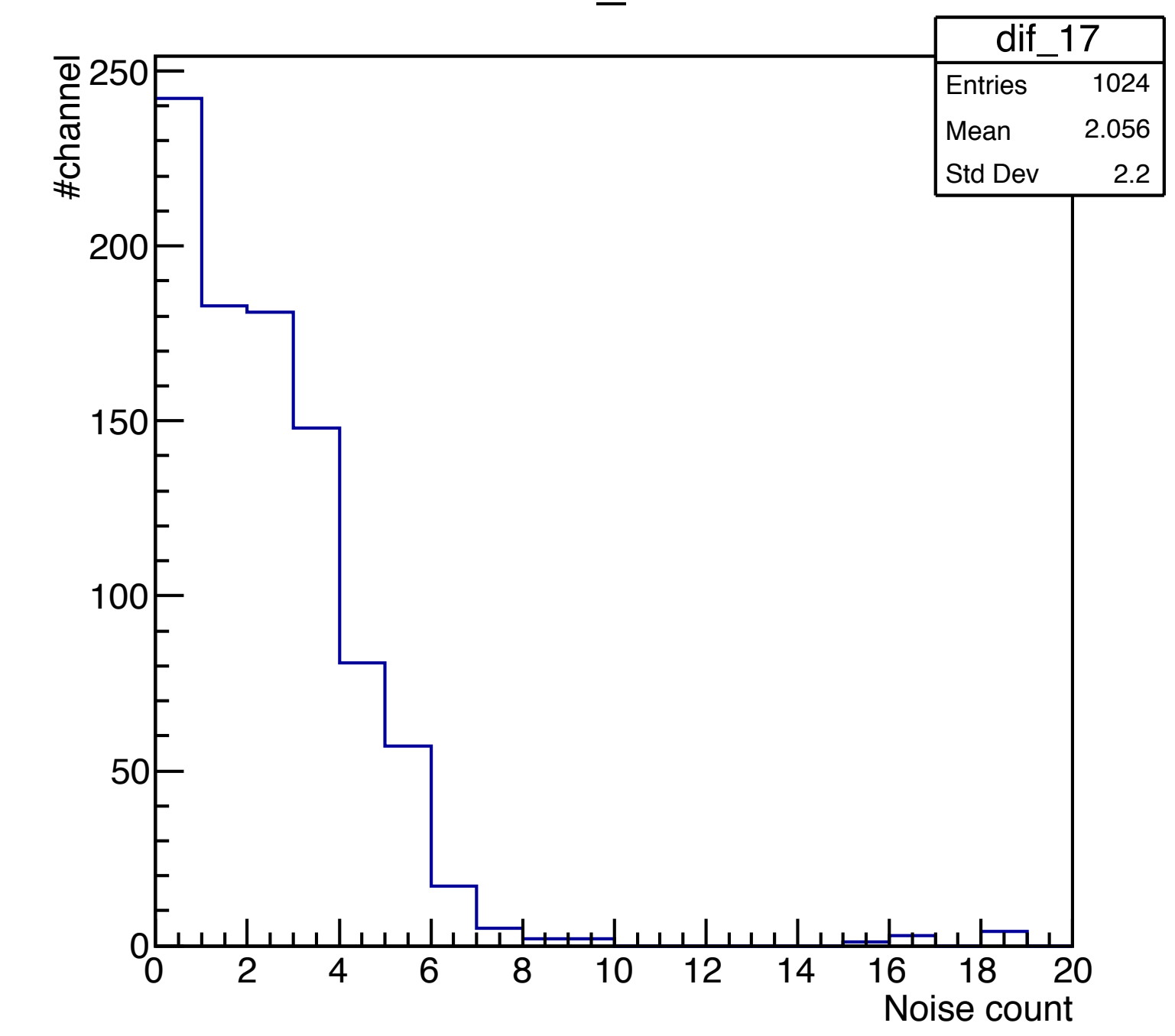
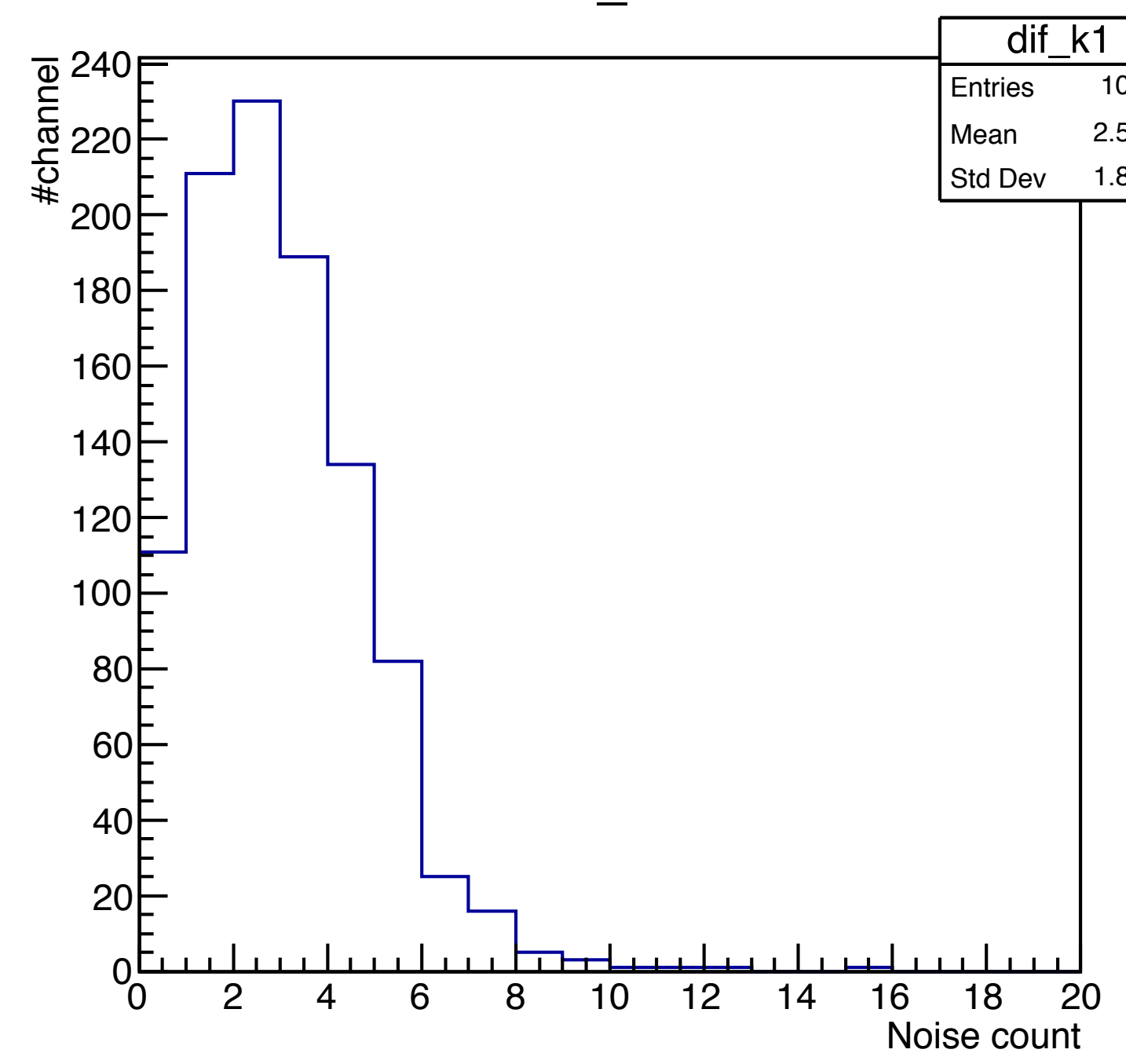
< Condition >

Mask noisy channels

Acquisition time : about 2 hours



One noise is occurred by 1 hours on every channel



Too low rate