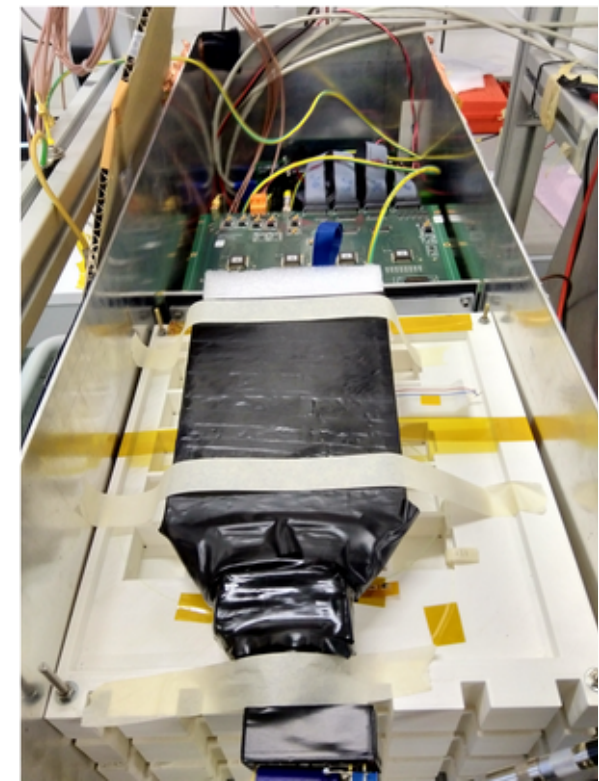
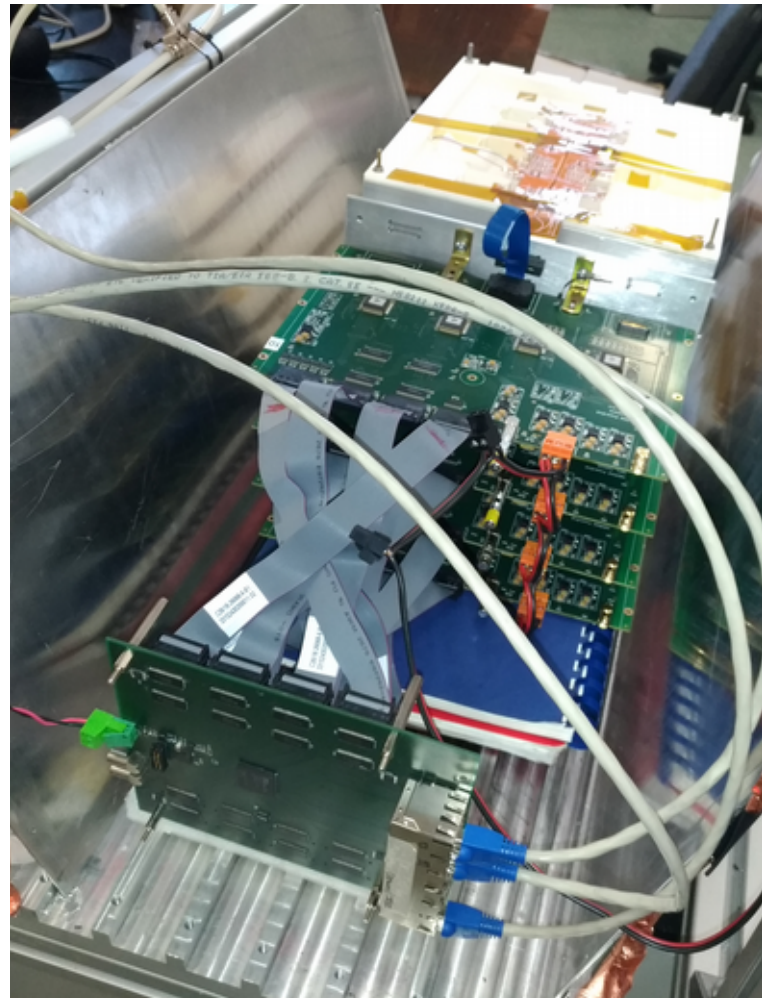
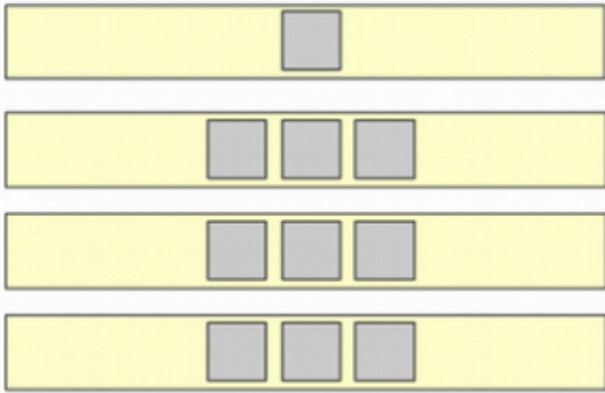


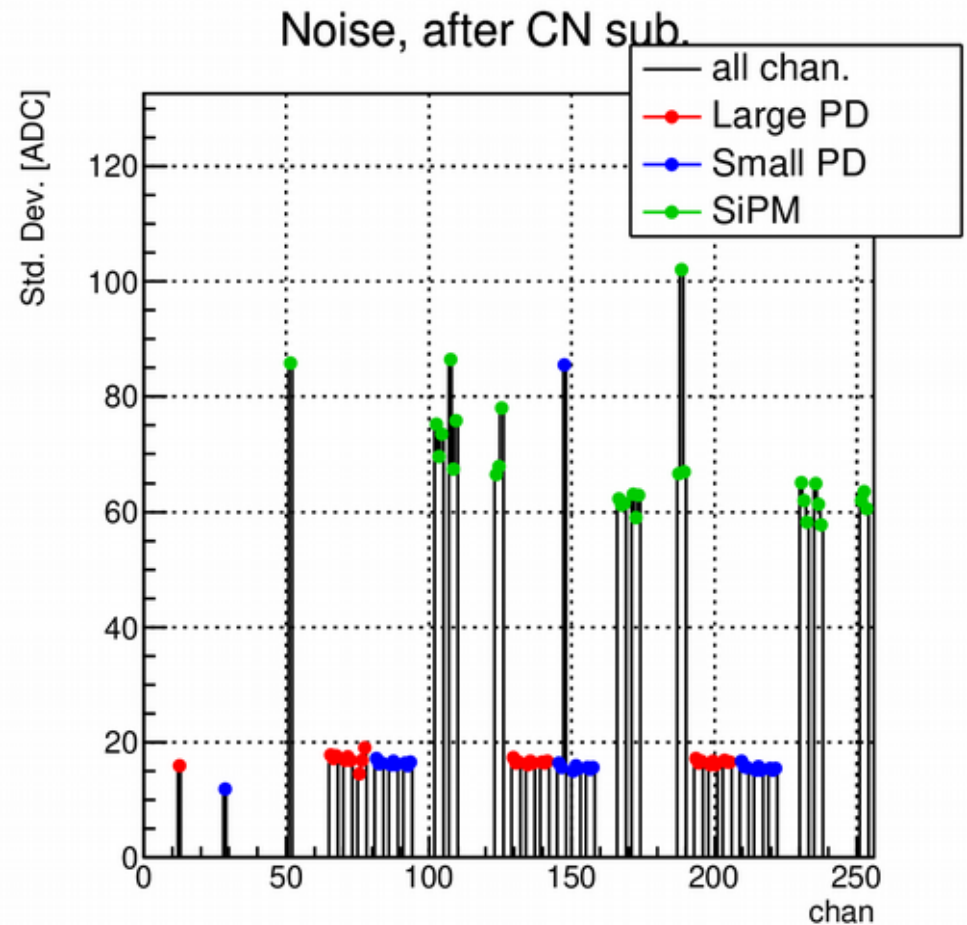
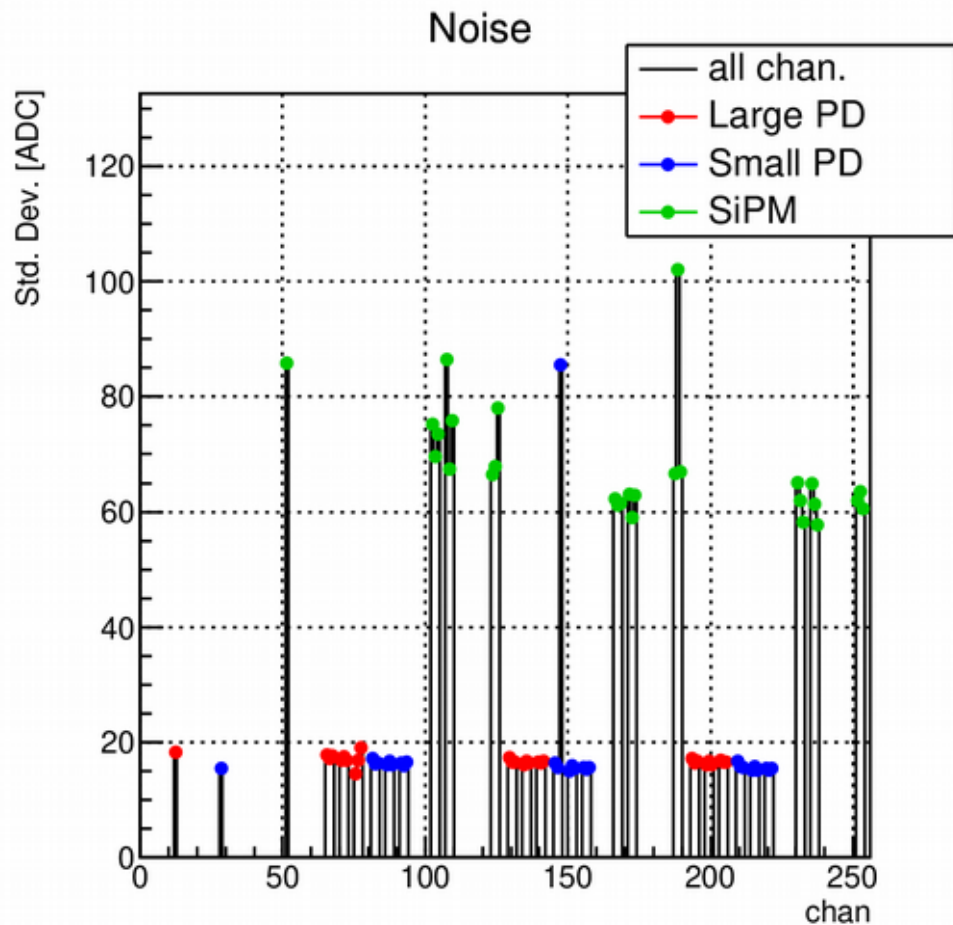
# Small Prototype

We realized a Small Prototype of 4 layers (28 LYSO crystals):  
Each cube is equipped with VTH2090 (old Large PD), VTP9412 (small PD) and WLS+SiPM (Hamamatsu S12571-010P)

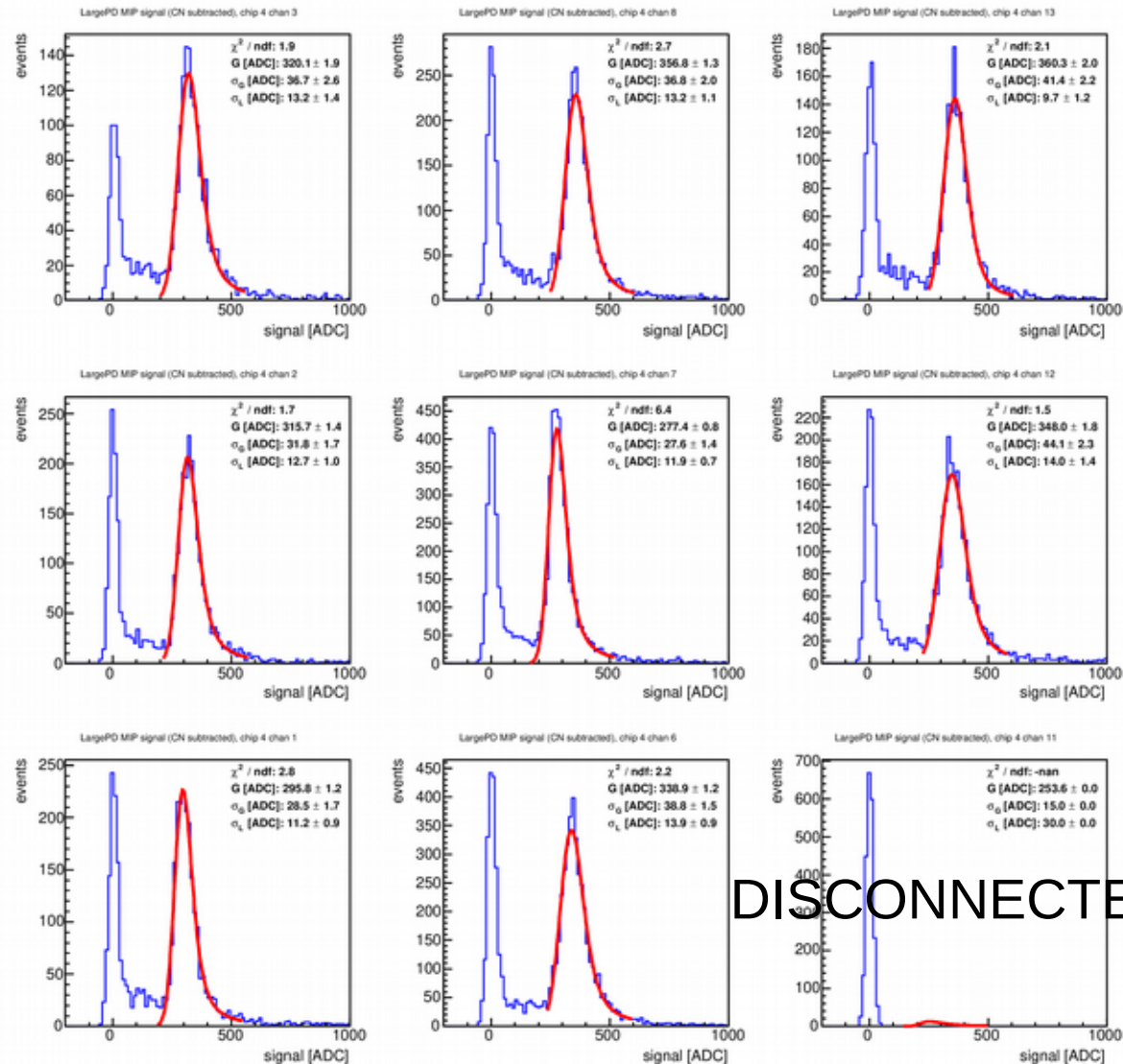


Cosmic muons are used to test the prototype.

# Small Prototype Electric Noise



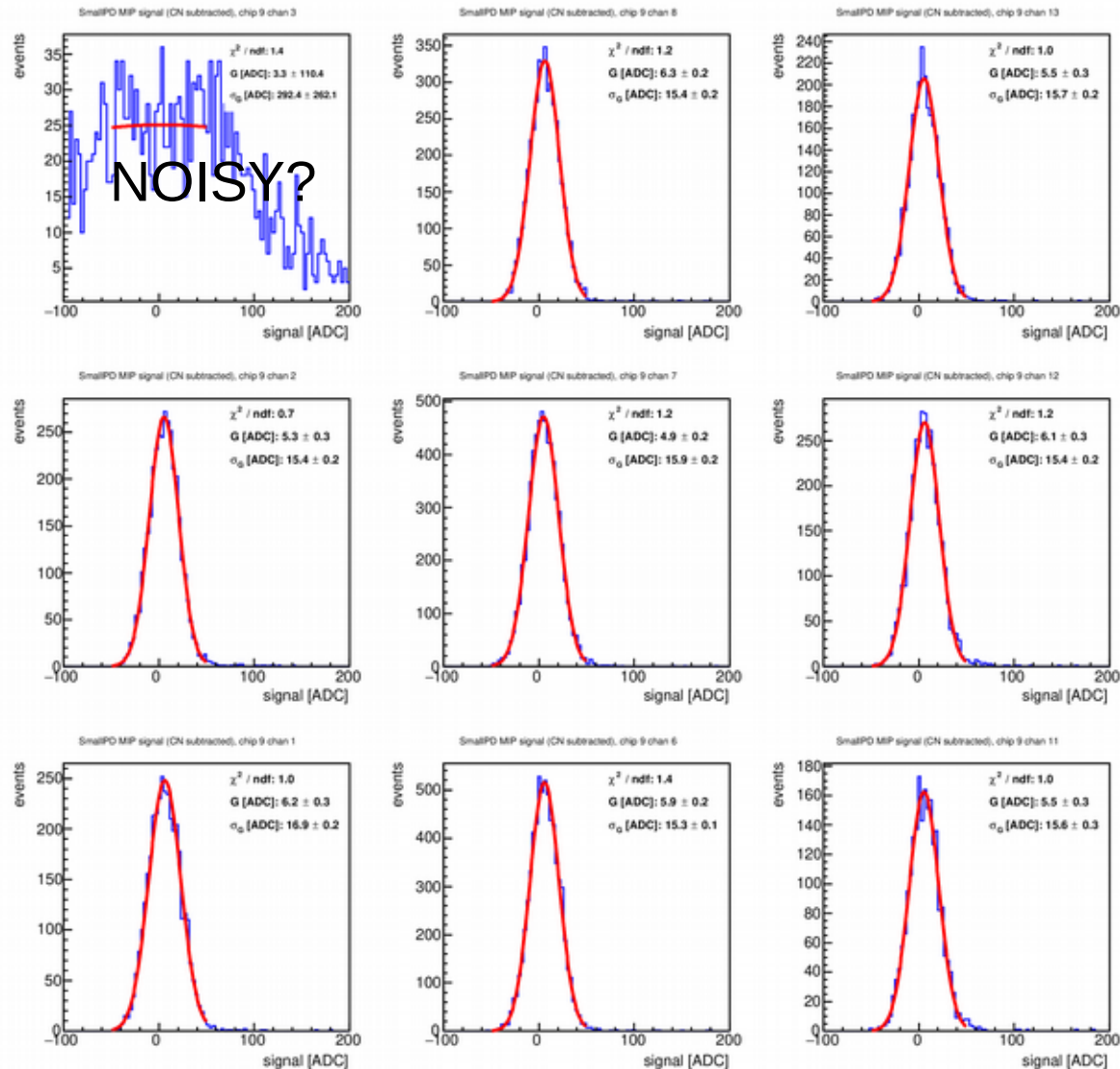
# Small Prototype Dead Channels- Large PDs - Layer 1



DISCONNECTED?

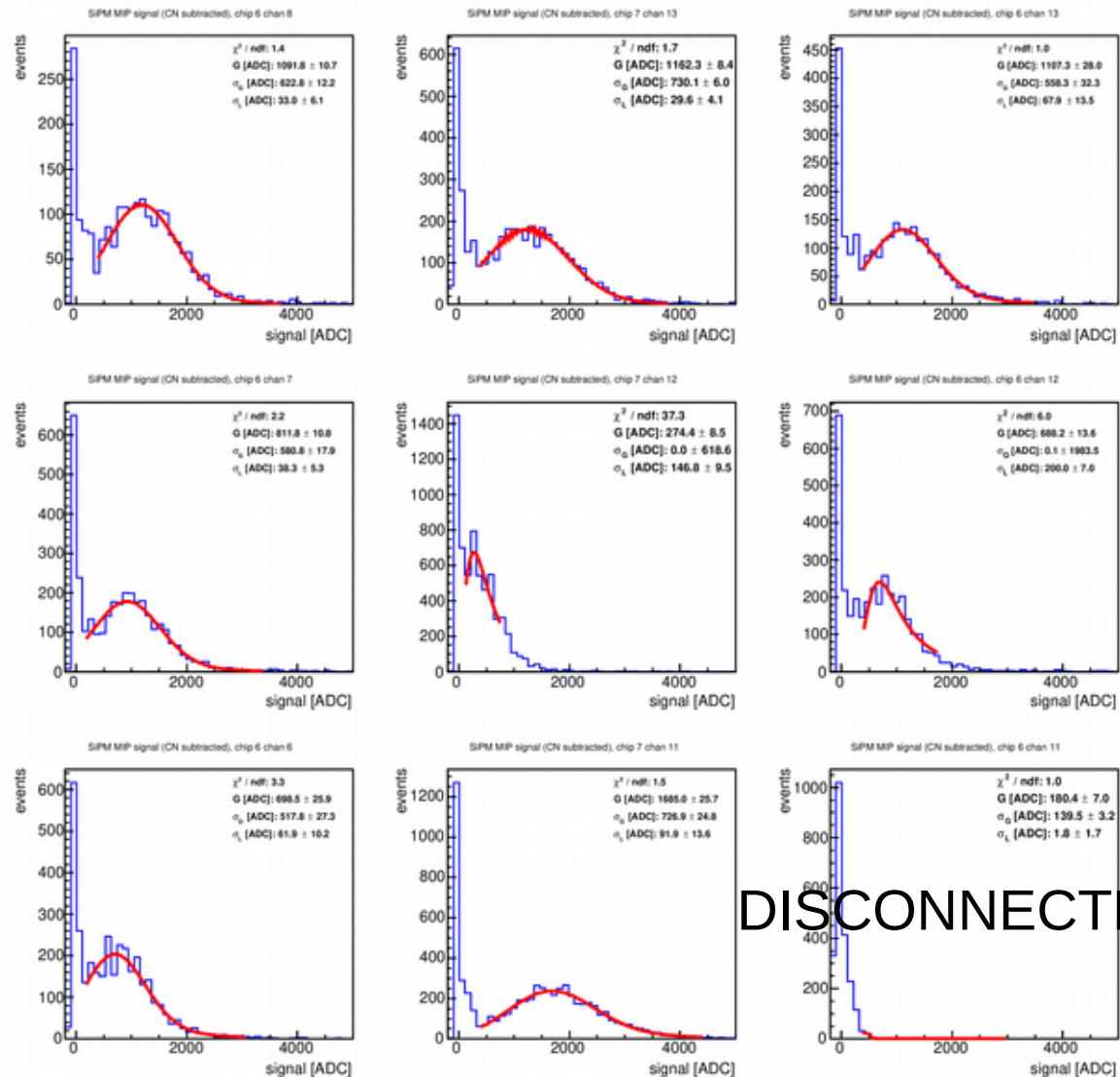
# Small Prototype

## Dead Channels- Small PDs - Layer 2





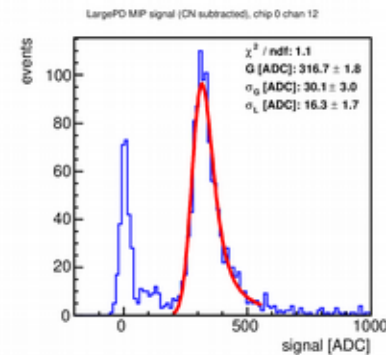
# Small Prototype Dead Channels- SiPM - Layer 1



DISCONNECTED?

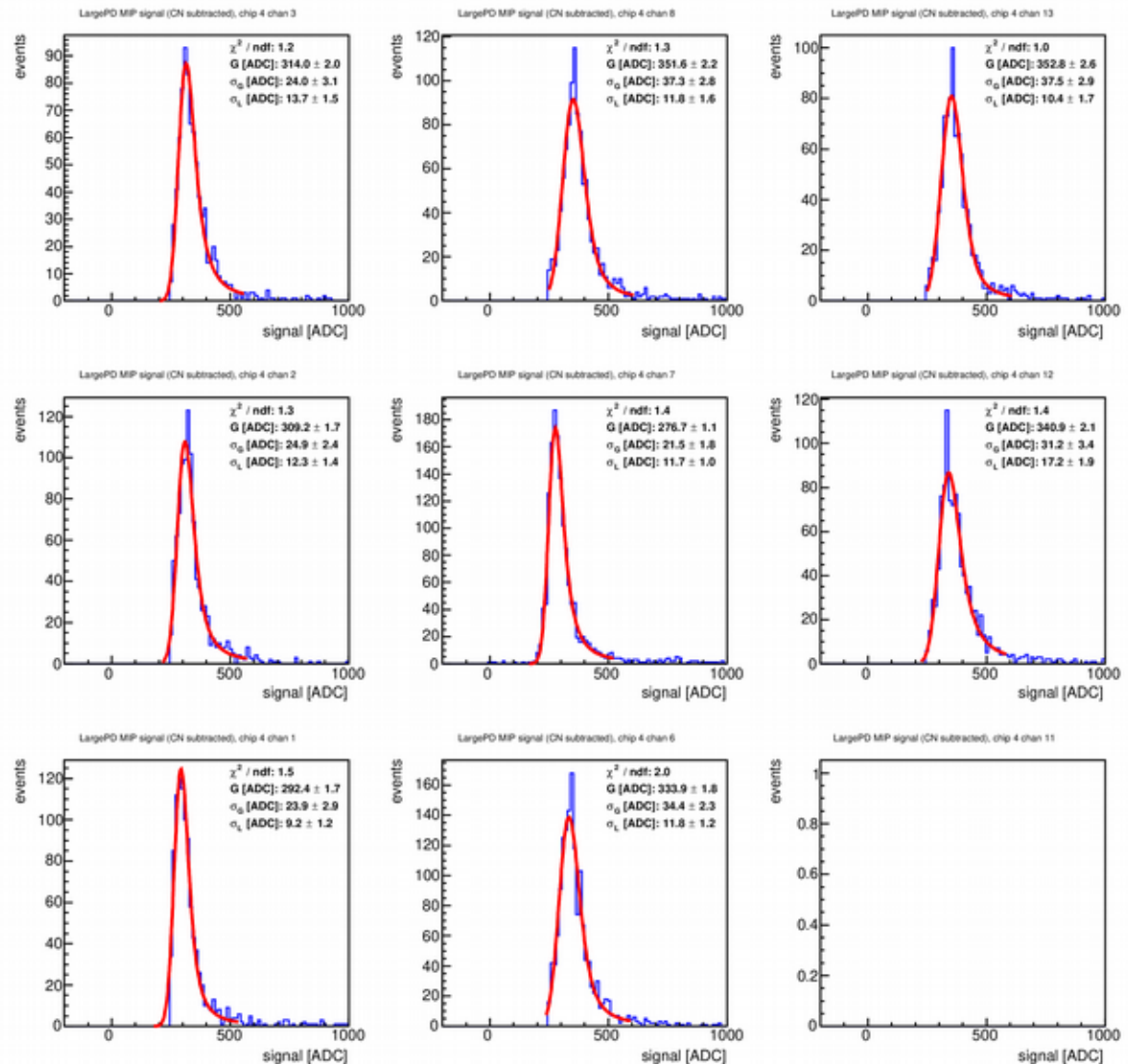
# Small Prototype Large PDs - Layer 0

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



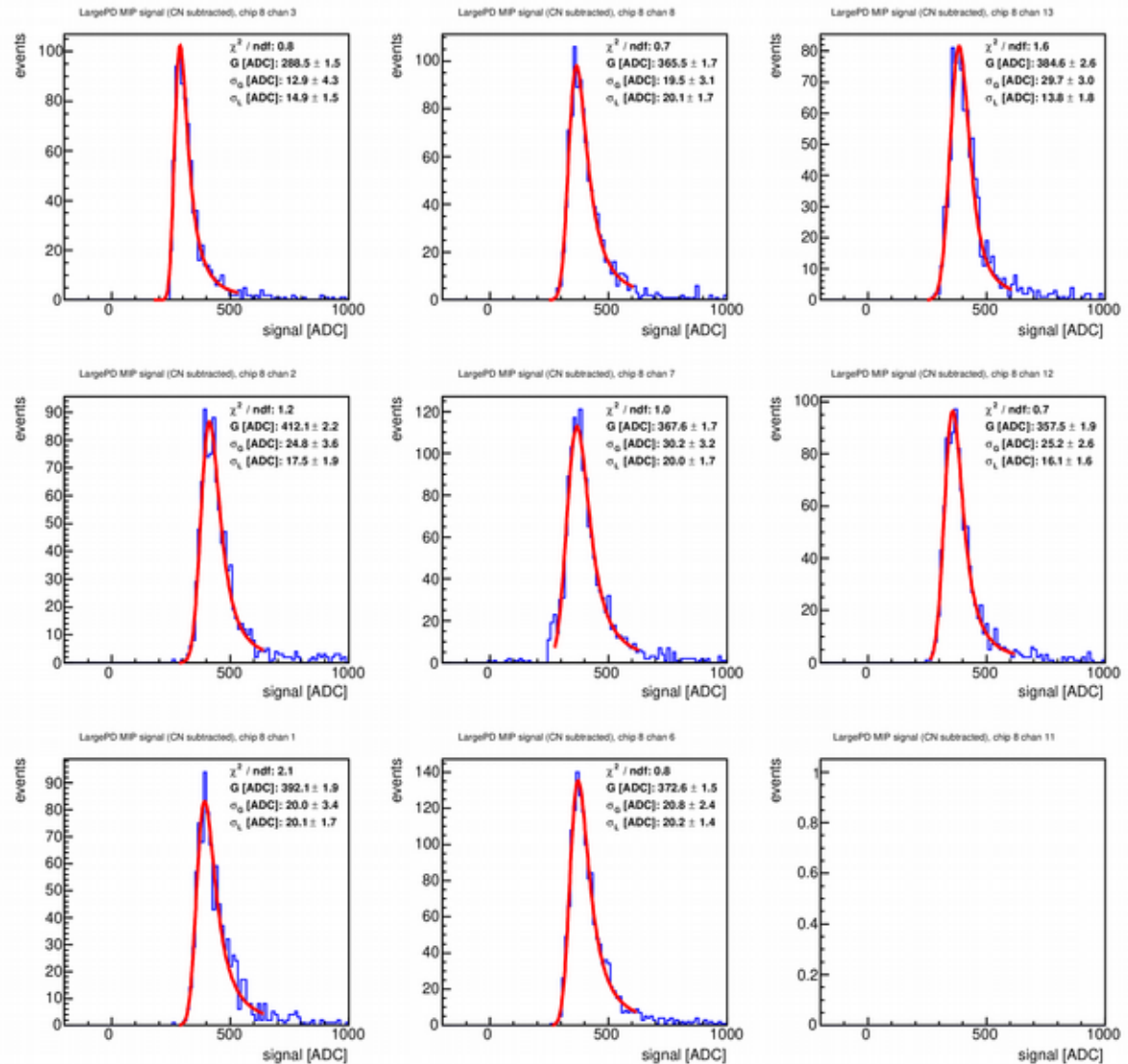
# Small Prototype Large PDs - Layer 1

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



# Small Prototype Large PDs - Layer 2

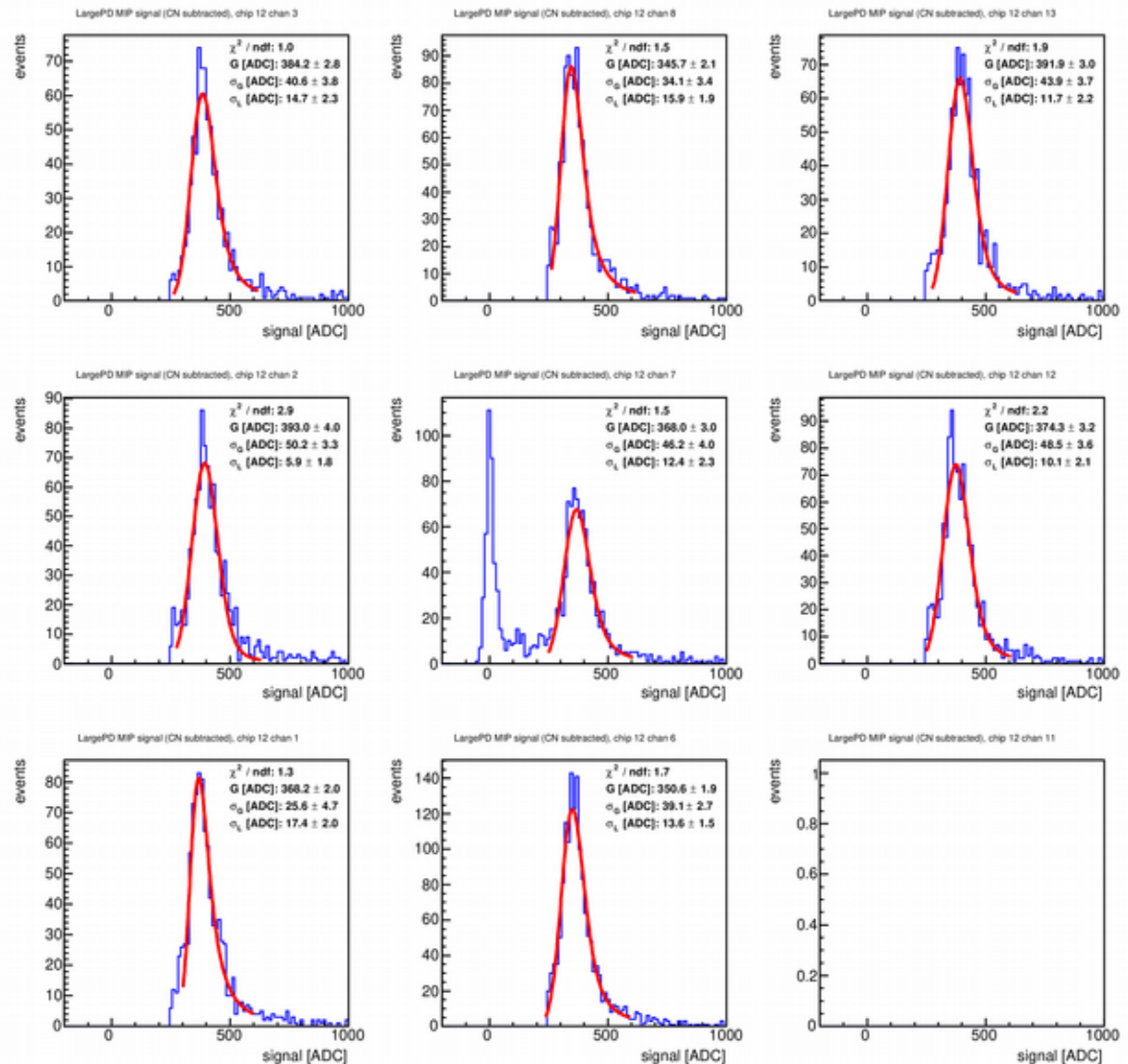
Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs





# Small Prototype Large PDs - Layer 3

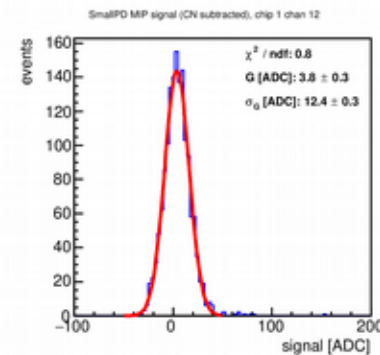
Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



# Small Prototype

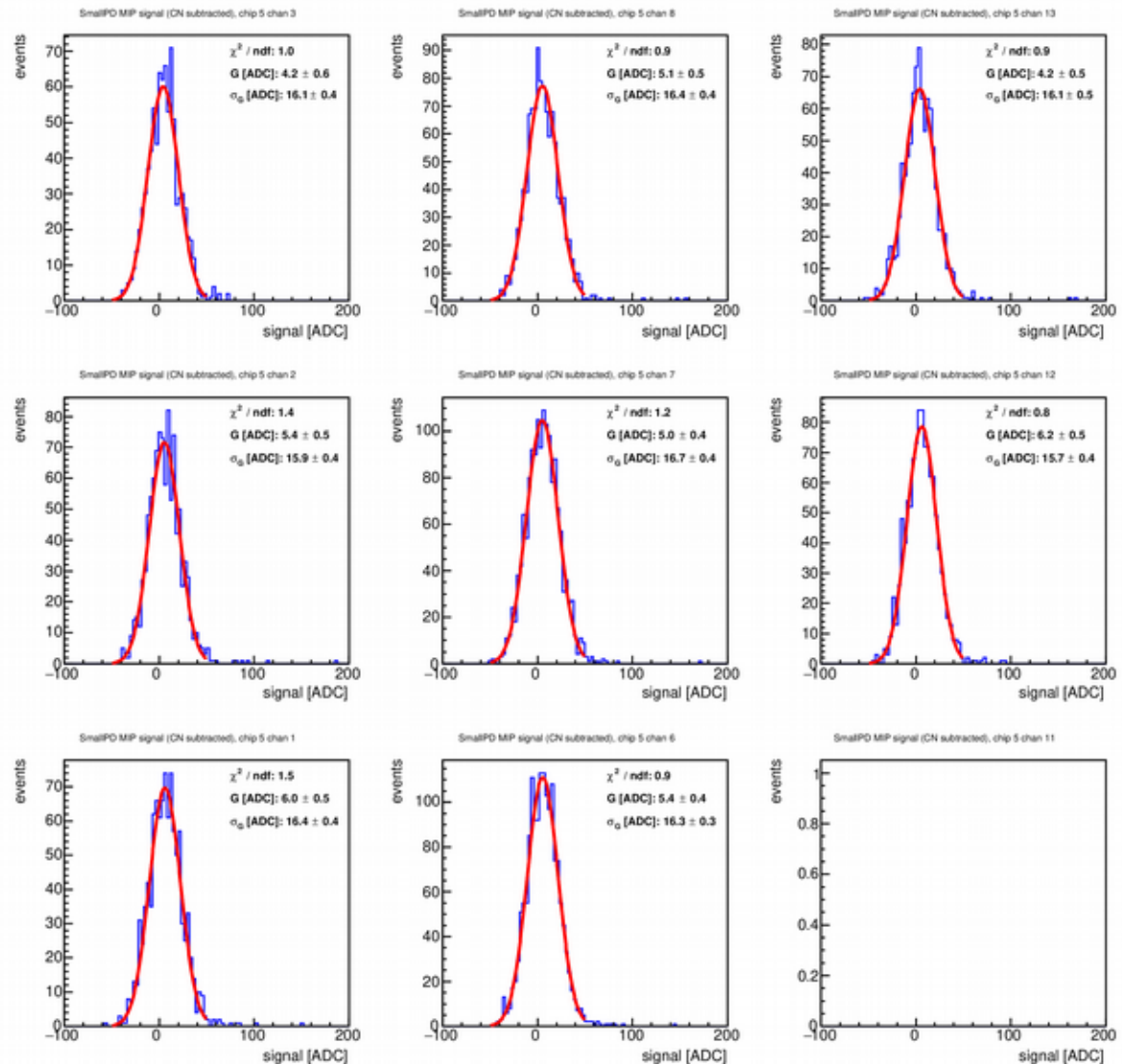
## Small PDs - Layer 0

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



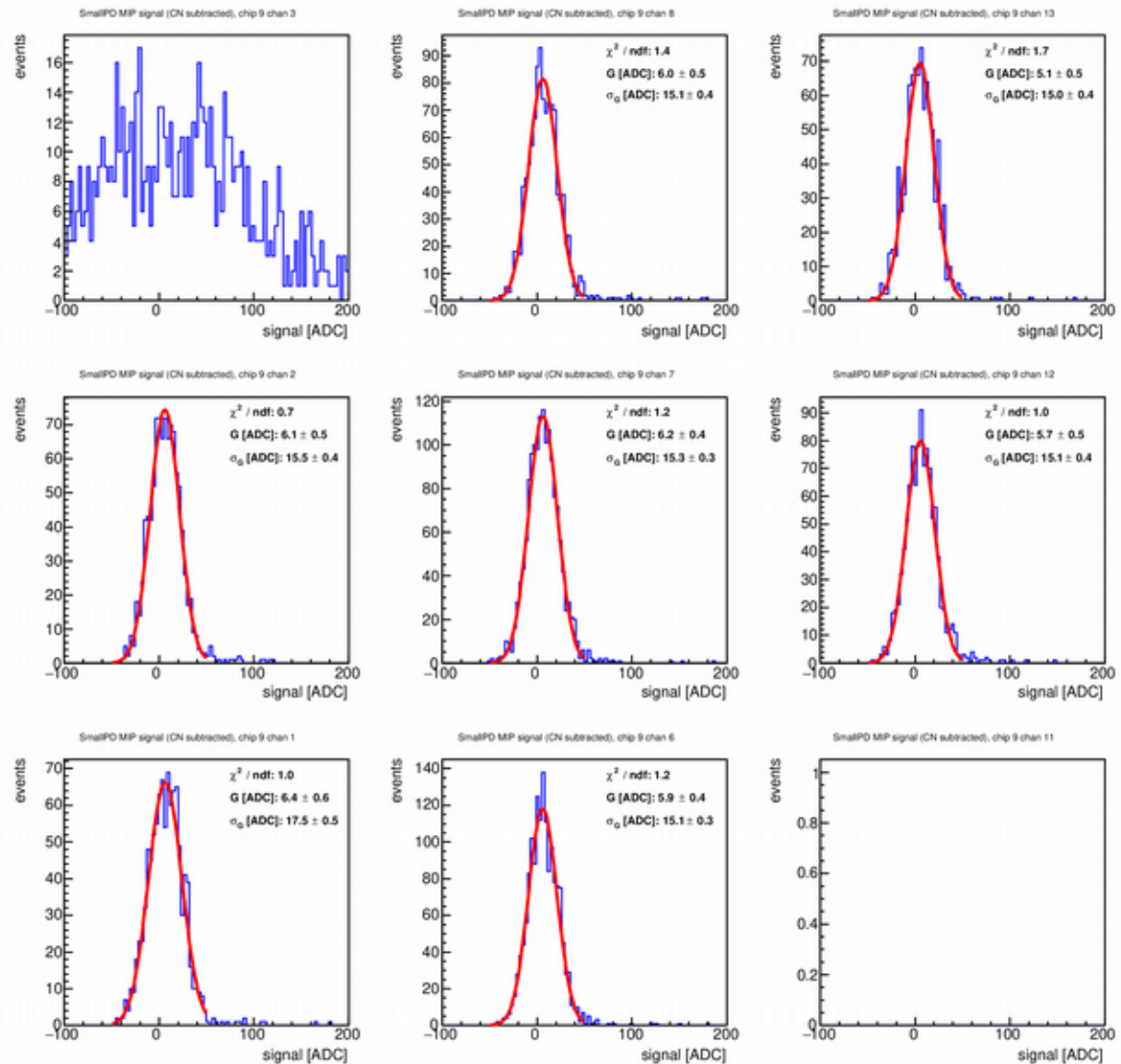
# Small Prototype Small PDs - Layer 1

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



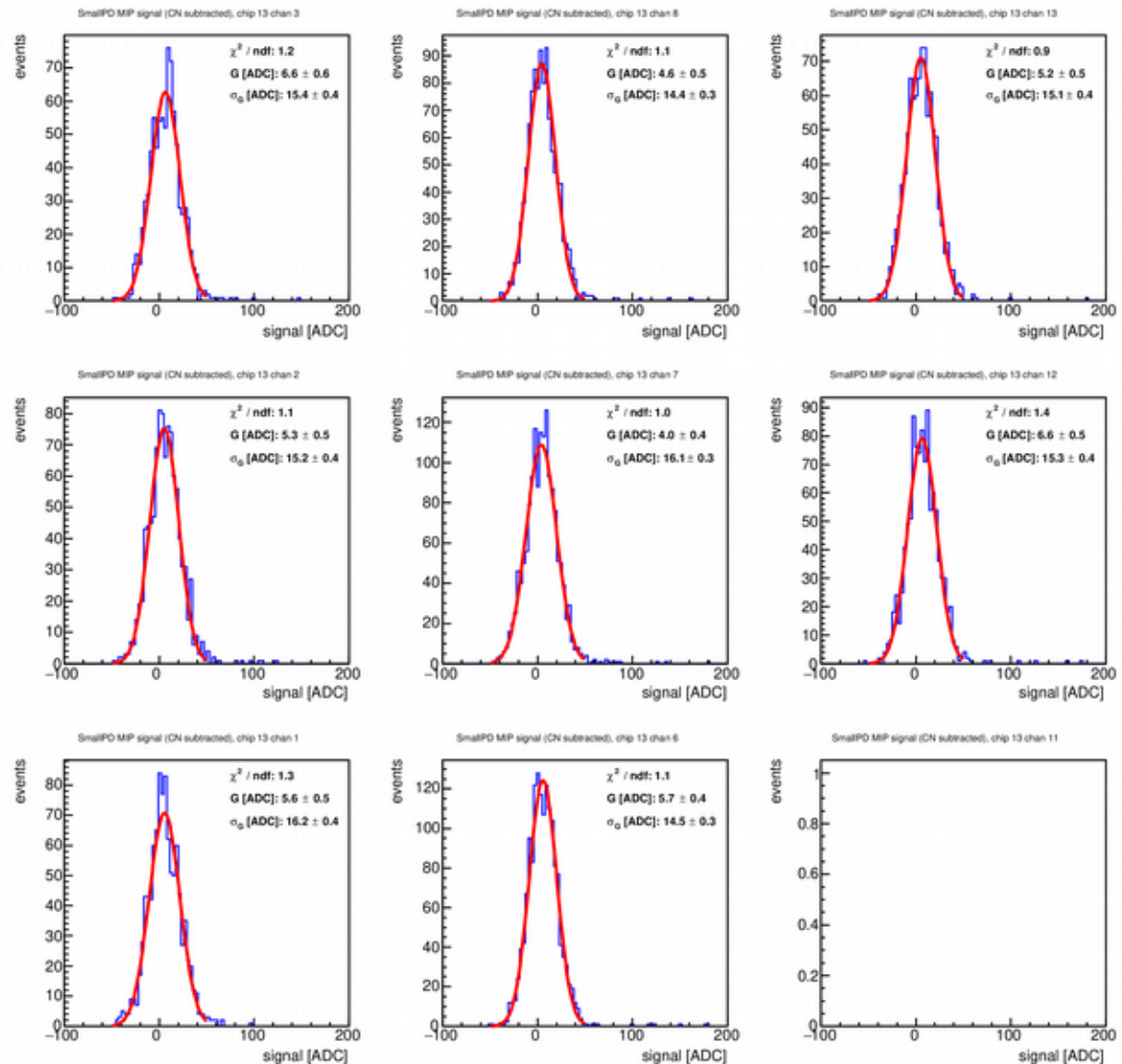
# Small Prototype Small PDs - Layer 2

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



# Small Prototype Small PDs - Layer 3

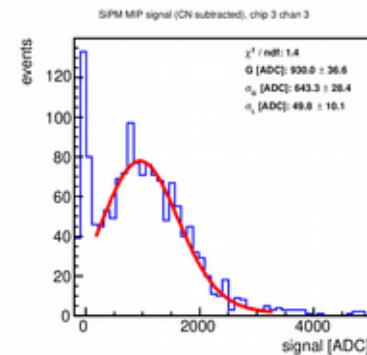
Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs





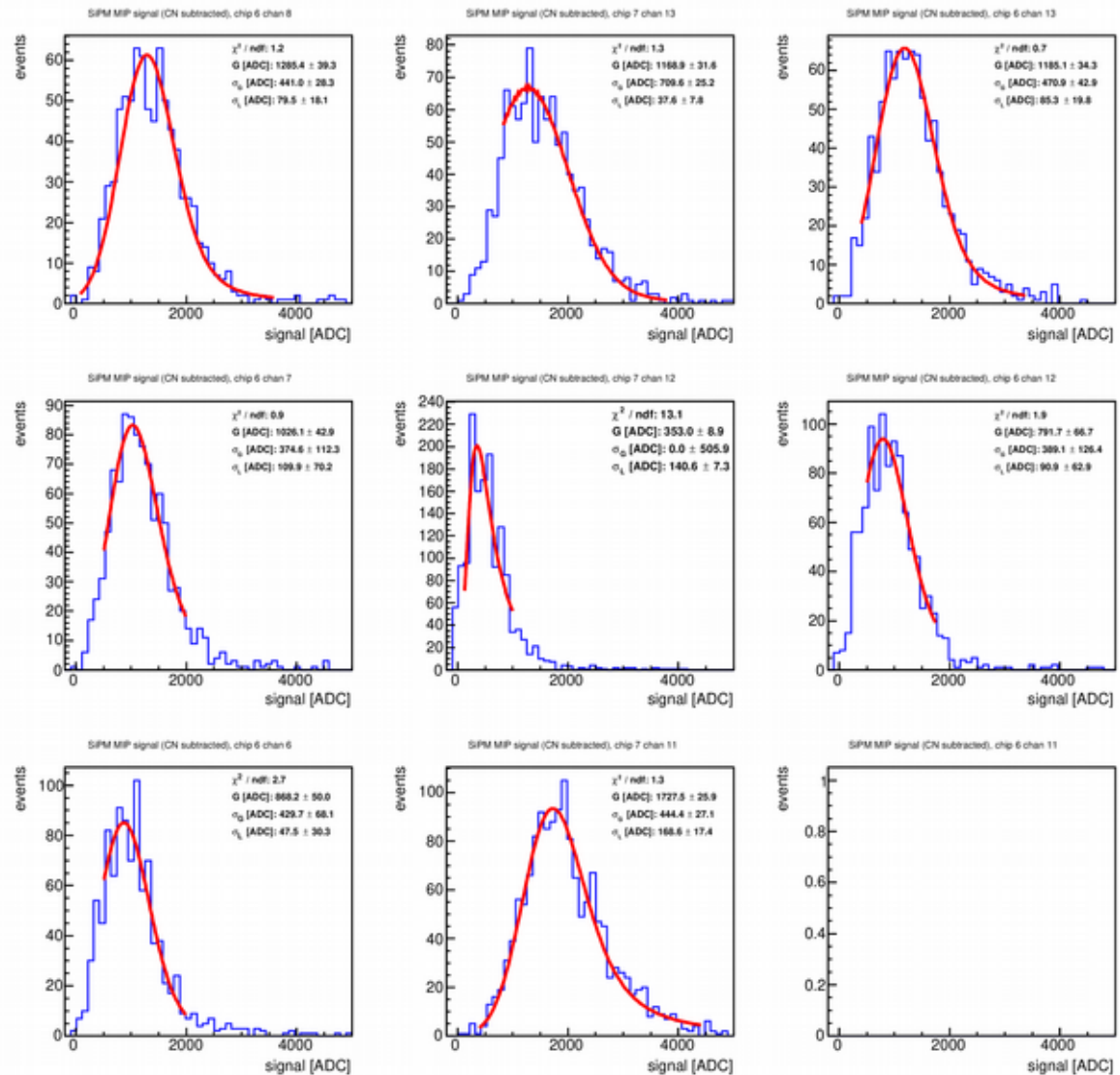
# Small Prototype SiPM - Layer 0

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



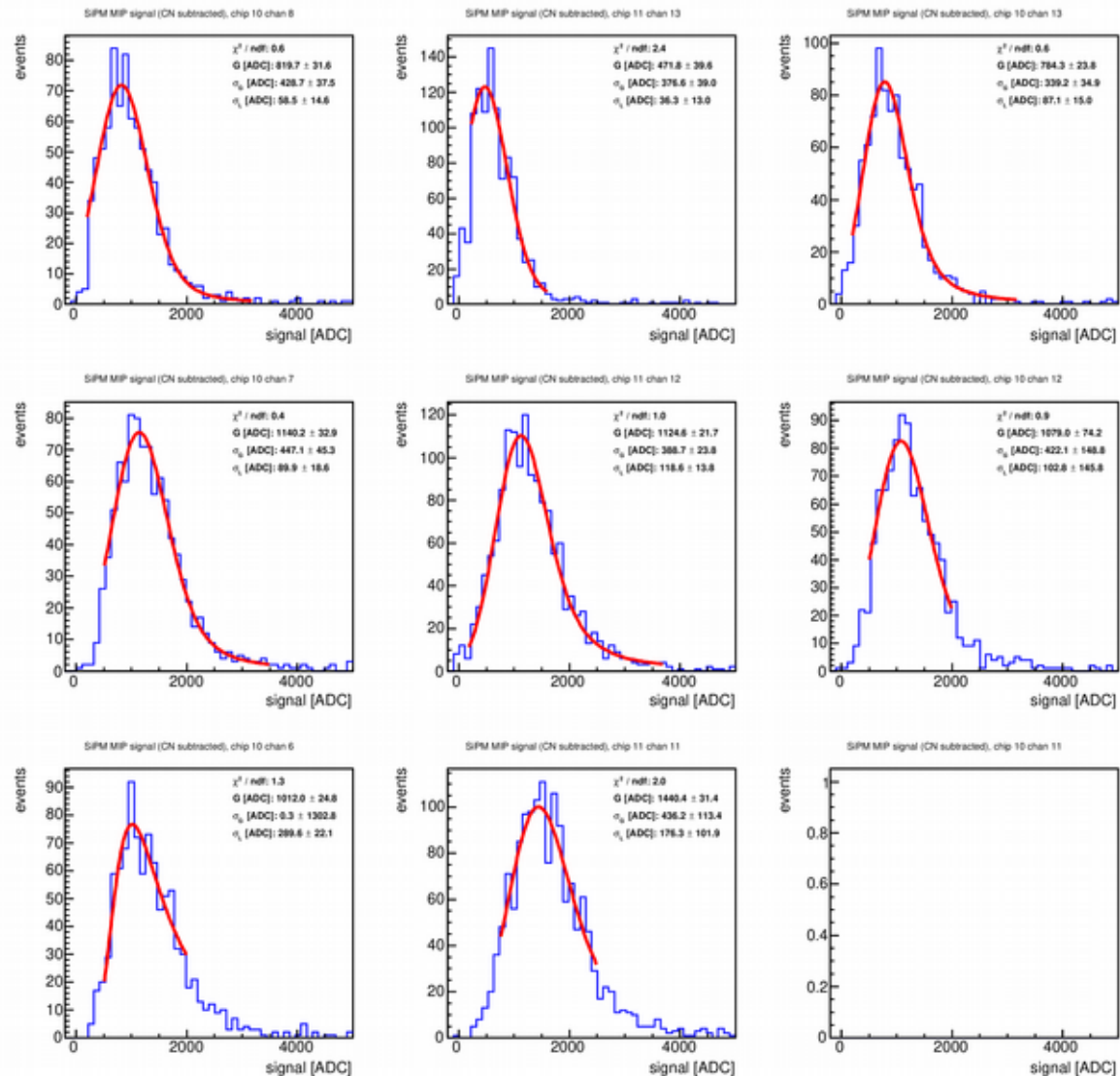
# Small Prototype SiPM - Layer 1

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



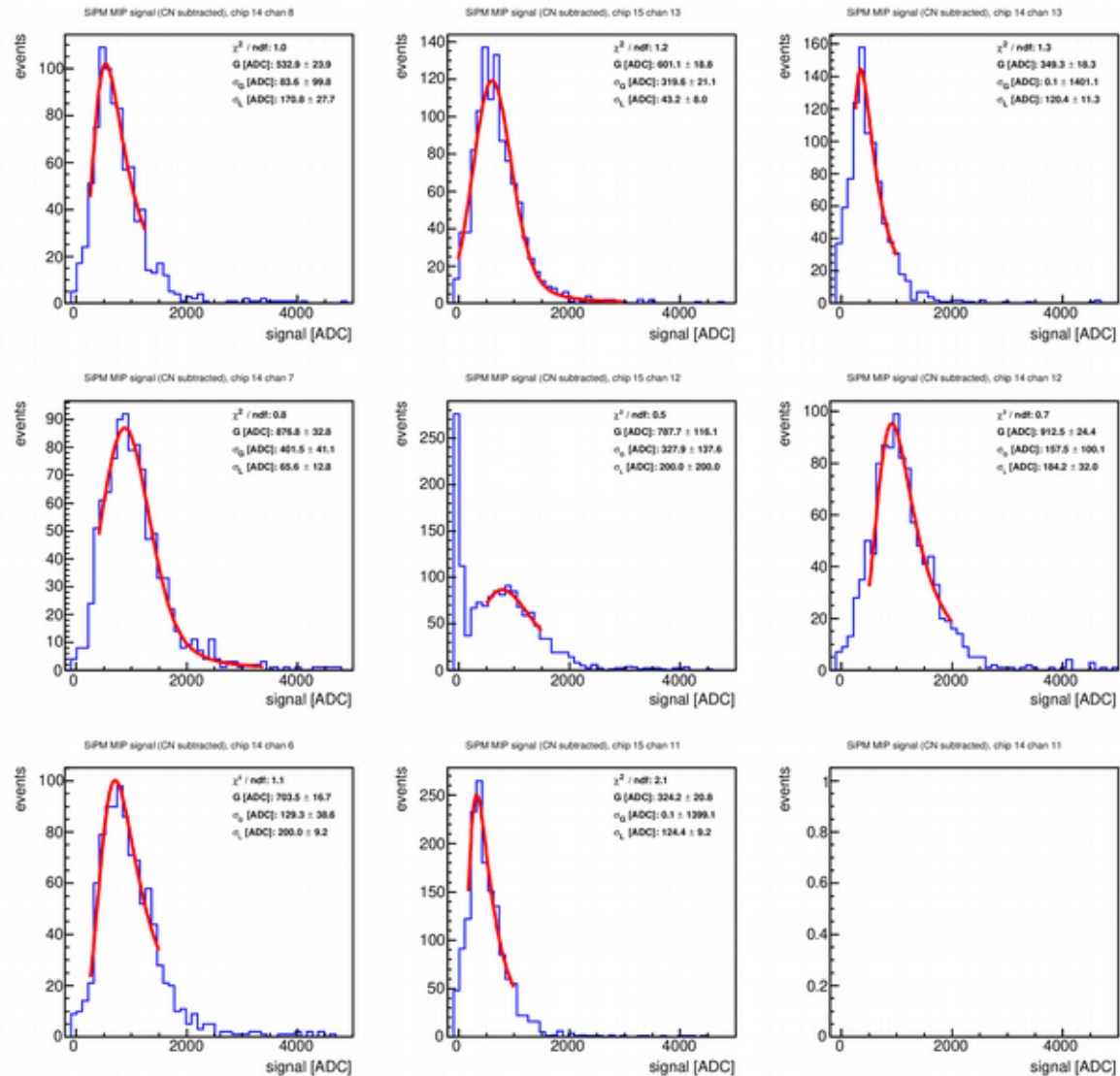
# Small Prototype SiPM - Layer 2

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



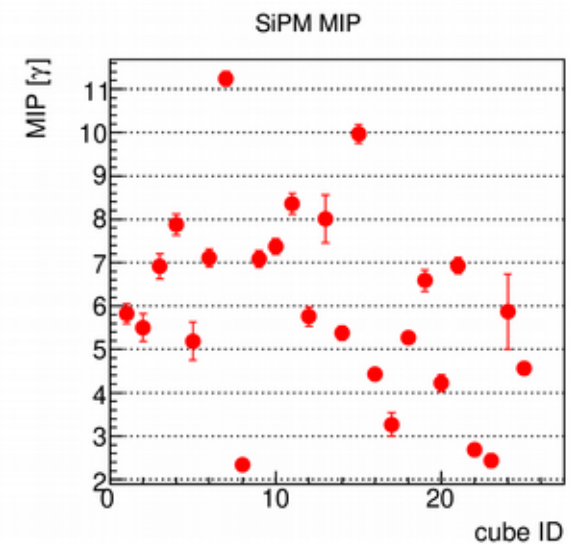
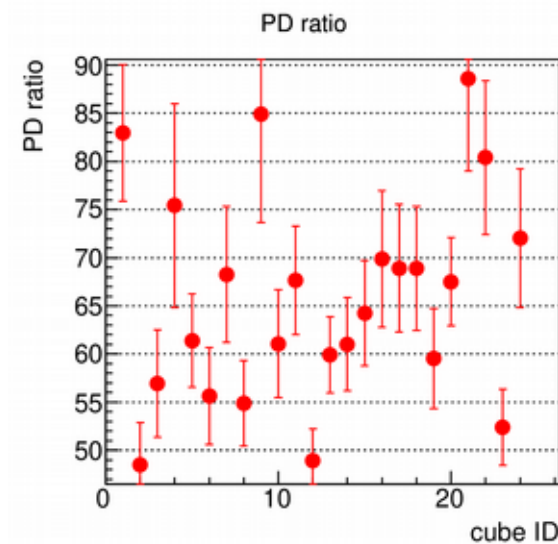
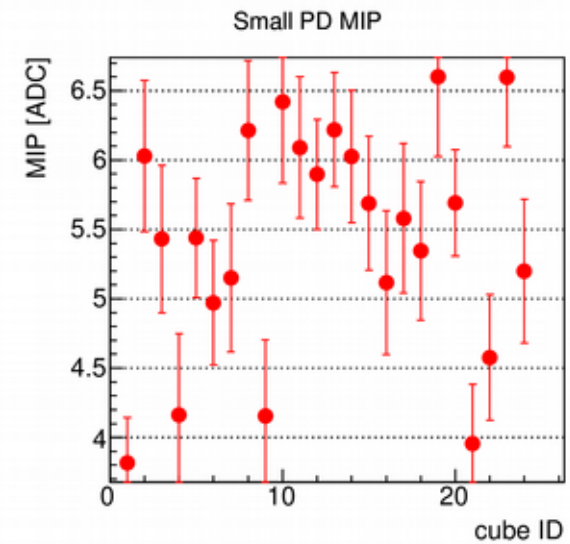
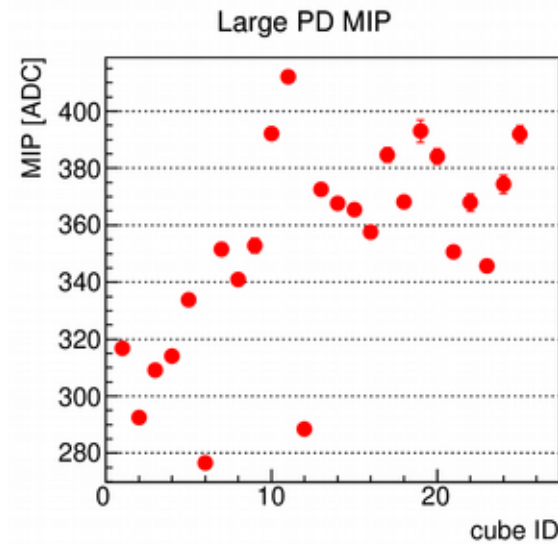
# Small Prototype SiPM - Layer 3

Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



# Small Prototype Summary

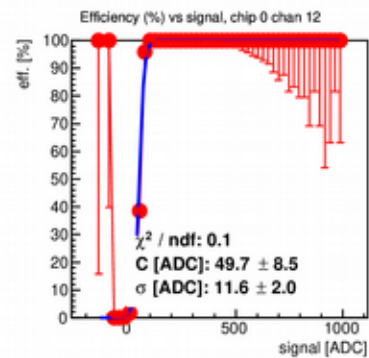
Event selection is obtained requiring three (or more) vertical hits ( $dE > 250$  ADC) in the Large PDs



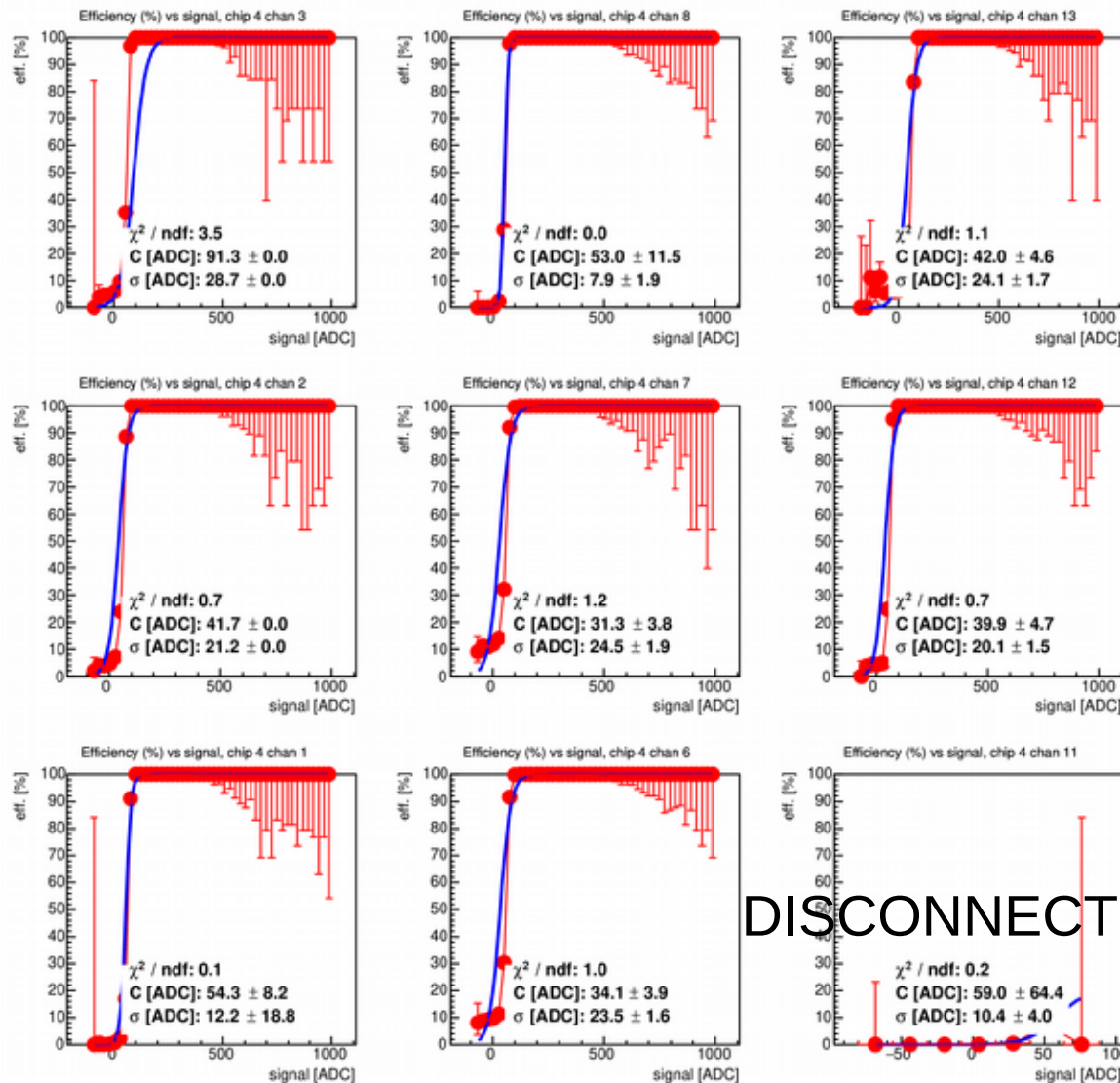


# Small Prototype

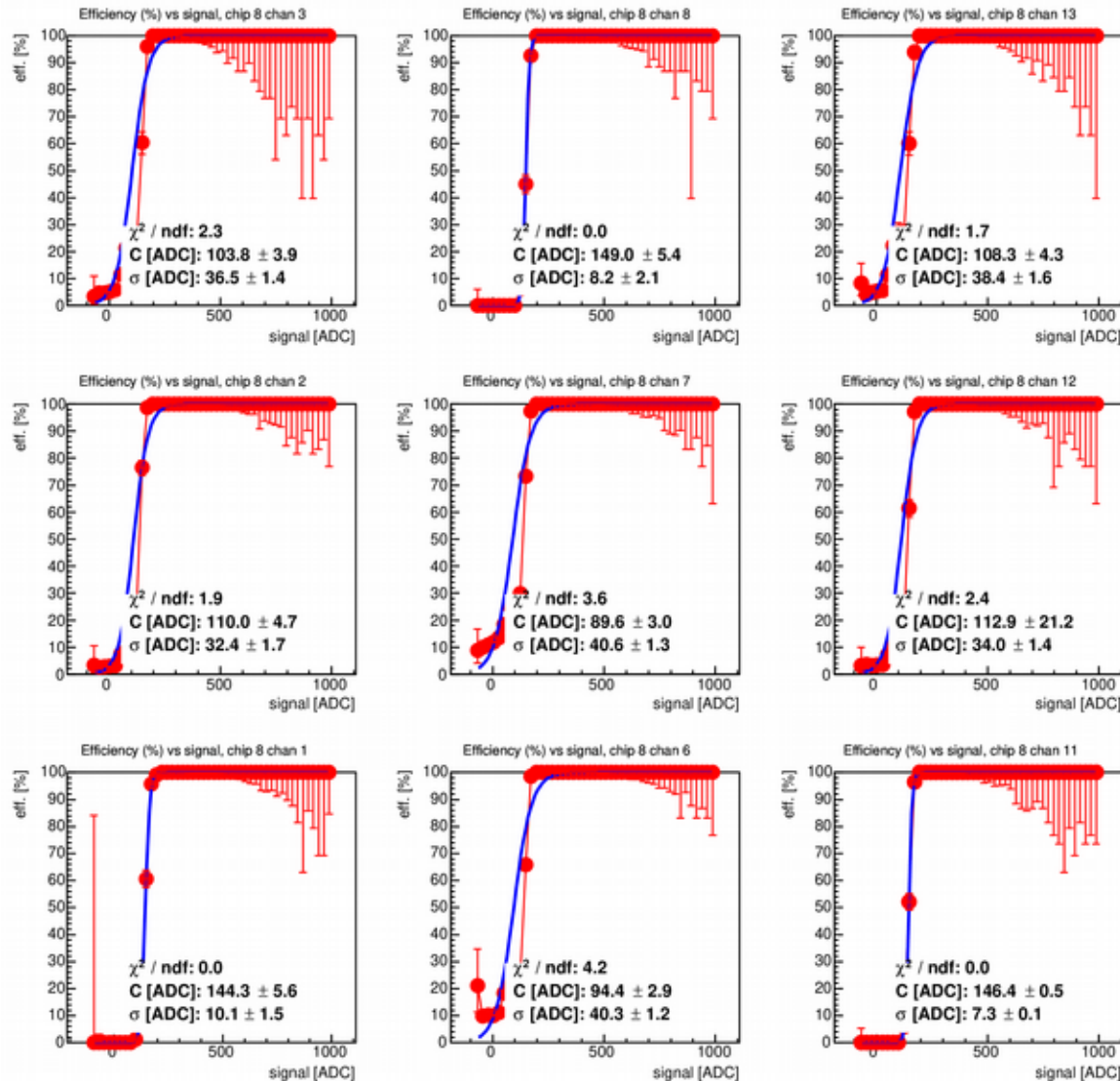
## SelfTrigger efficiency - Layer 0



# Small Prototype SelfTrigger efficiency - Layer 1

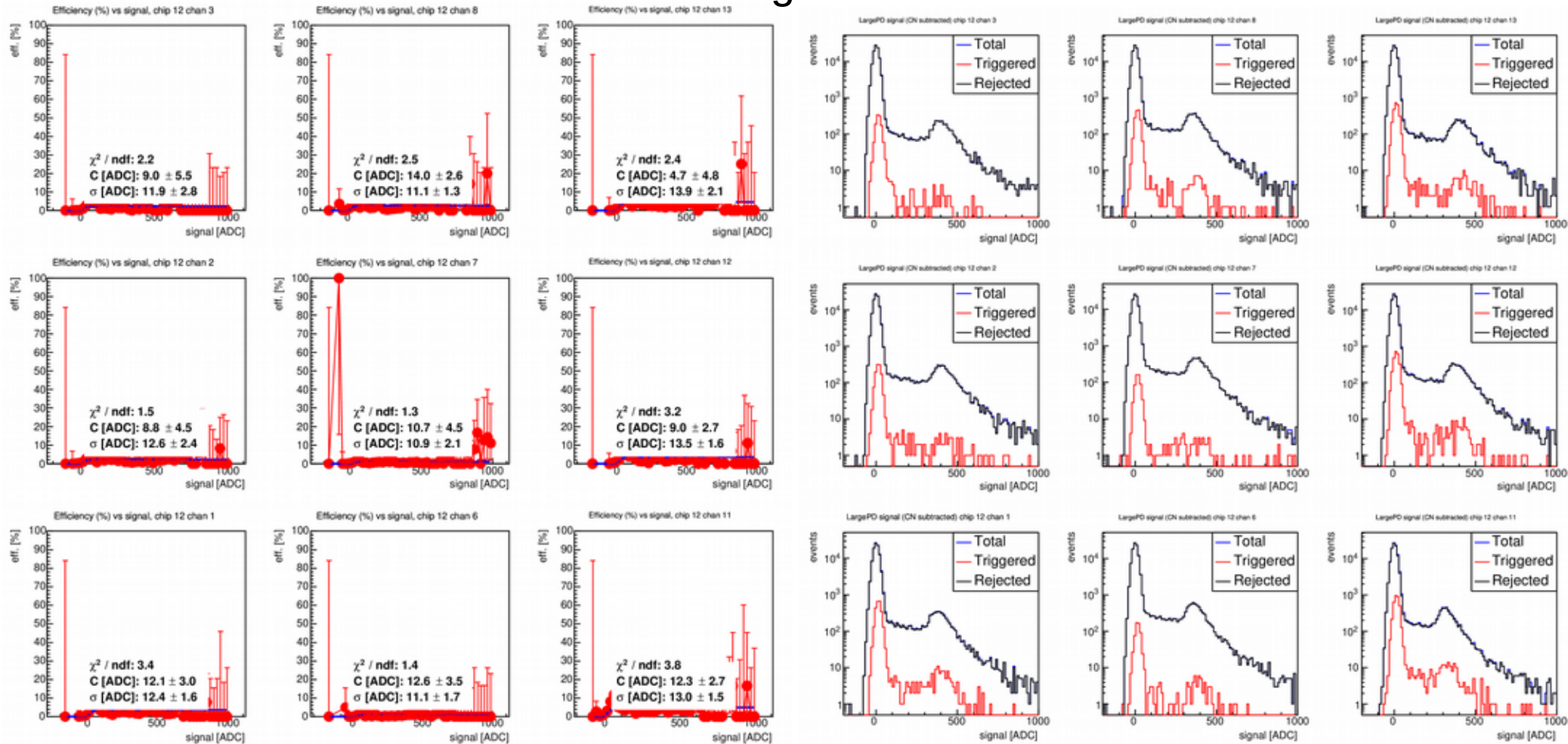


# Small Prototype SelfTrigger efficiency - Layer 2



# Small Prototype SelfTrigger efficiency - Layer 3

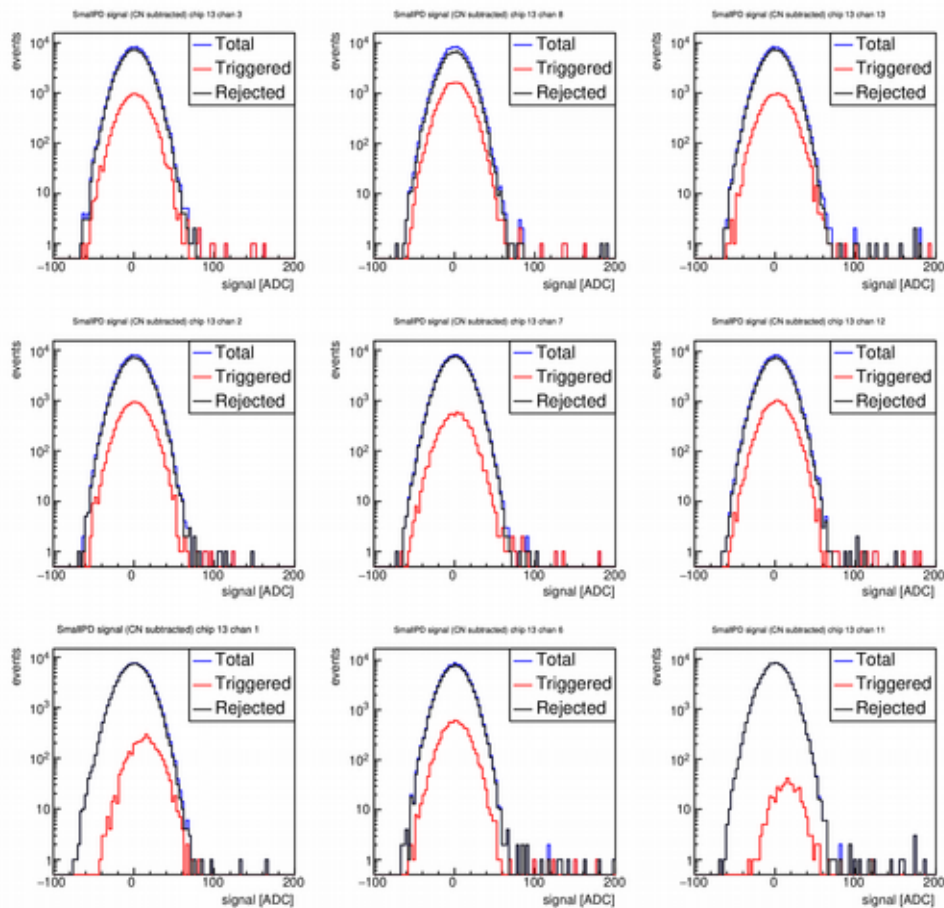
## Large PDs



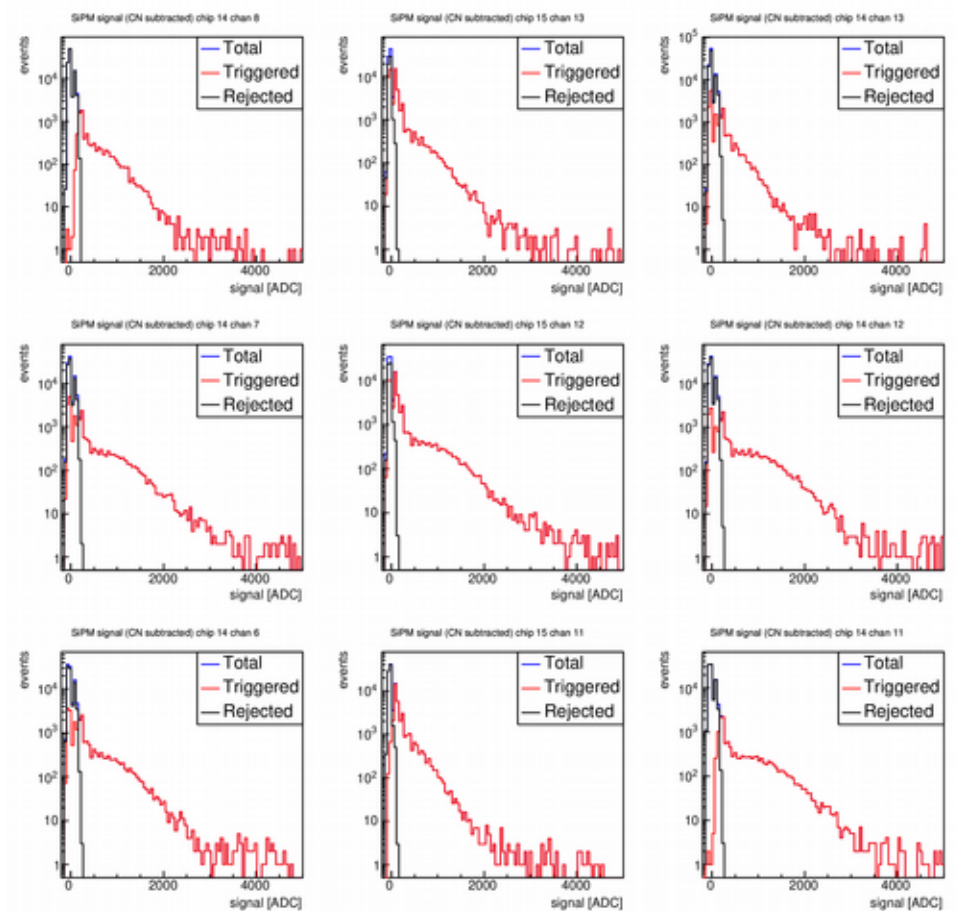
SelfTrigger on the chip 0 of the board  
connected to Layer 3 does not work...

# Small Prototype SelfTrigger on board 3

## Small PDs



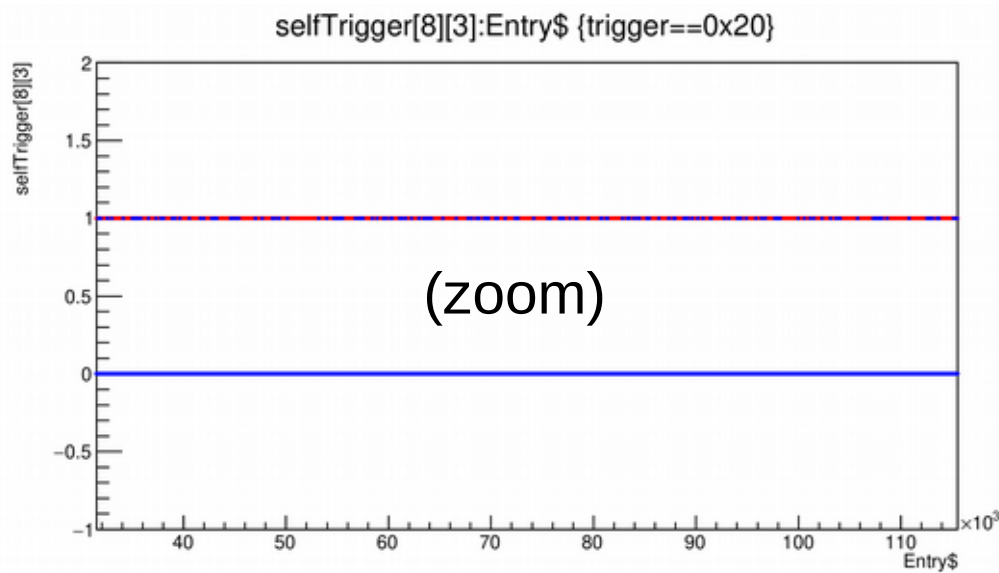
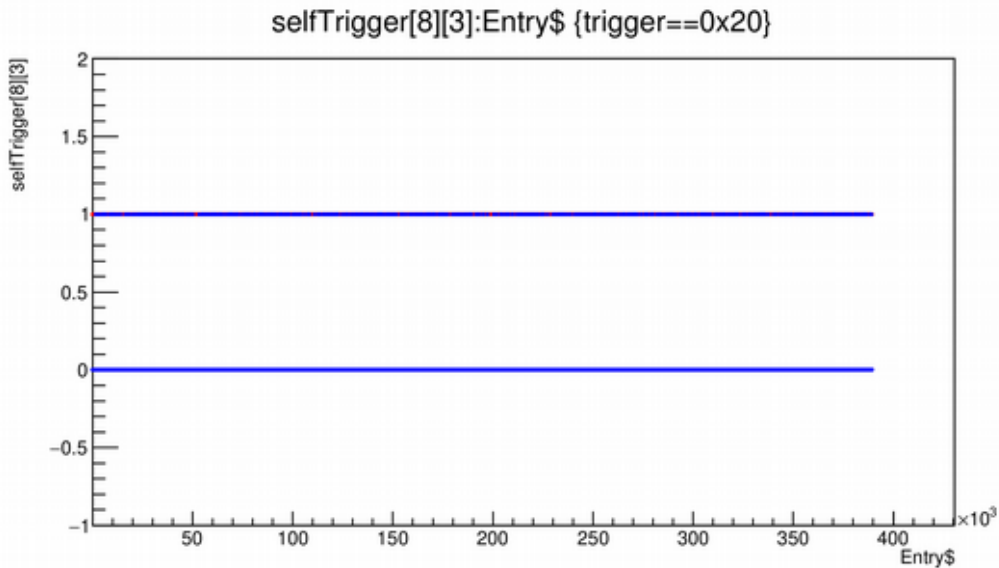
## SiPMs



Difficult to say what happens to SelfTrigger on chip 1 ( Small PD)...  
... but SelfTrigger on Chip 2 and 3 of the board (SiPM) works well!



# Small Prototype SelfTrigger on board 3 - chip 0

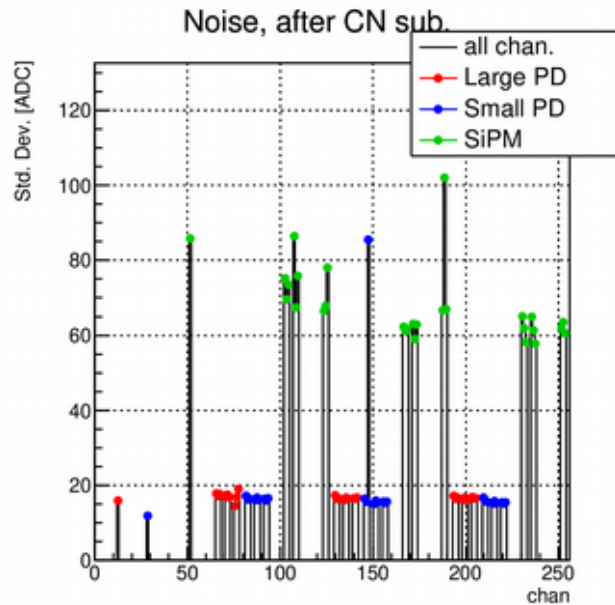
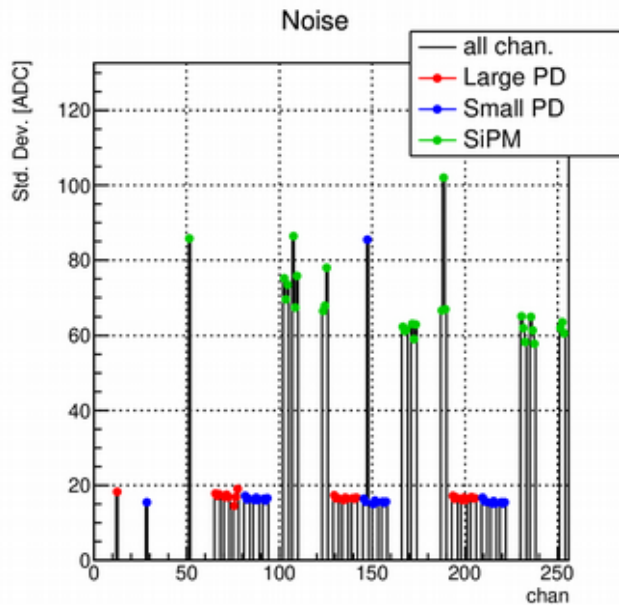


- SelfTrigger connected to central Large PDs of Layer 2
- SelfTrigger connected to central Large PDs of Layer 3

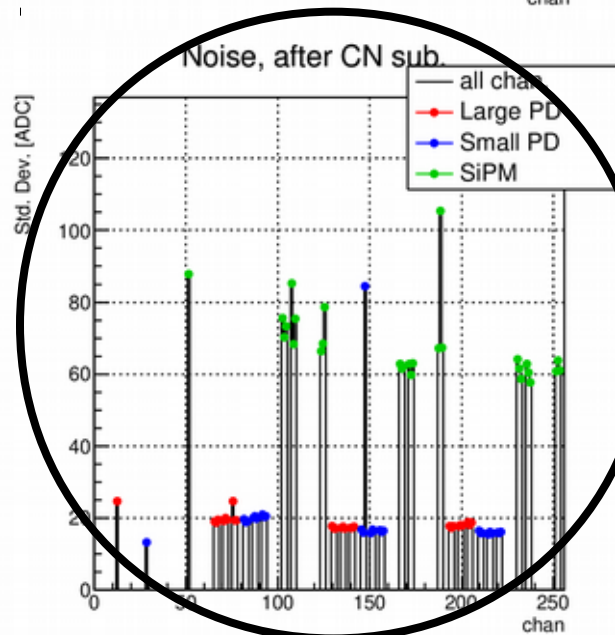
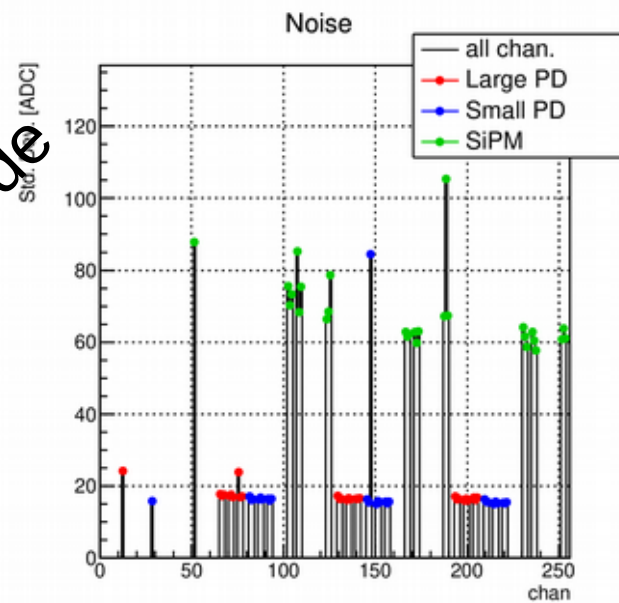
There is no clear trend as a function of the event number, so it seems to be likely due to a faulty chip

# Small Prototype Alternative Mode - Electric Noise

Original Mode



Alternative Mode

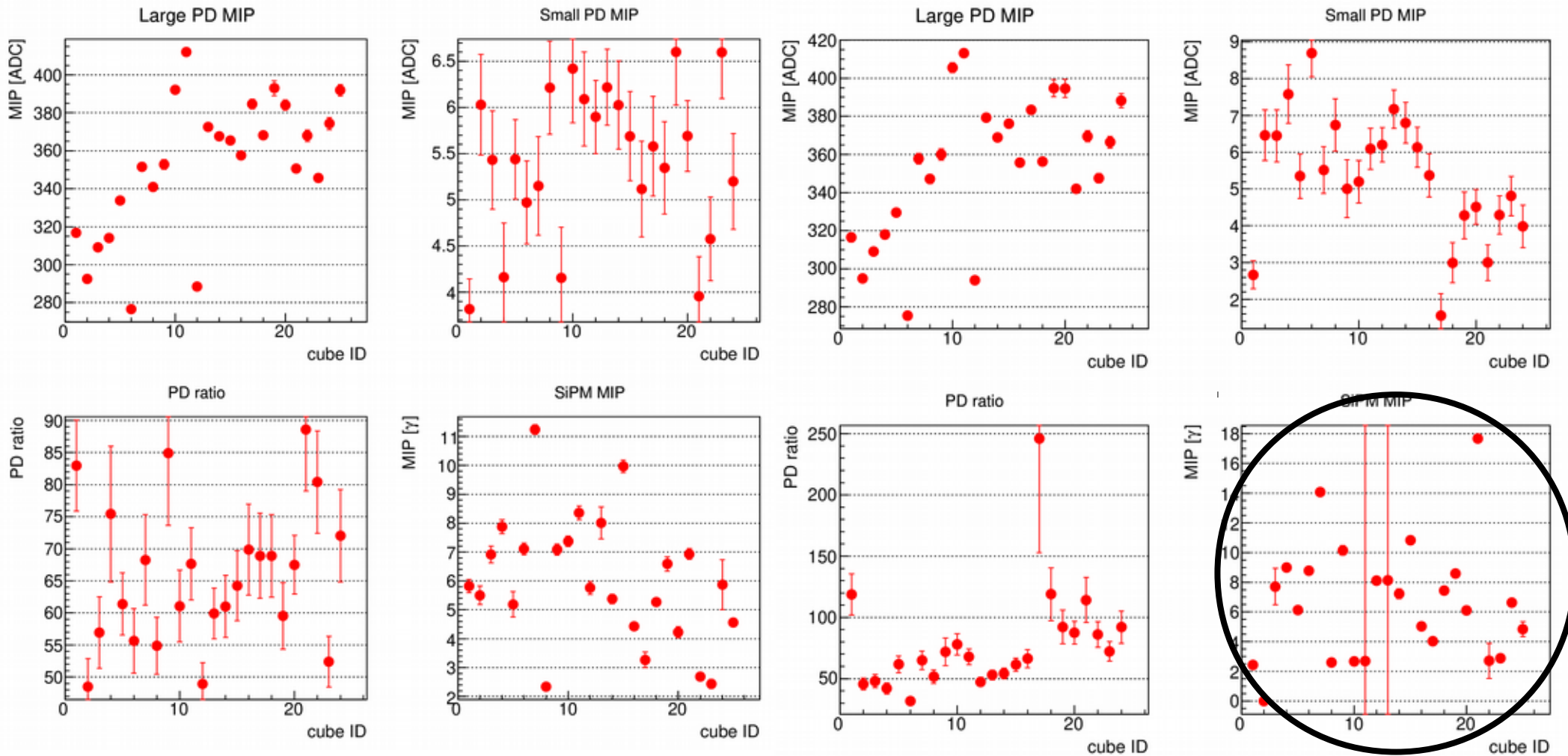


Problems with CN subtraction?

# Small Prototype Alternative Mode - Summary

## Original Mode

## Alternative Mode



Fit parameters  
must be tuned