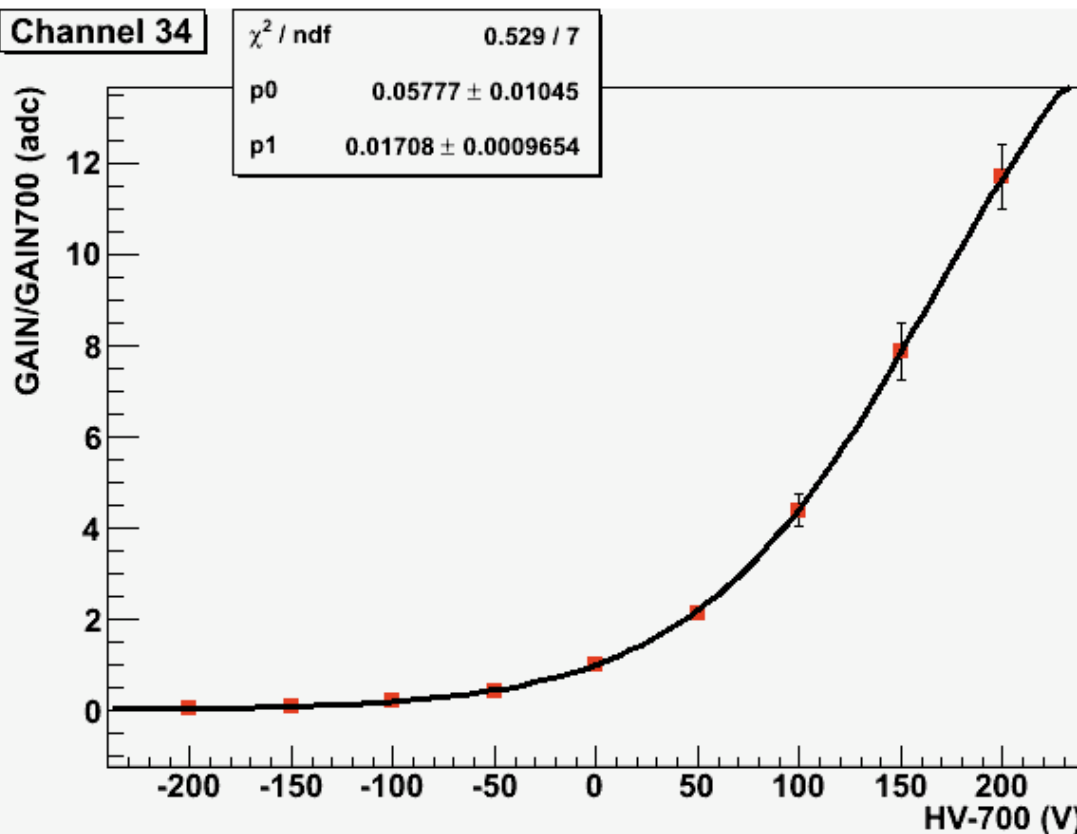


Study of signal pulse height
as a function of PMT HV

(A/A_{700V}) vs $(HV - 700V)$

Channel 34



Fit function:

$$f(x) = \frac{1 + P_0}{e^{-xP_1} + P_0}$$



$$f(x = 0) = 1$$

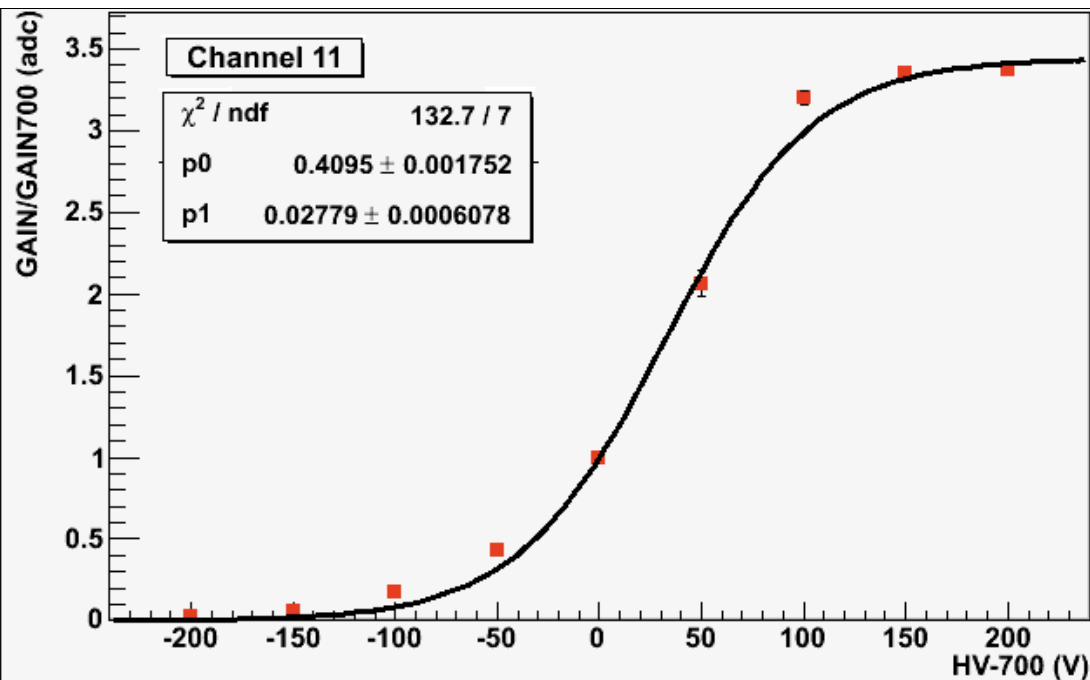
$$f(x \rightarrow -\infty) \rightarrow 0$$

Set parameter P_0



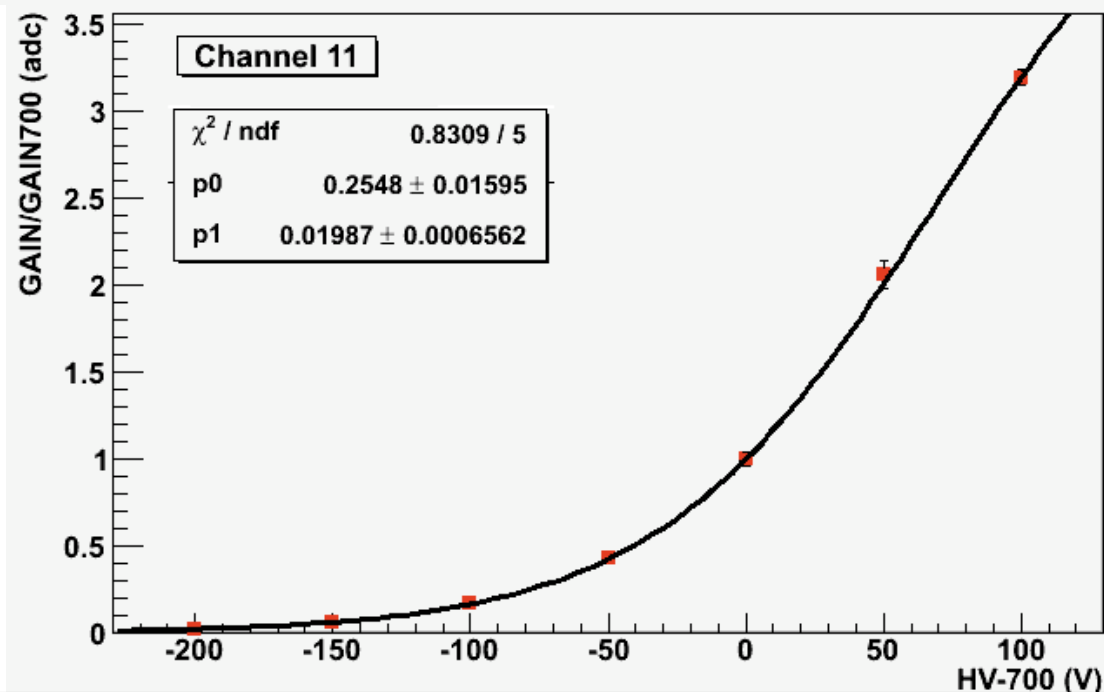
$$f(x \rightarrow +\infty) \rightarrow \tilde{A}_{max}$$

$$\frac{1 + P_0}{P_0} = \tilde{A}_{max} \Rightarrow P_0 = \frac{1}{\tilde{A}_{max} - 1}$$

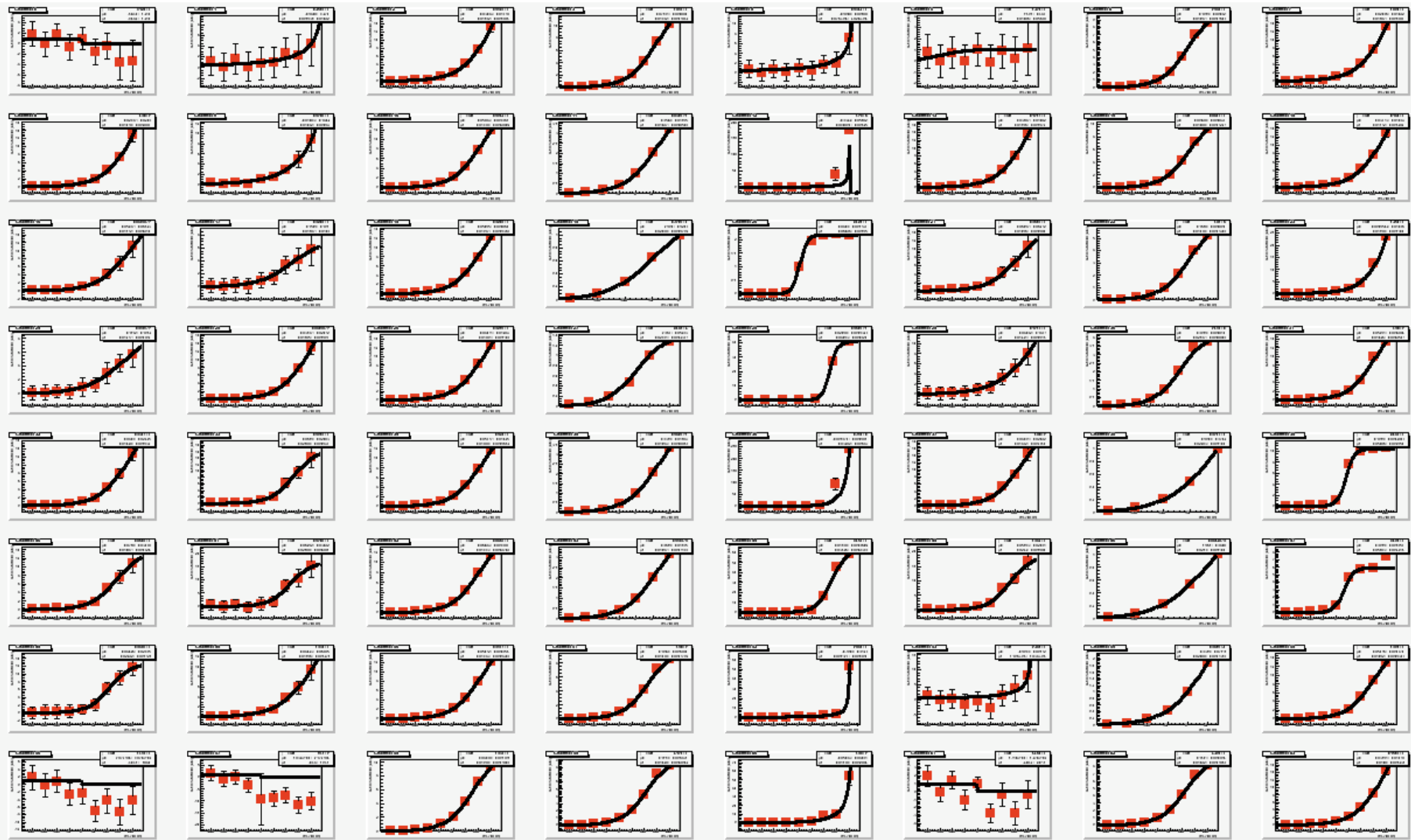


Rise from pedestal and saturation cannot be fully described by the same exponential

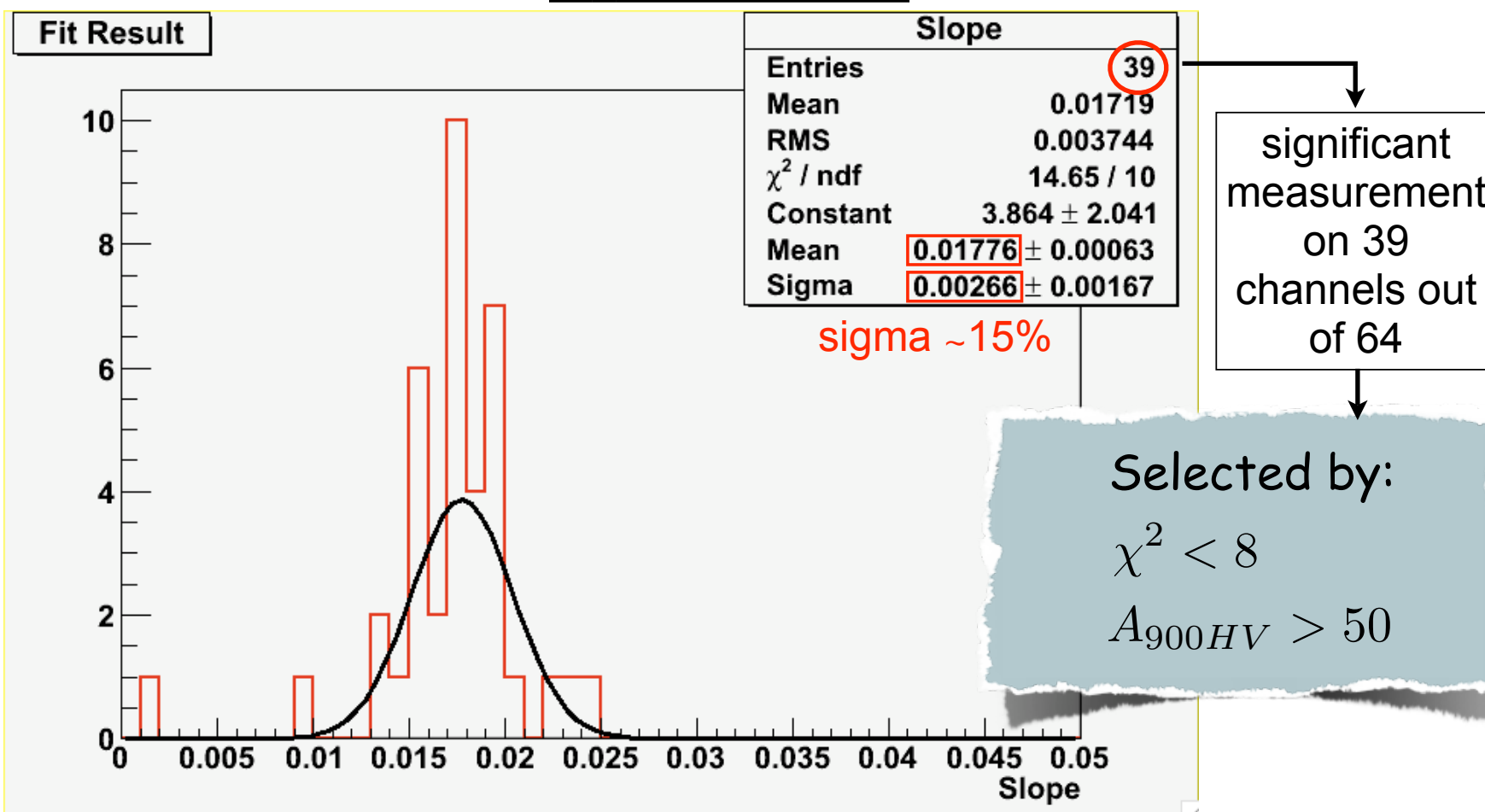
Fit is good if we remove the points at saturation



Fit results



P₁ results



Gain attenuation factor for e^{xP1} :

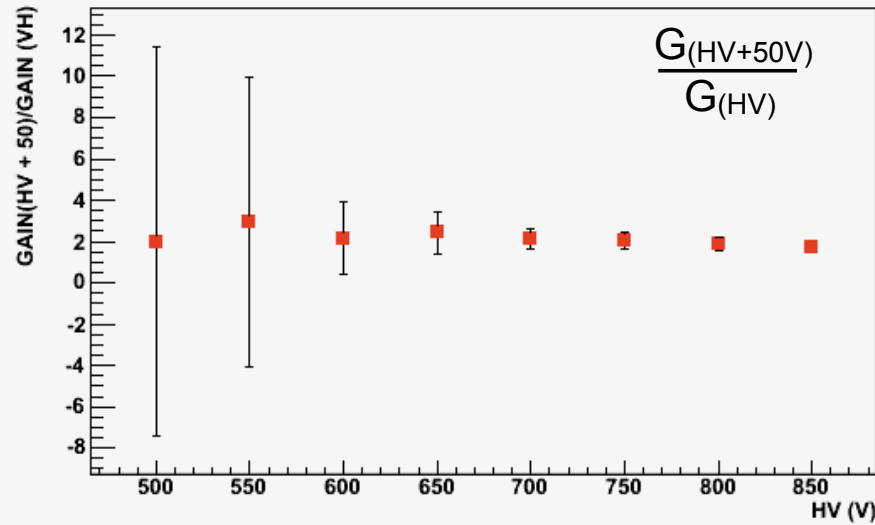
- ~ 2,4 for $\Delta HV = -50$ V
- ~ 5,9 for $\Delta HV = -100$ V
- ~ 35 for $\Delta HV = -200$ V

Parameter P1 from fit

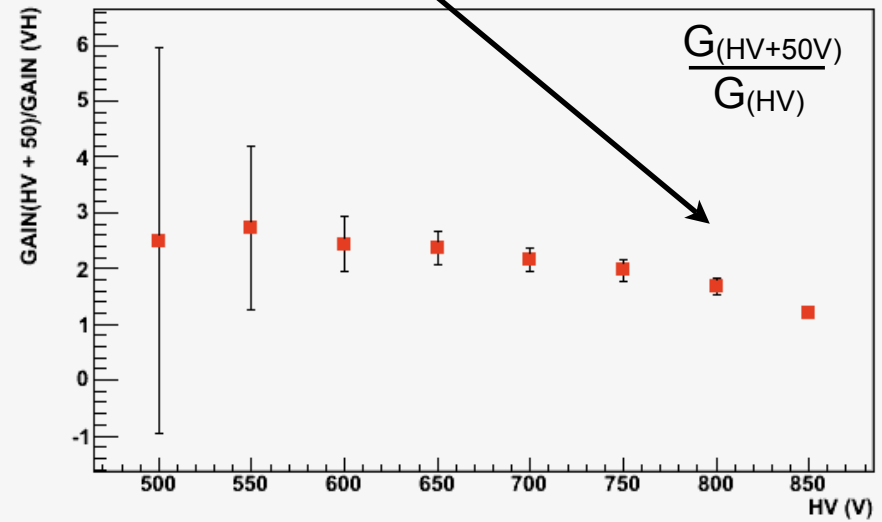
Gain attenuation factor for $\Delta HV = -50$ V

~ 2,4 far from saturation

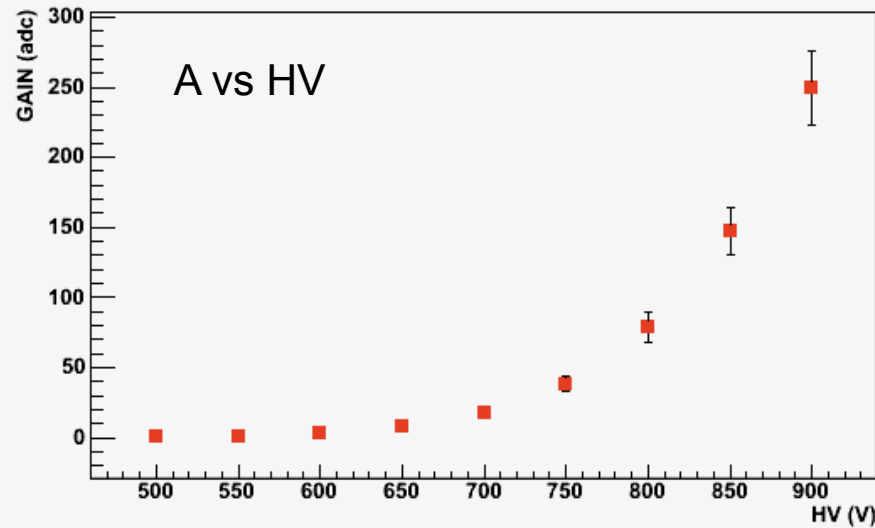
Channel 13



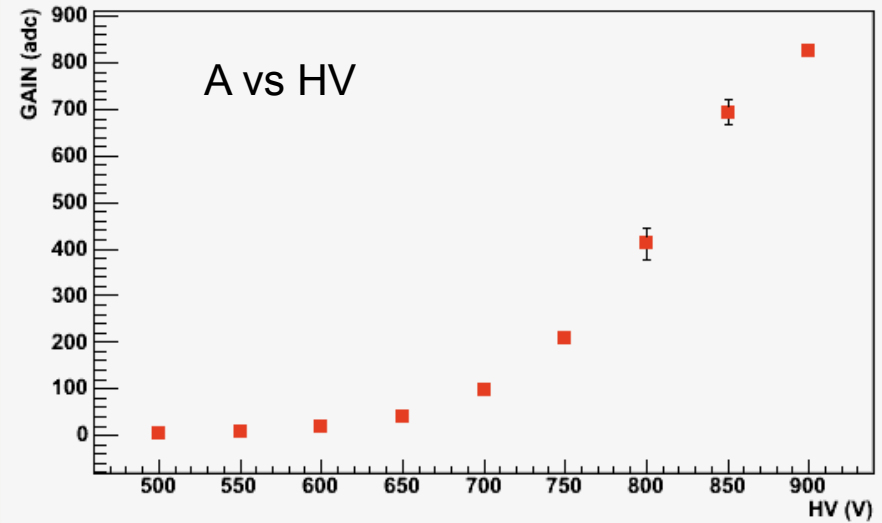
Channel 51



Channel 13



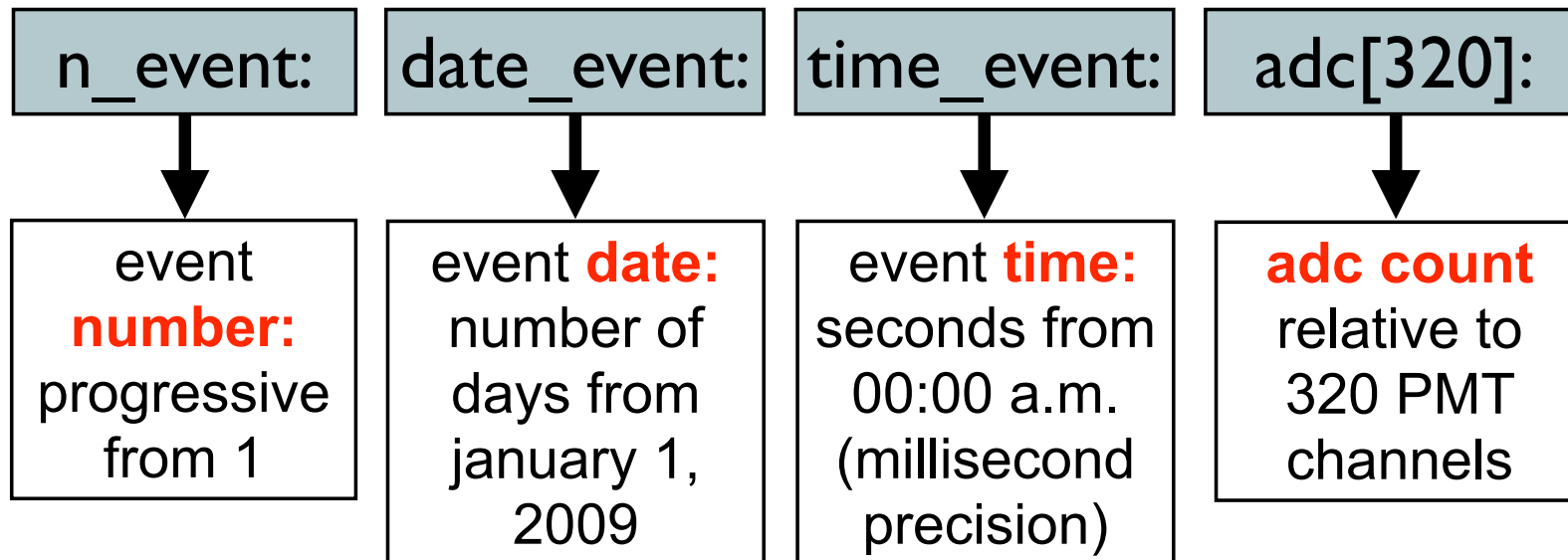
Channel 51



Structure of DAQ SW:
output TTree.root

file.root: TTree

```
tree->Branch("n_event", &n_event, "n_event/I");  
tree->Branch("date_event",&date_event,"date_event/I");  
tree->Branch("time_event",&time_event,"time_event/D");  
tree->Branch("adc", &adc, "adc[N_CHANNELS]/I");
```



Acquisition problem (?)

nwords: number of data vector elements in binary file

Evento numero: 10
13:45:25.625
nwords = 330

Evento numero: 11
13:46:5.359
nwords = 74

Evento numero: 12
13:46:5.39
nwords = 330

For 5
MAROC
boards

$$\begin{aligned} \text{nwords} &= \\ &64\text{ch} \times 5 \\ &+ \\ &5 \text{ Header} \\ &+ \\ &5 \text{ Trailer} \\ &= 330 \end{aligned}$$

few per cent
of wrong
events

To do

- 1) Read TTree
(plot adc[320] vs #ch)
- 2) Pedestals subtraction
(take pedestal values from five .txt files)
- 3) Unfolding