# Recap Analysis

RIKEN/RBRC
Itaru Nakagawa

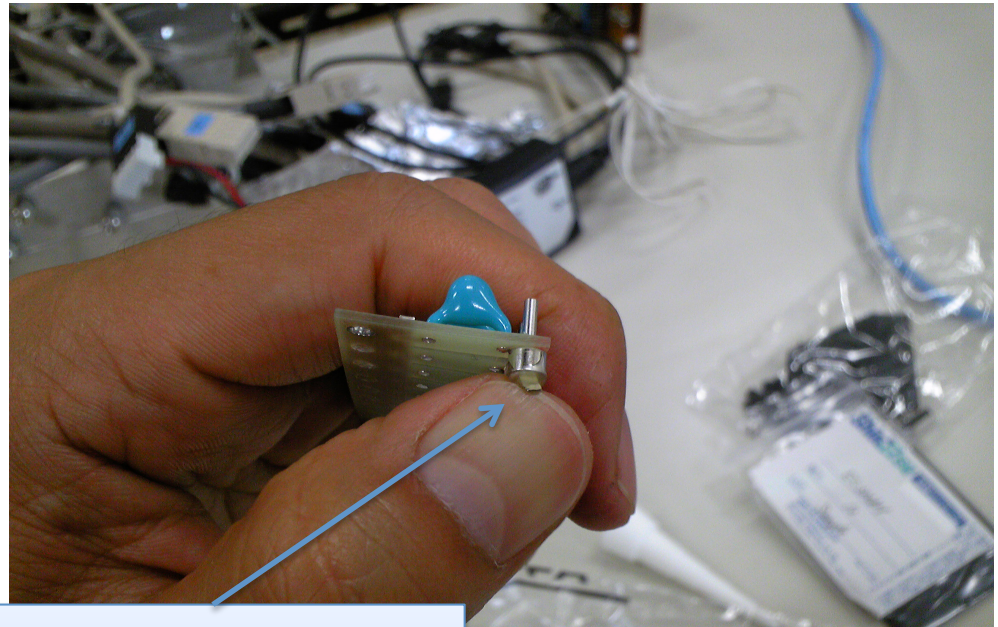
# Conductive Rubber

Attempted to cut in RIKEN using super sonic cutter.

Achieved Precision ~ ± 0.8mm

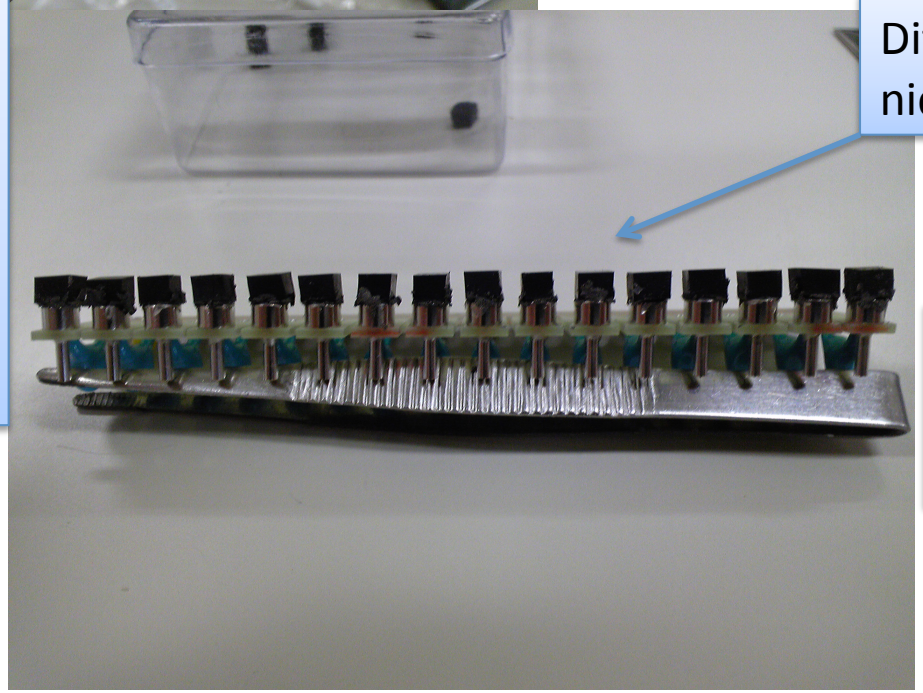
| 抵抗値 | 富士高分子 | 信越化学 | |
|---|---|---|---|
| | | EC-300BH | EC-300BM |
| 3x3x3$^{t}$ mm | ~1 Ω | ~80 Ω | ~40 Ω? |
| カタログ値 | 0.02 Ω | 16 Ω | 8 Ω |

# Conductive Rubber Assembly



Removed 2mm thick Fuji Polymer Made Conductive rubber and replaced with **ShiEtsu EC-300BH**.

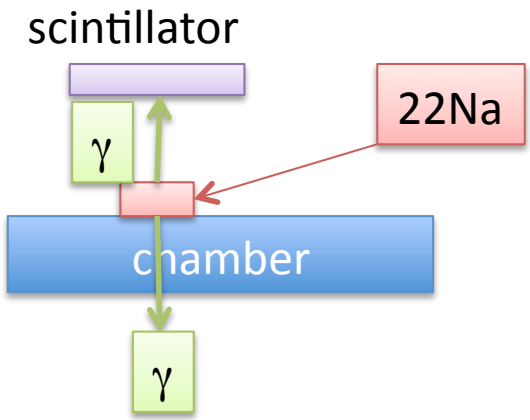
Silver paste glued Fuji Polymer's rubber very well. Sticky enough for practical use for 2x2x2$^{t}$mm rubber.
Not tested 3x3x3$^{t}$mm one yet.



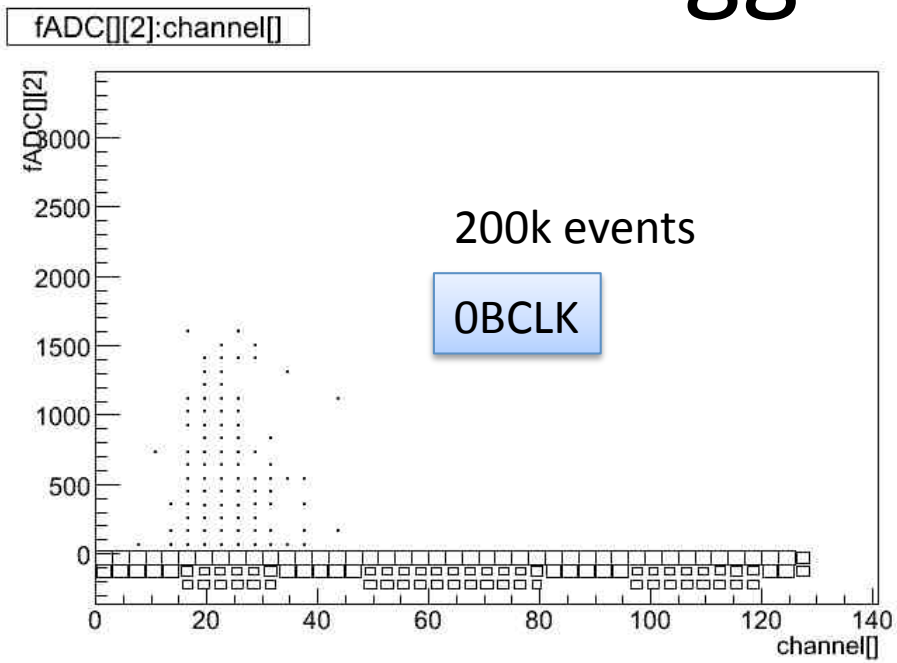
Difficult to line up cubes nicely.

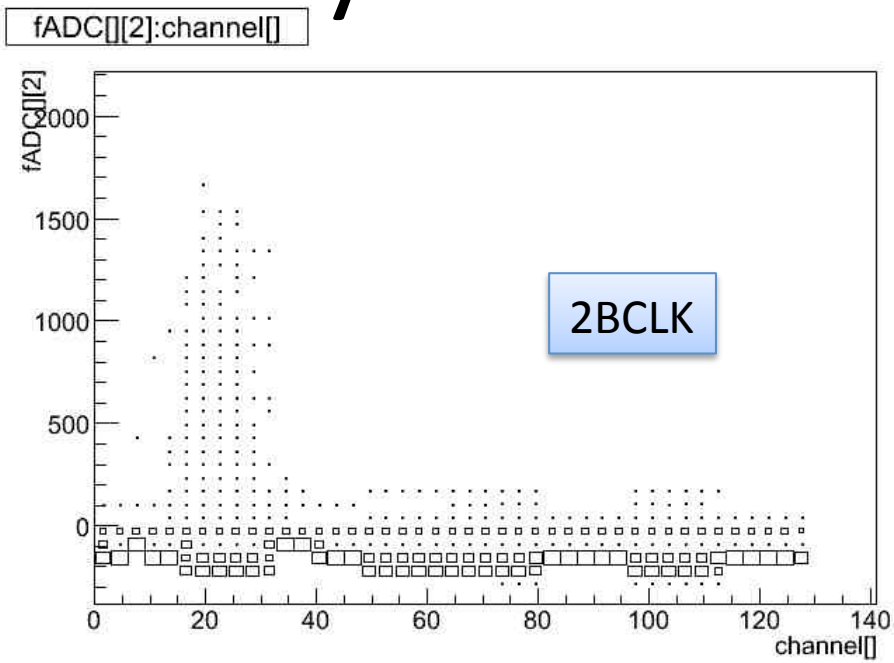
EC-BHの残りとEC-BMの打ち抜きはソッコー（株）に依頼。

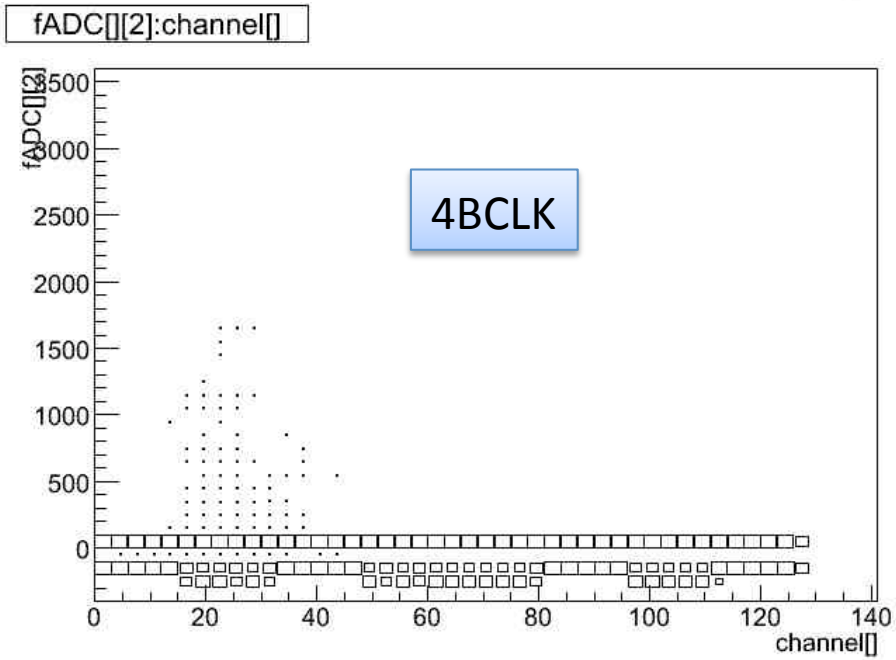
# Trigger Improvement 22Na

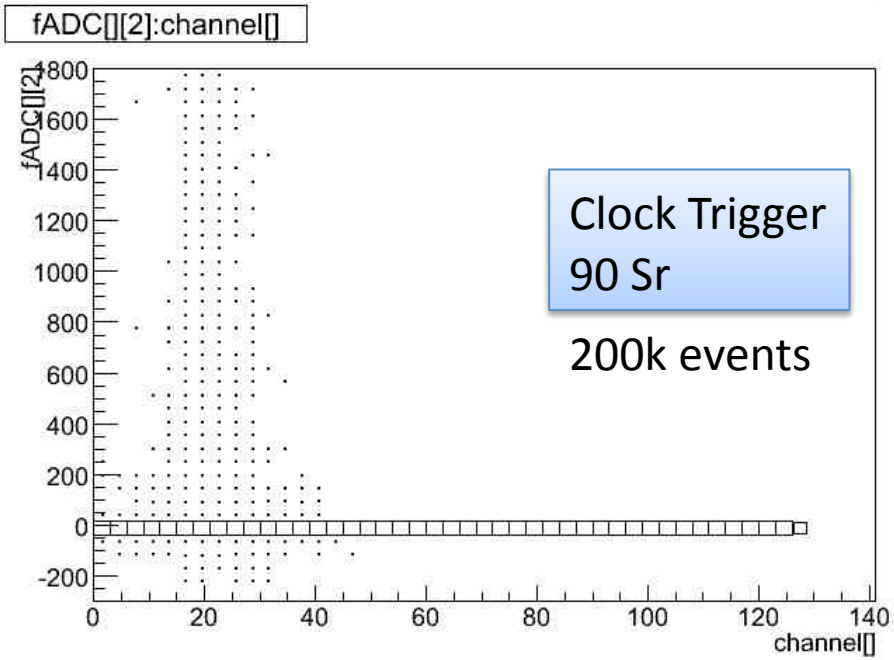


# Scinti Trigger Latency Scan



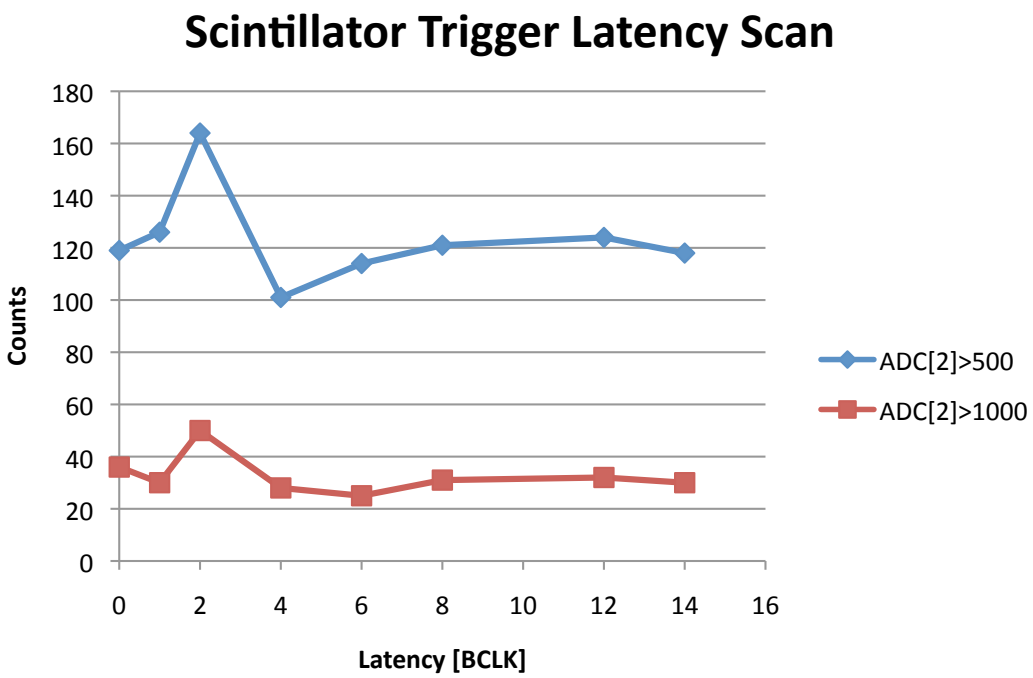



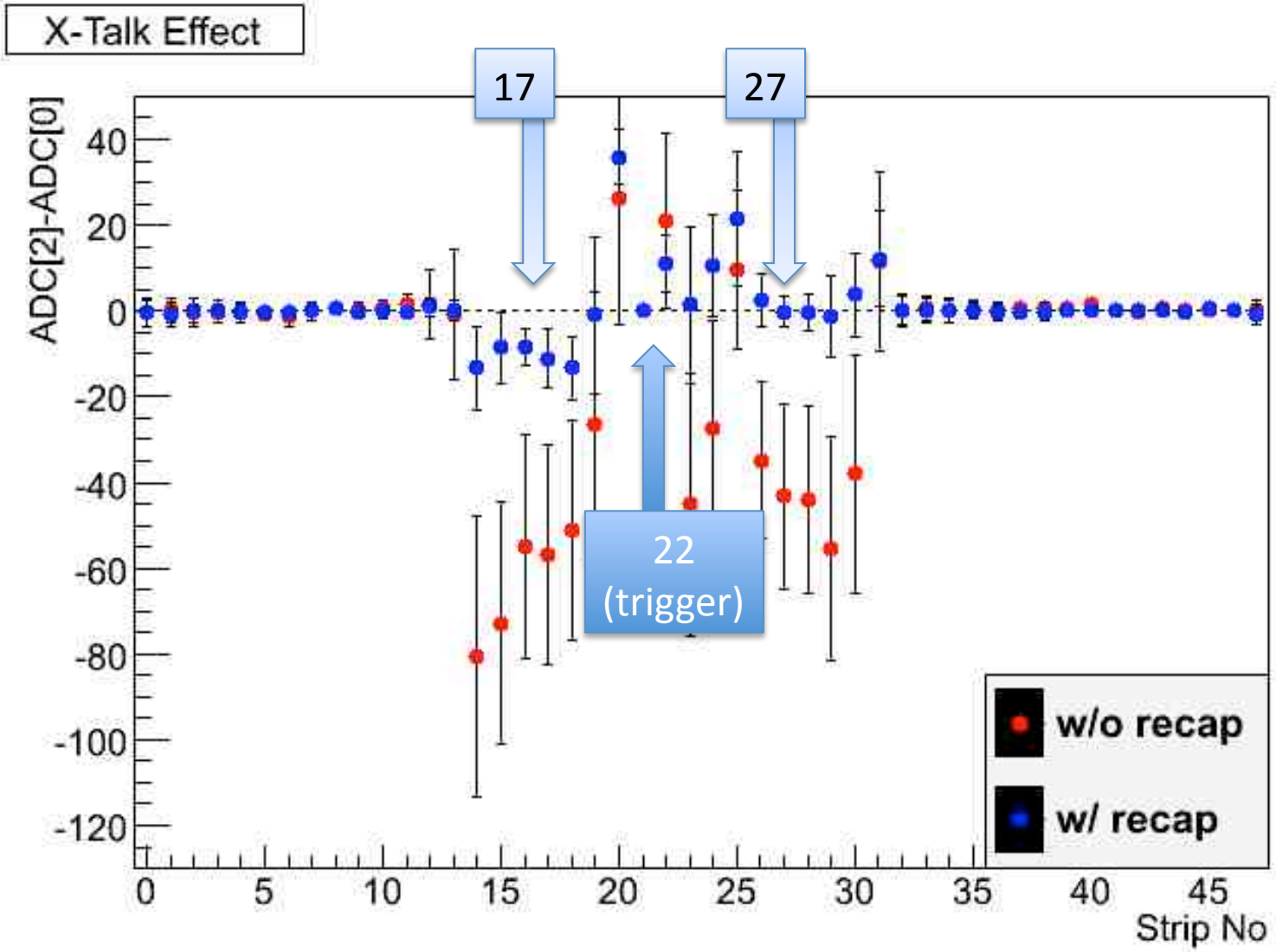
# Latency Scan Results

| Latency [BCLK] | ADC[2]>500 | ADC[2]>1000 |
|---|---|---|
| 0 | 119 | 36 |
| 1 | 126 | 30 |
| 2 | 164 | 50 |
| 4 | 101 | 28 |
| 6 | 114 | 25 |
| 8 | 121 | 31 |
| 12 | 124 | 32 |
| 14 | 118 | 30 |
| clock | 1884 | 661 |

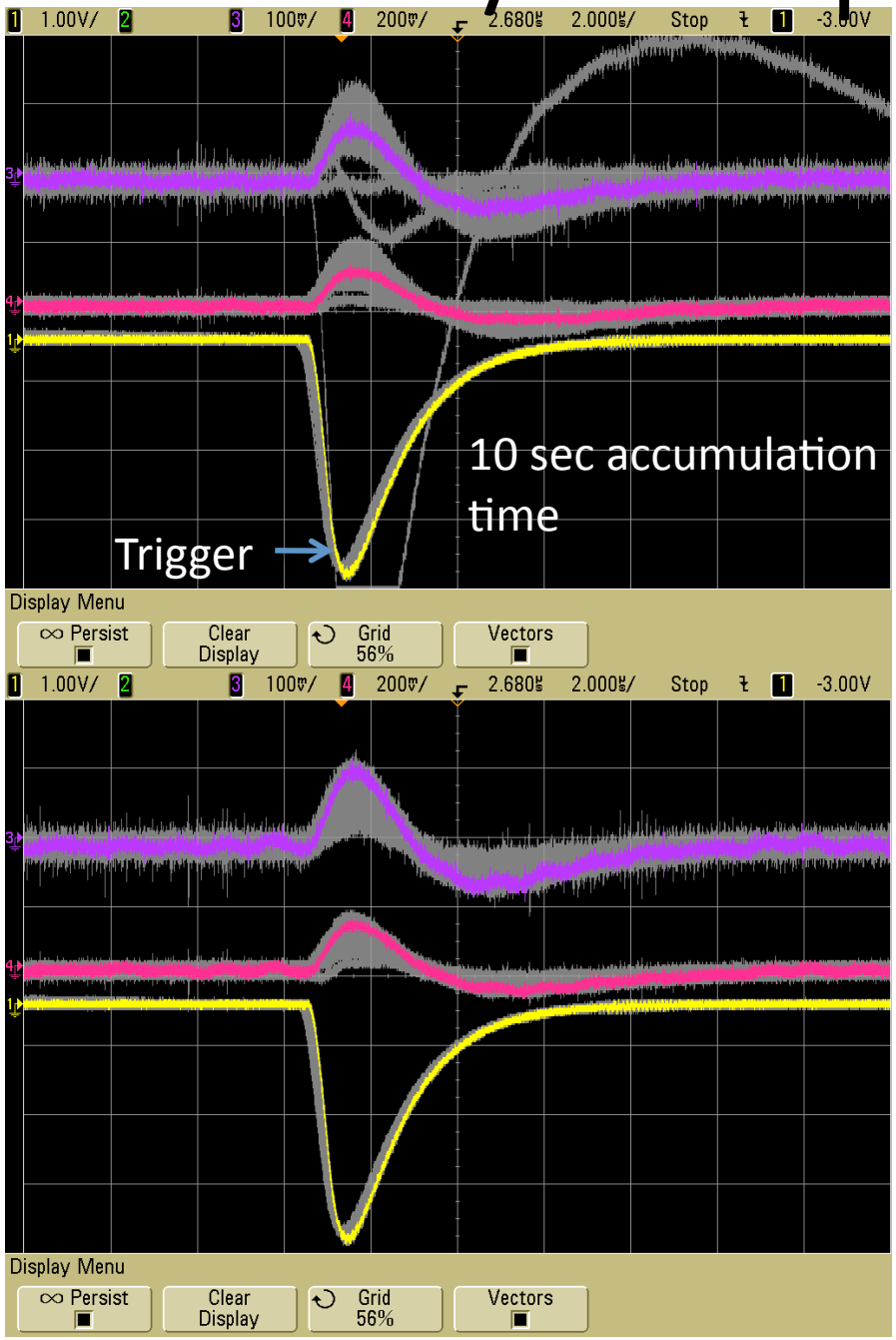


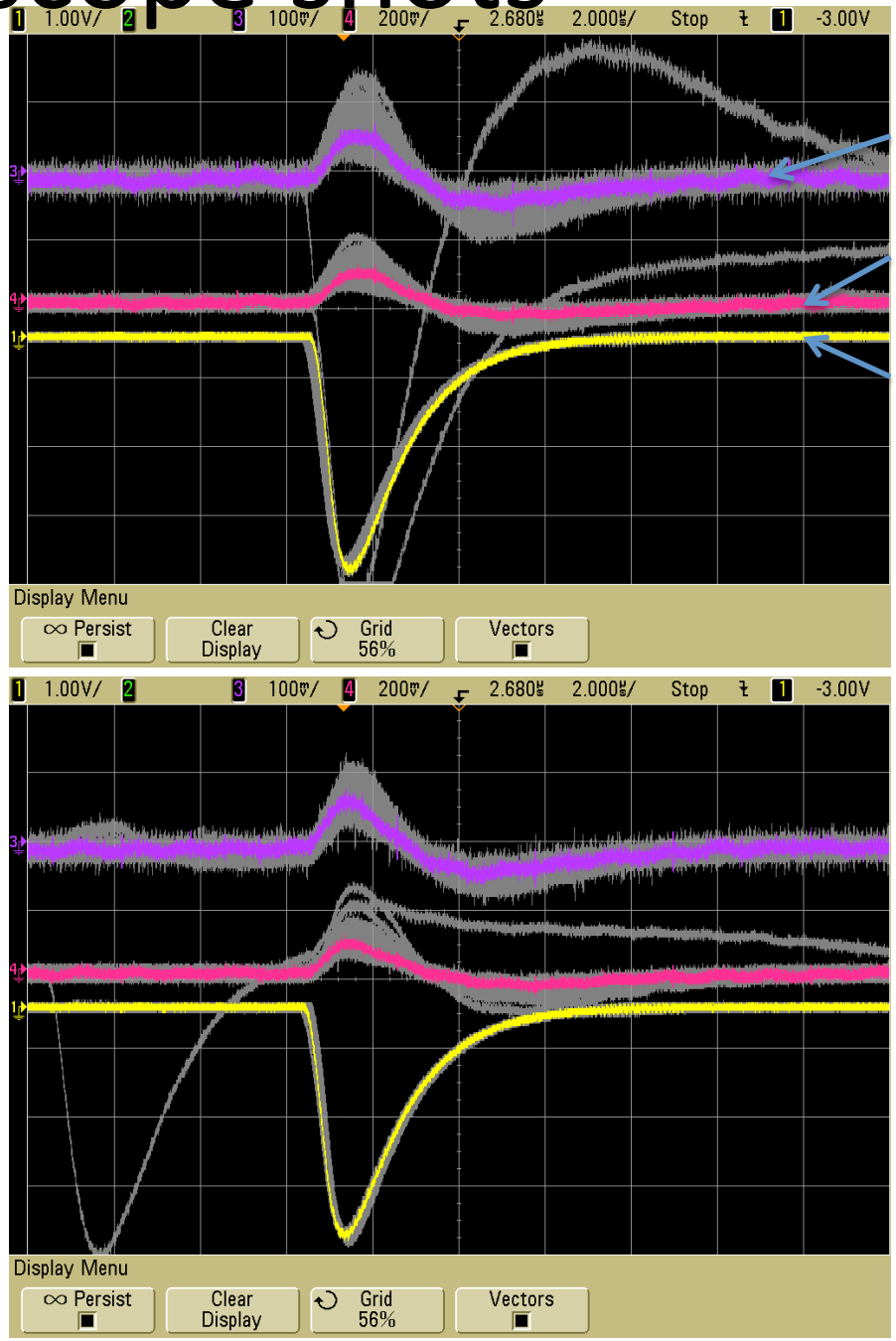
# X-talk Analysis

# Sampled Strip



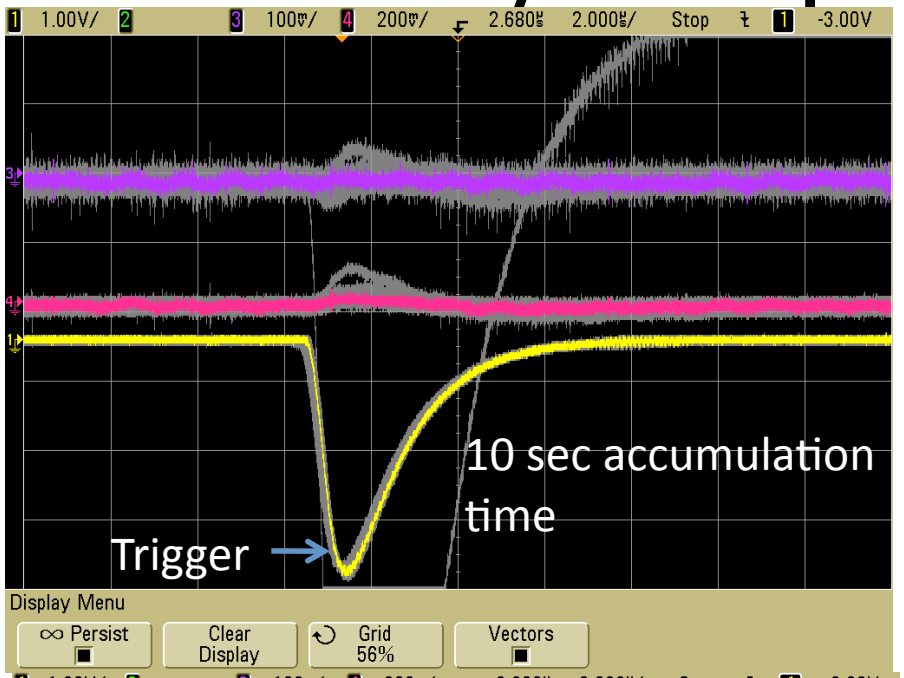
# Source @ 21 ~ 22 w/o recap scope shots

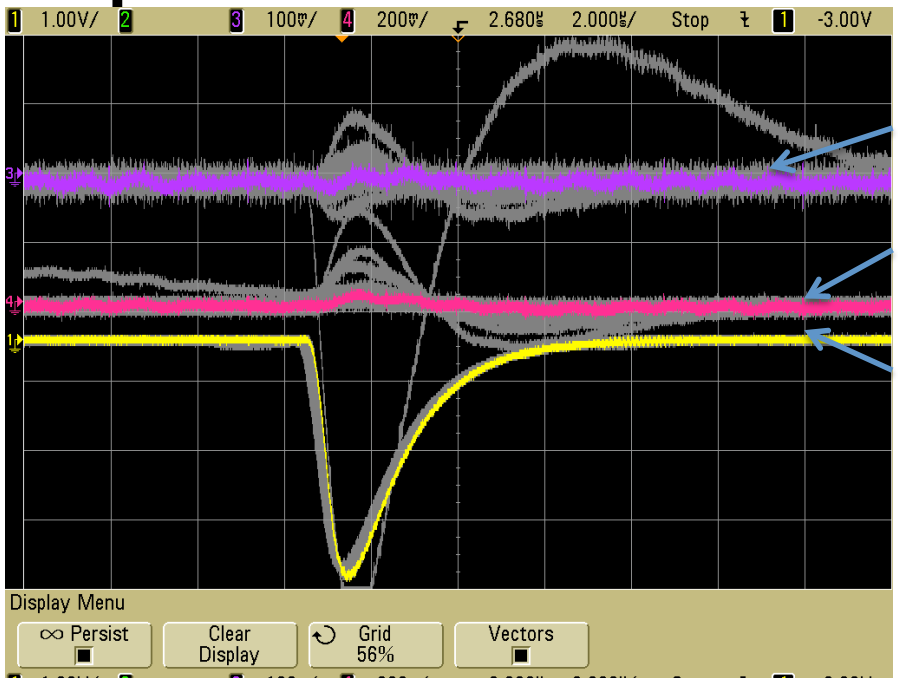


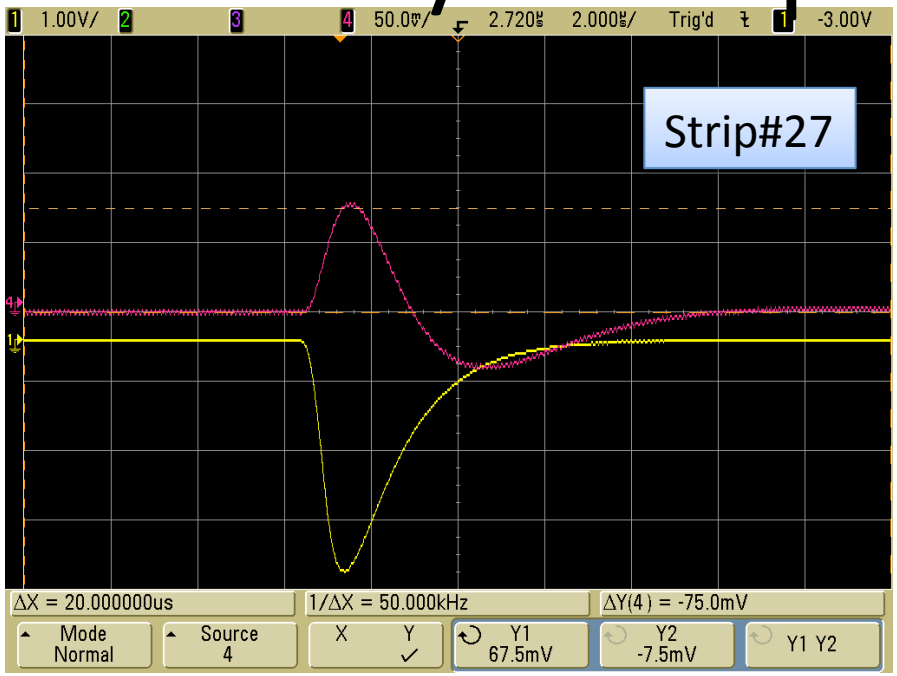
Source @ 21 ~ 22

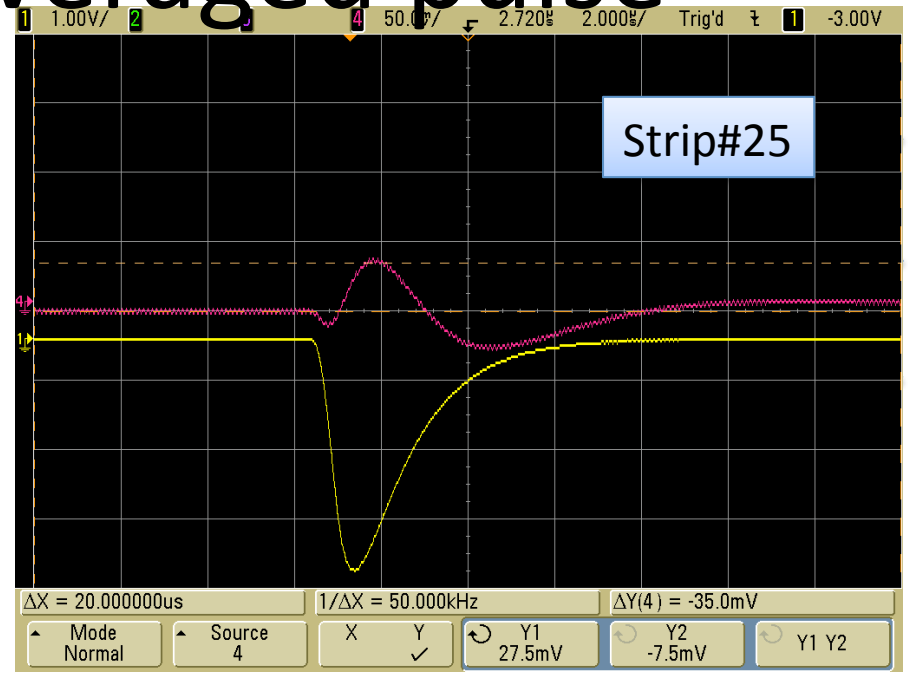
# w/ recap scope shots

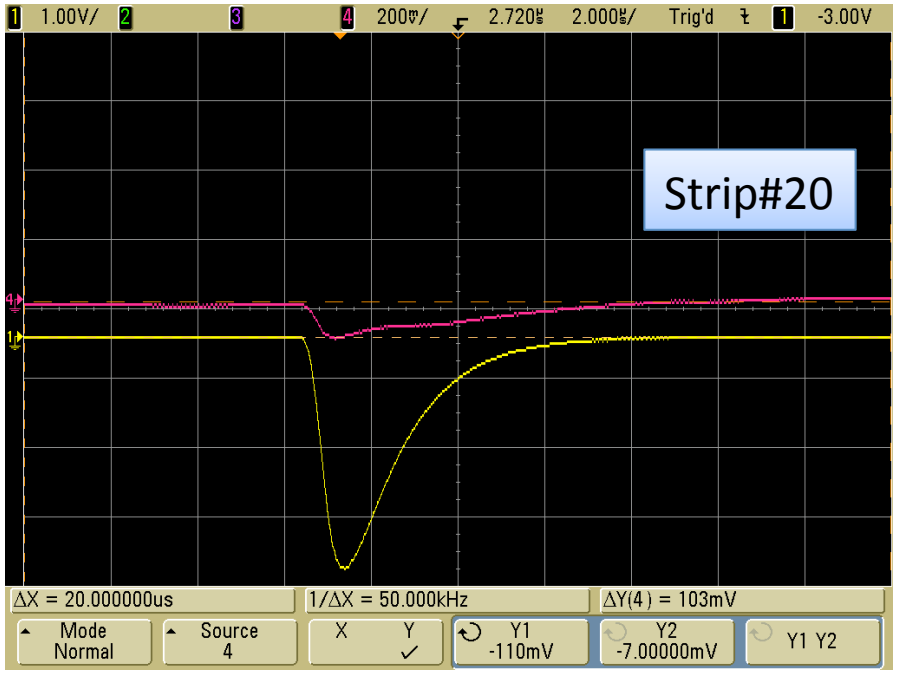


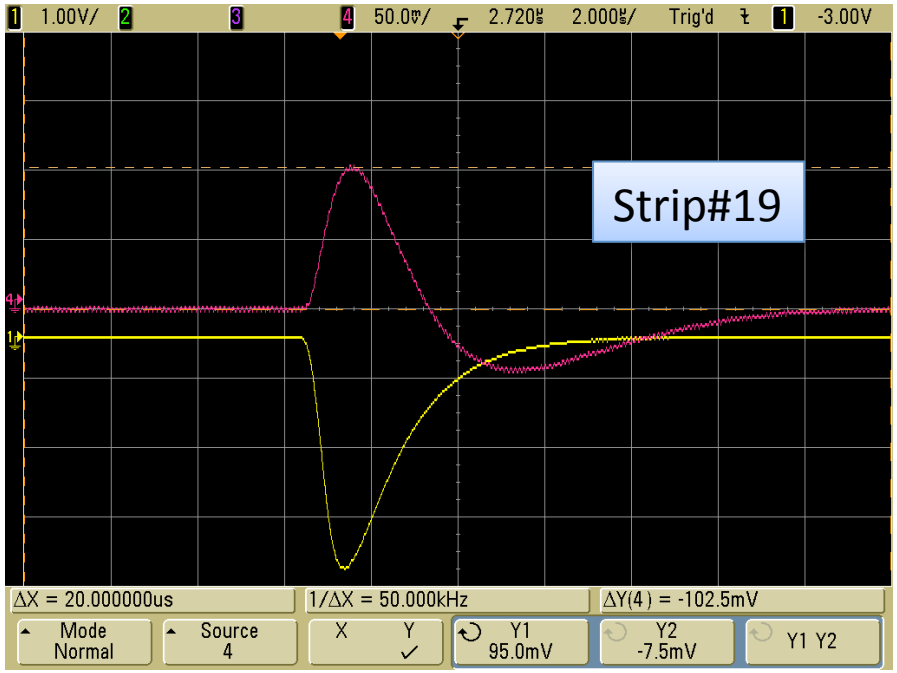



# Source @ 21 ~ 22 w/o recap averaged pulse



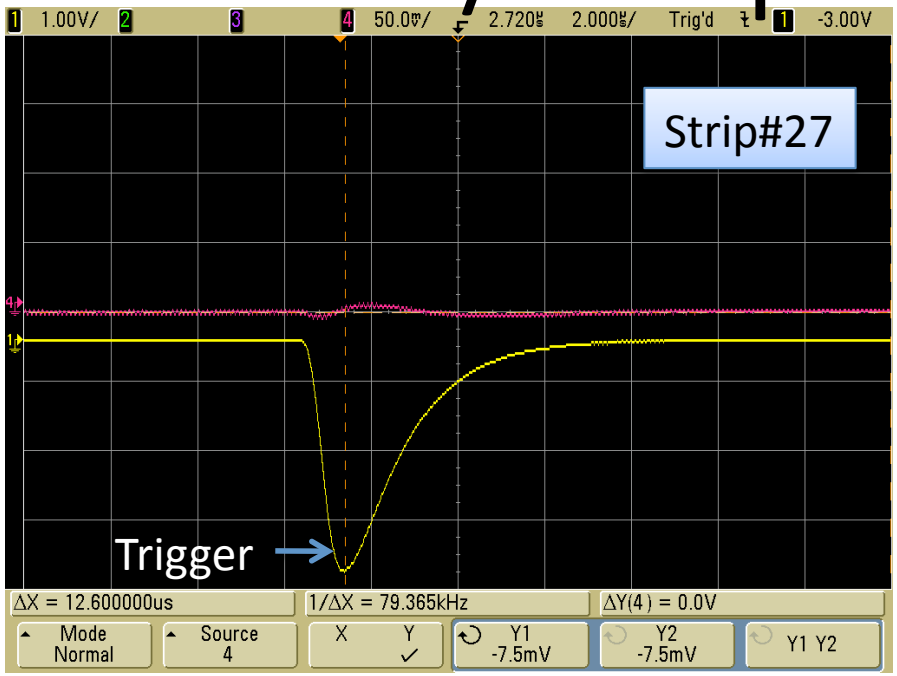



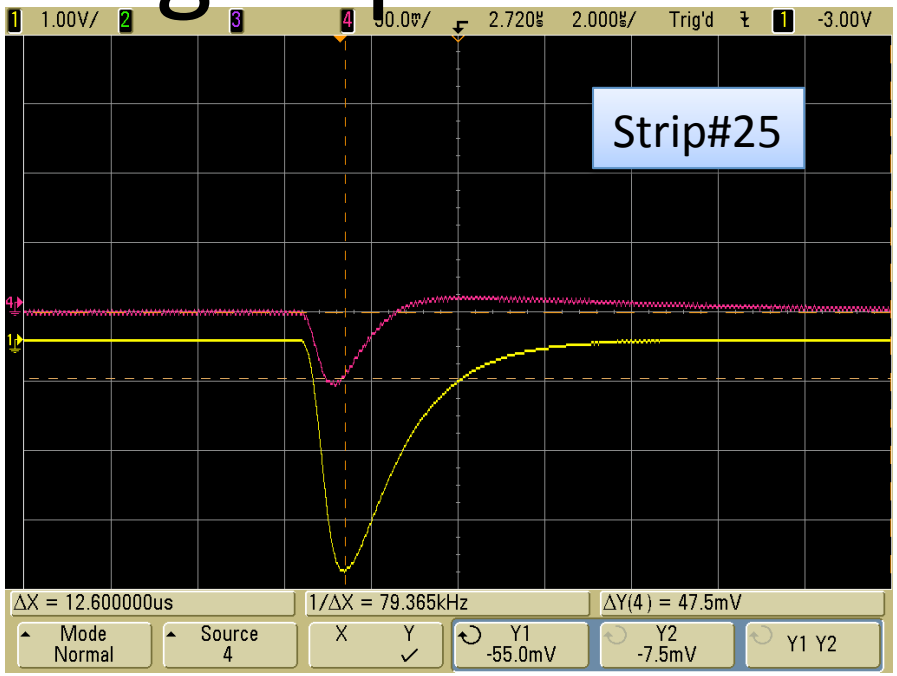



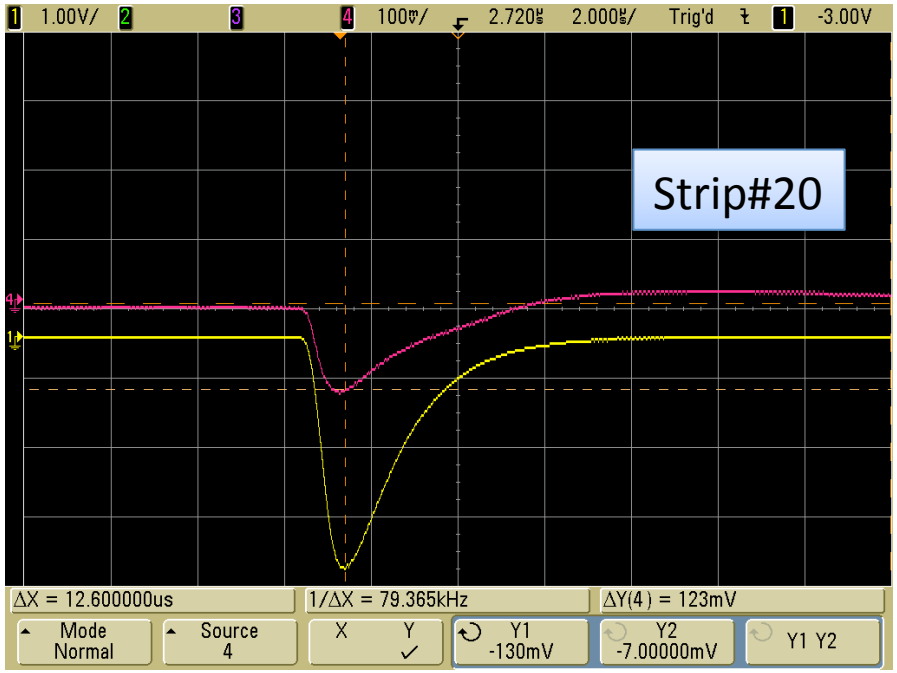



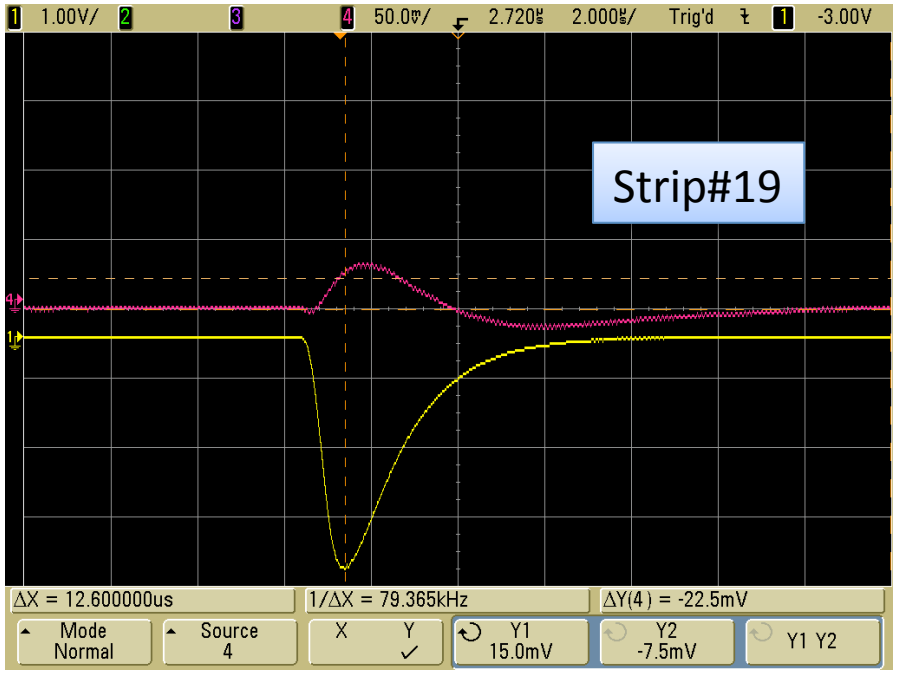
Source @ 21 ~ 22

# w/ recap averaged pulse



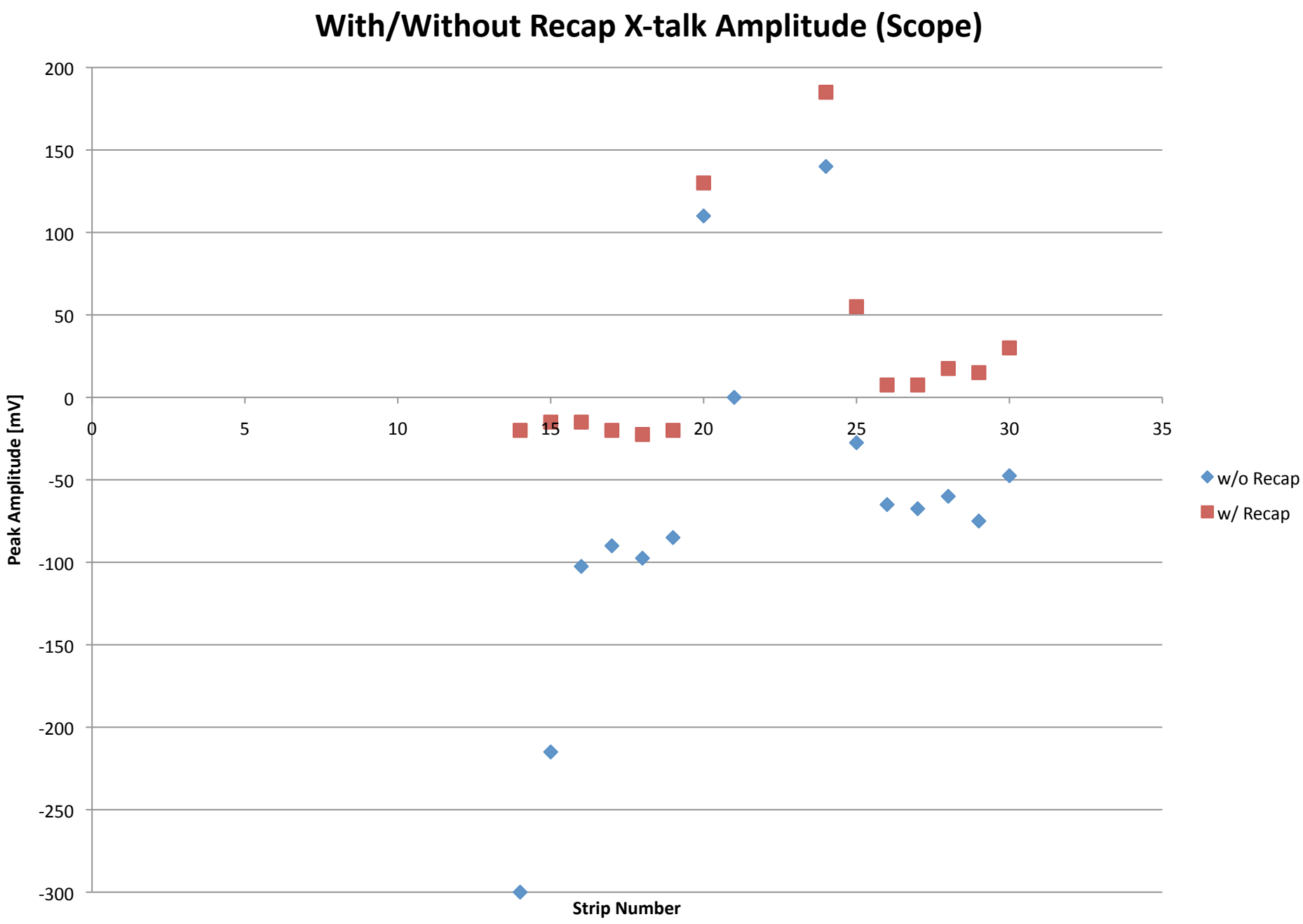



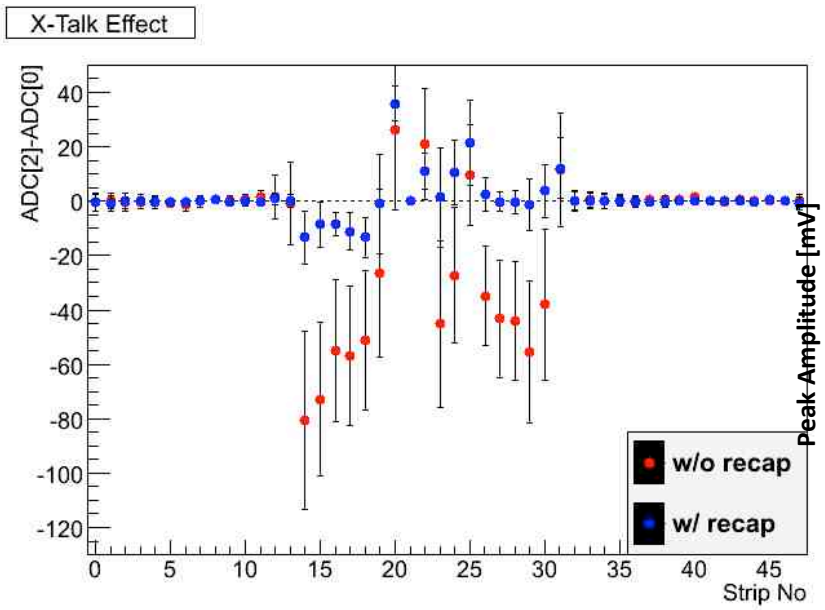



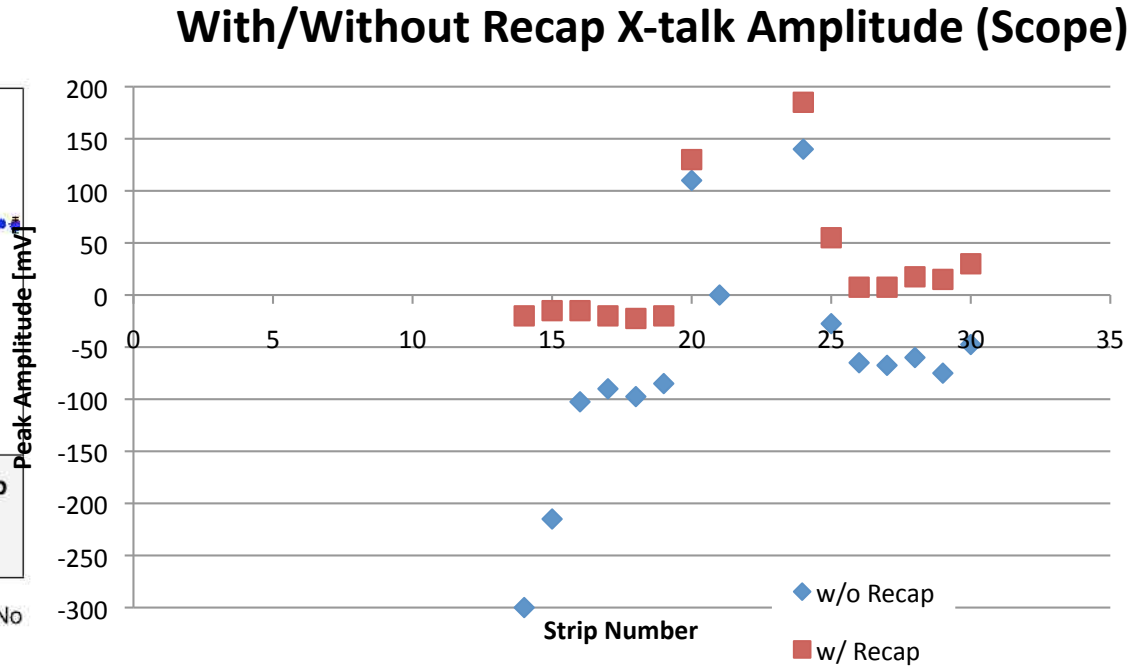
# Scope Measurements Summary

| | With Out Recap Clamp | | | | w/ Recap | |
|---|---|---|---|---|---|---|
| | | Ave. Amp [mV] | | Ave. Amp [mV] | Ave. Amp [mV] | With/Without |
| Board # | Strip# | pk2pk | 2nd meas. | from GND | from GND | Ratio |
| 31 | 10 | 7 | 6 | 0 | 0 | |
| 32 | 11 | 7 | 7 | 0 | 0 | |
| 33 | 12 | 7 | 7 | −7.5 | 0 | |
| 34 | 13 | 27 | | 2.5 | 0 | |
| 35 | 14 | 440 | 470 | 300 | 20 | 0.07 |
| 36 | 15 | 380 | 400 | 215 | 15 | 0.07 |
| 37 | 16 | 155 | | 102.5 | 15 | 0.15 |
| 38 | 17 | 143 | 152 | 90 | 20 | 0.22 |
| 39 | 18 | 130 | | 97.5 | 22.5 | 0.23 |
| 40 | 19 | 116 | | 85 | 20 | 0.24 |
| 41 | 20 | −146 | | −110 | −130 | 1.18 |
| 42 | 21 | 9999 | | 9999 | 9999 | 1.00 |
| 43 | 22 | 9999 | | 9999 | 9999 | 1.00 |
| 44 | 23 | 9999 | | 9999 | 9999 | 1.00 |
| 45 | 24 | −150 | | −140 | −185 | 1.32 |
| 46 | 25 | −163 | | 27.5 | −55 | −2.00 |
| 47 | 26 | 55 | | 65 | −7.5 | −0.12 |
| 48 | 27 | 100 | | 67.5 | −7.5 | −0.11 |
| 49 | 28 | 101 | | 60 | −17.5 | −0.29 |
| 50 | 29 | 151 | 142 | 75 | −15 | −0.20 |
| 51 | 30 | 91 | | 47.5 | −30 | −0.63 |
| 52 | 31 | −46 | −45 | −37.5 | −47.5 | 1.27 |
| 53 | 32 | 6 | | 0 | 0 | |
| 54 | 33 | 7 | | 0 | 0 | |
| 55 | 34 | 7 | | 0 | 0 | |
| | | | | | Average | −0.06 |

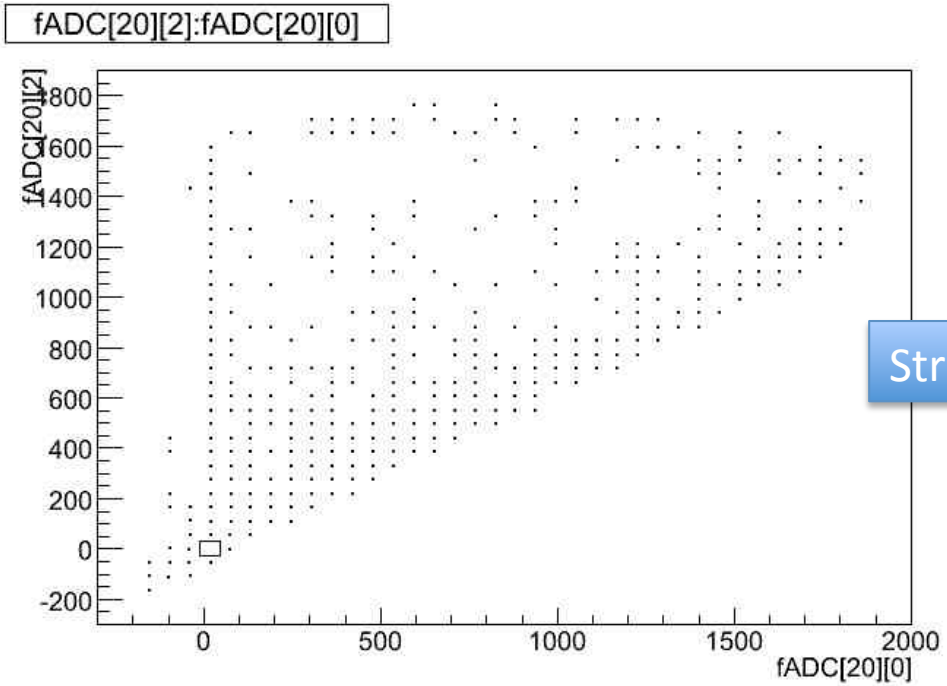

With/Without Recap X-talk Amplitude (Scope)
Peak Amplitude [mV]
200
150
100
50
0
-50
-100
-150
-200
-250
-300
0
5
10
15
20
25
30
35
Strip Number
w/o Recap
w/ Recap

# Consistency btwn Scope and CROC-DAQ measurements



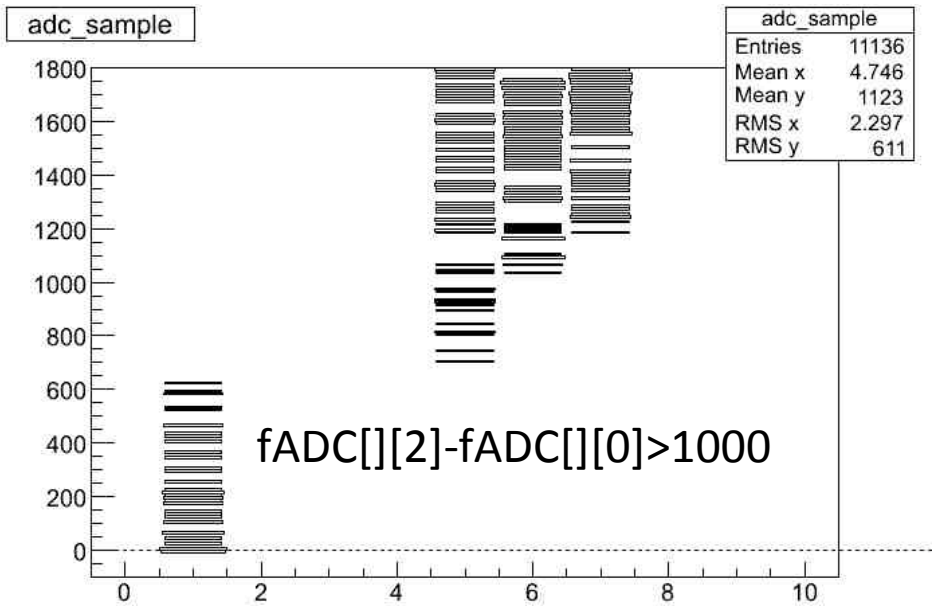



# Event Selection of Peak Strip

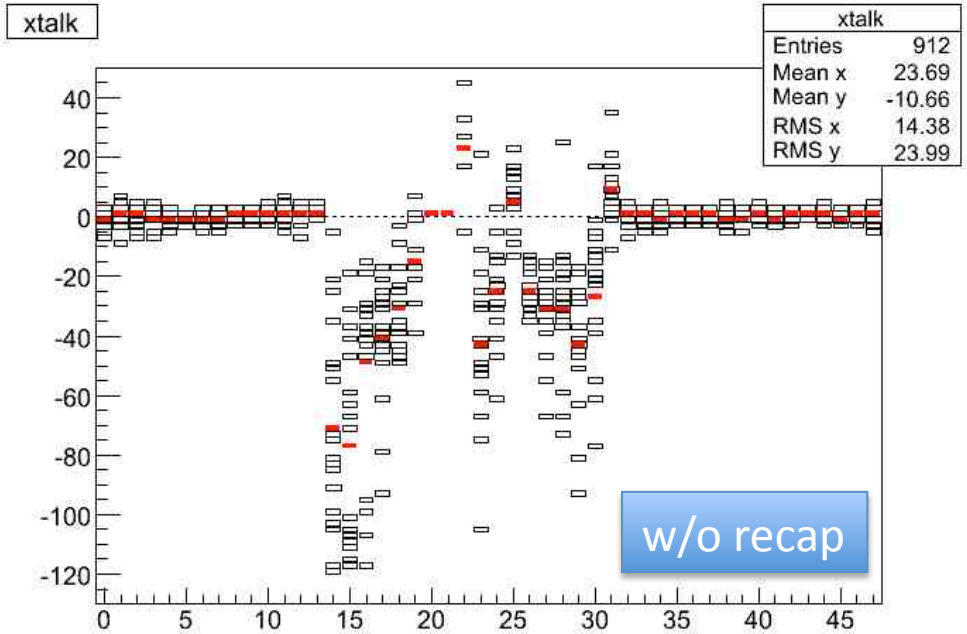


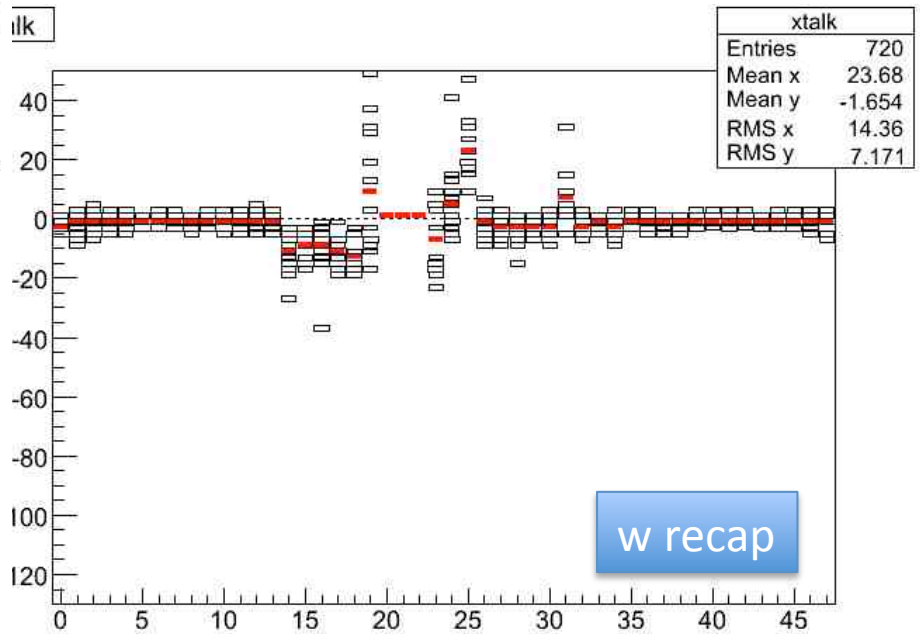

Strip=21

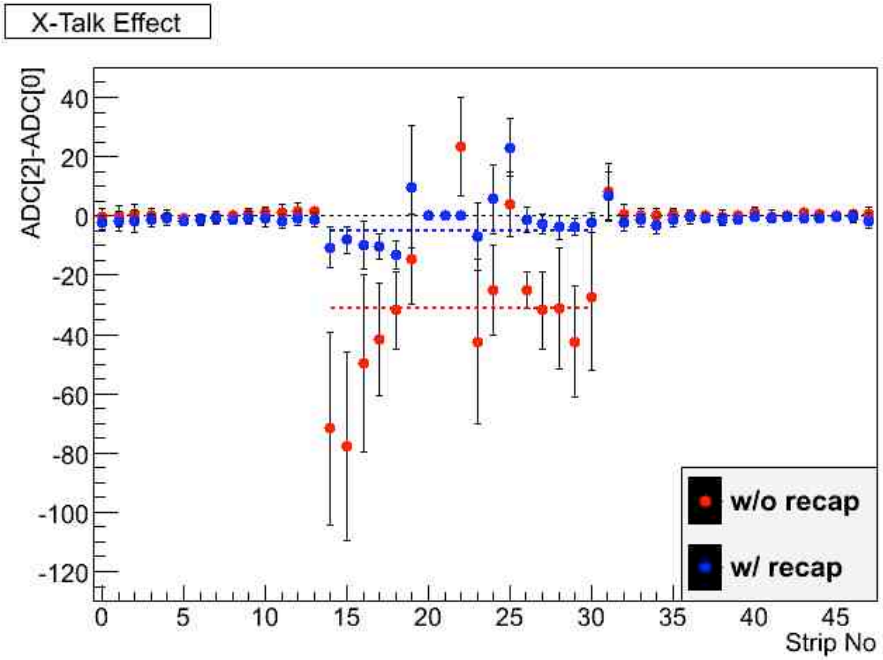
ある程度のタイミングセレクションは自動的に入って
いる。fADC[][2]>fADC[][3]を要求するとイベントはなくなって
しまう。つまりfADC[][2]でピークを迎える事象はゴミイベントのみ。



# Operating Voltage at 1800V

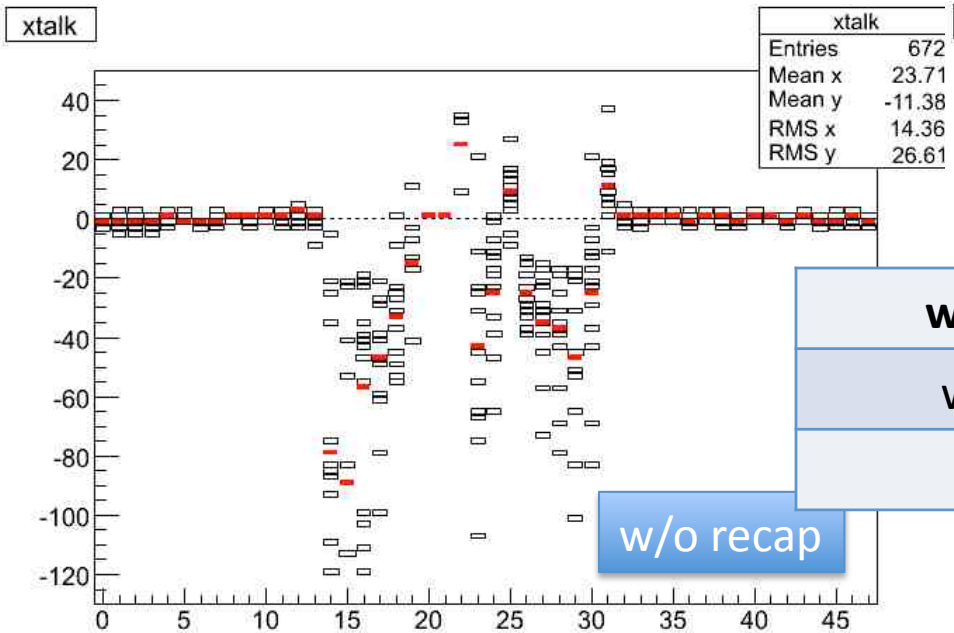


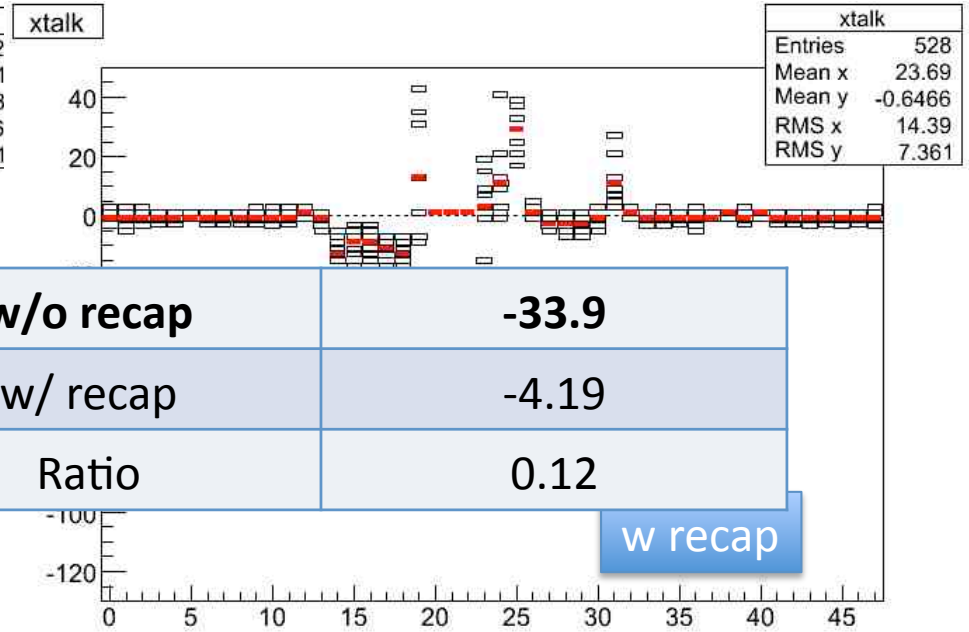



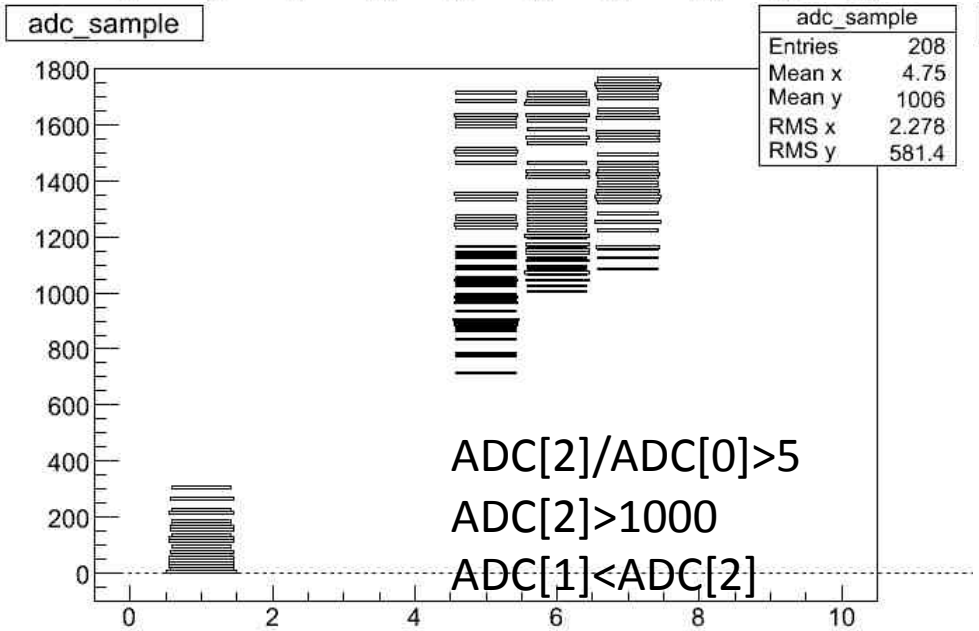

| | |
|---|---|
| **w/o recap** | **-31.4** |
| w/ recap | -5.17 |
| Ratio | 0.16 |

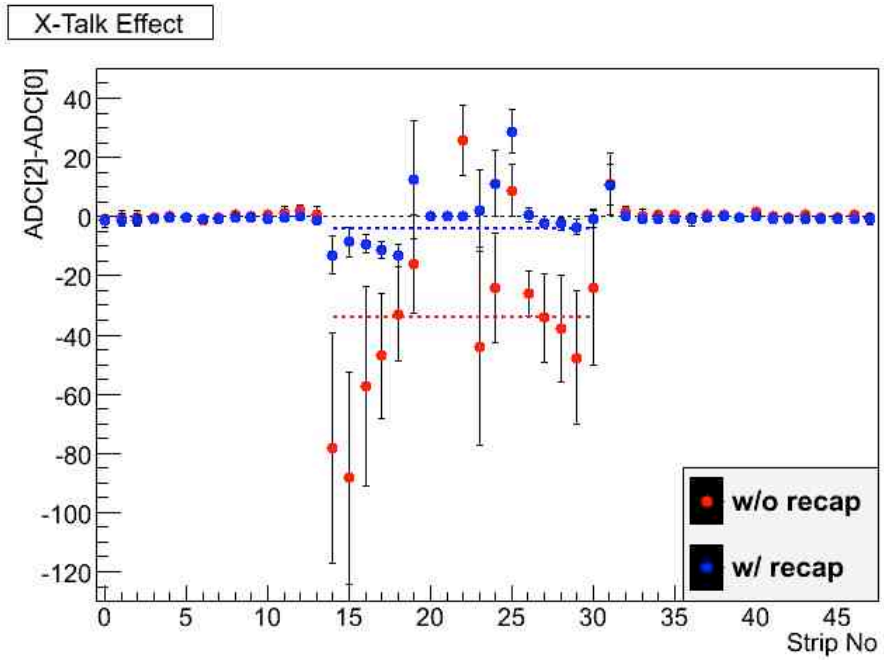
# Operating Voltage at 1800V (shape cut)



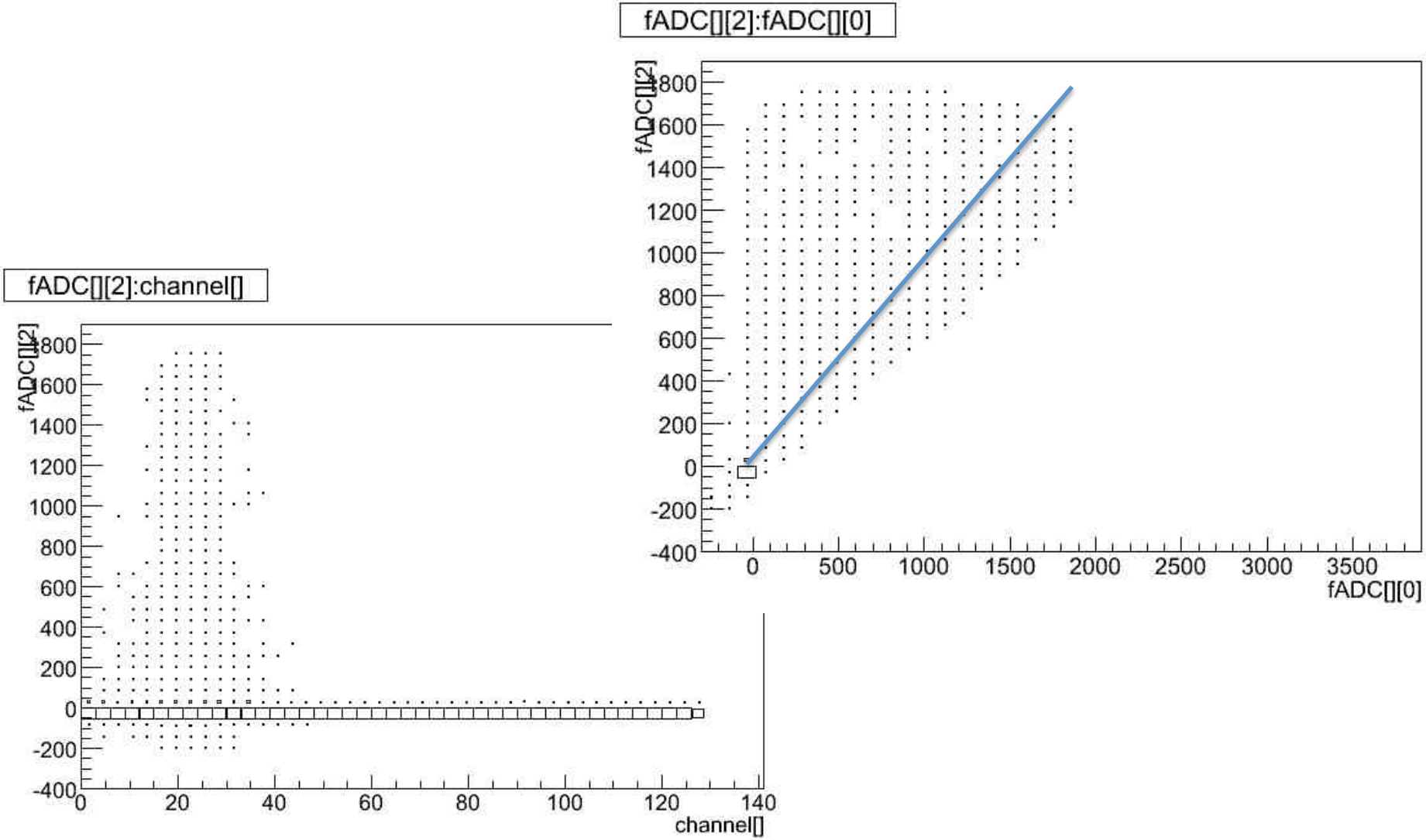




| | |
|---|---|
| **w/o recap** | **-33.9** |
| w/ recap | -4.19 |
| Ratio | 0.12 |

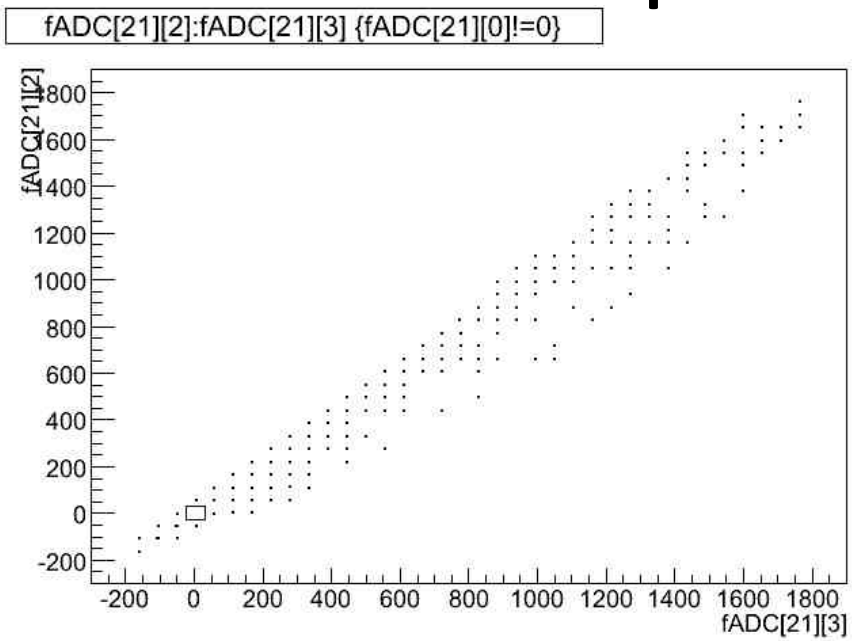


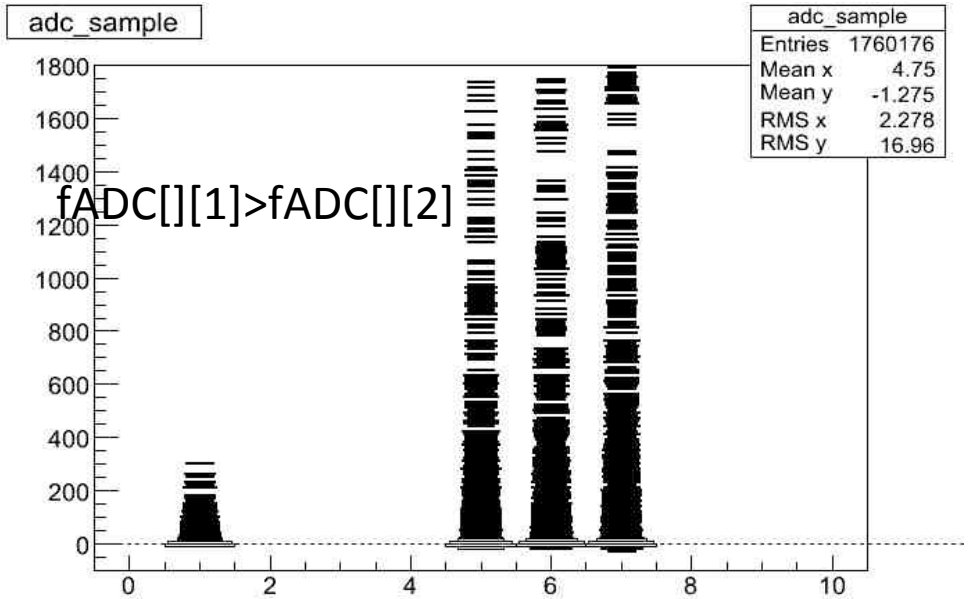



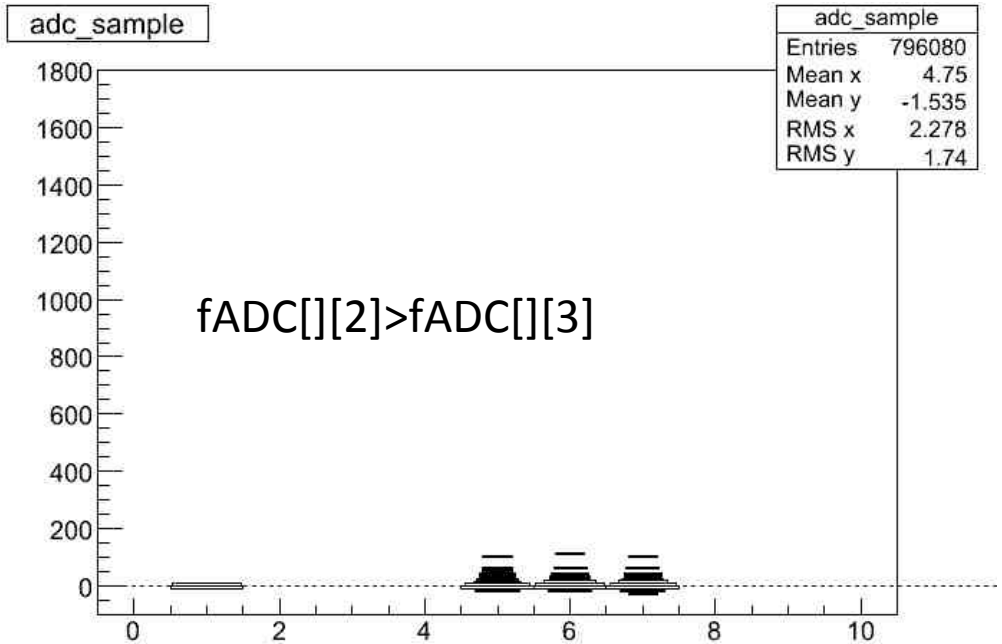
# Signal Structure ADC[2] vs. ADC[0]



# 4 Samples Event Structure



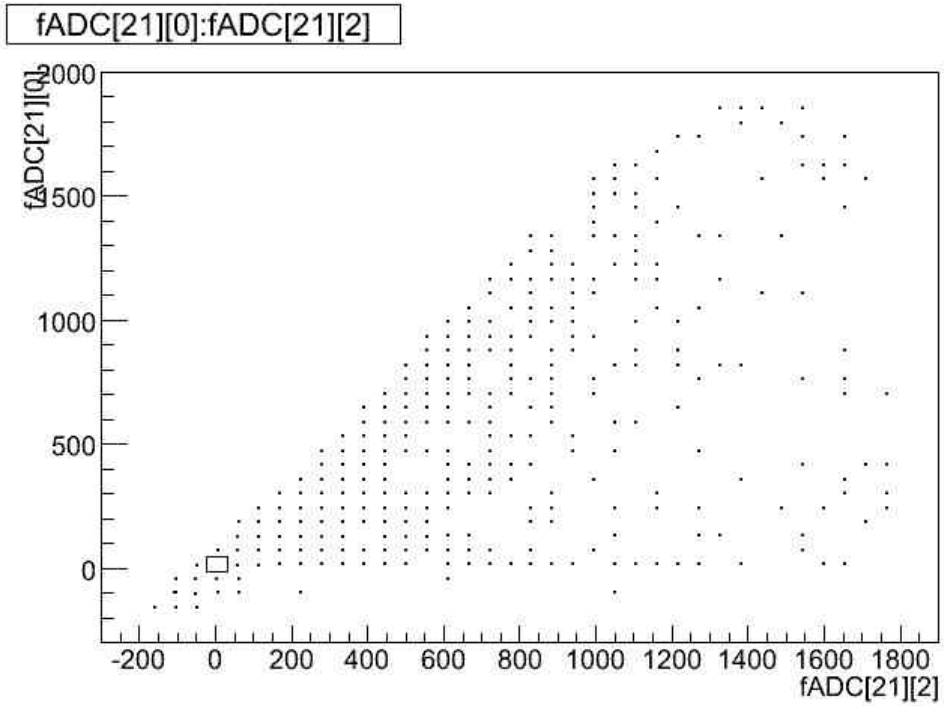



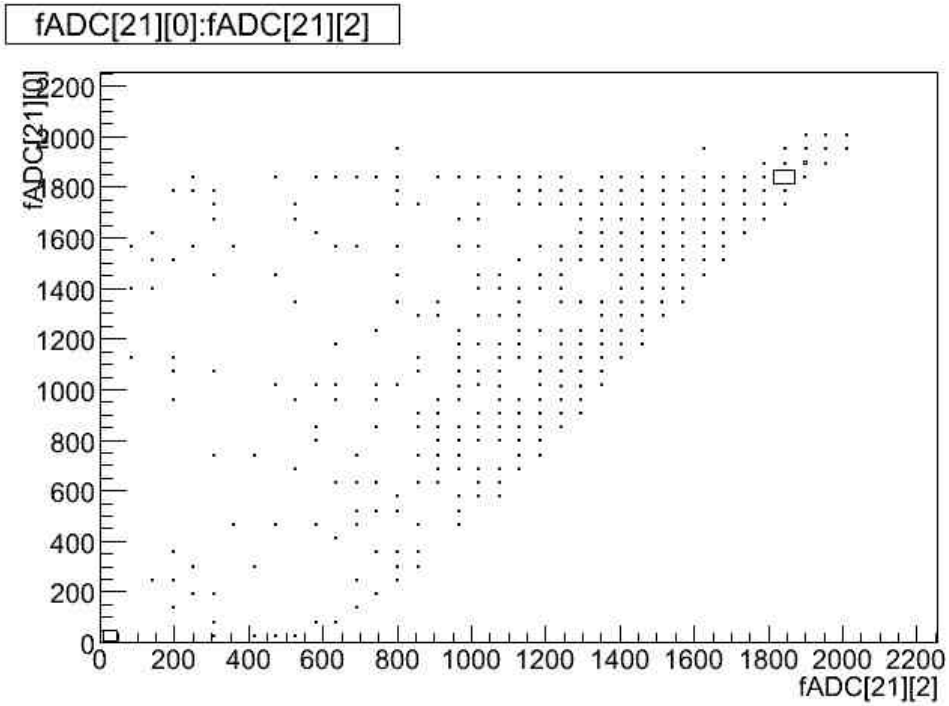
# feedata000.root .vs feeclus000.root

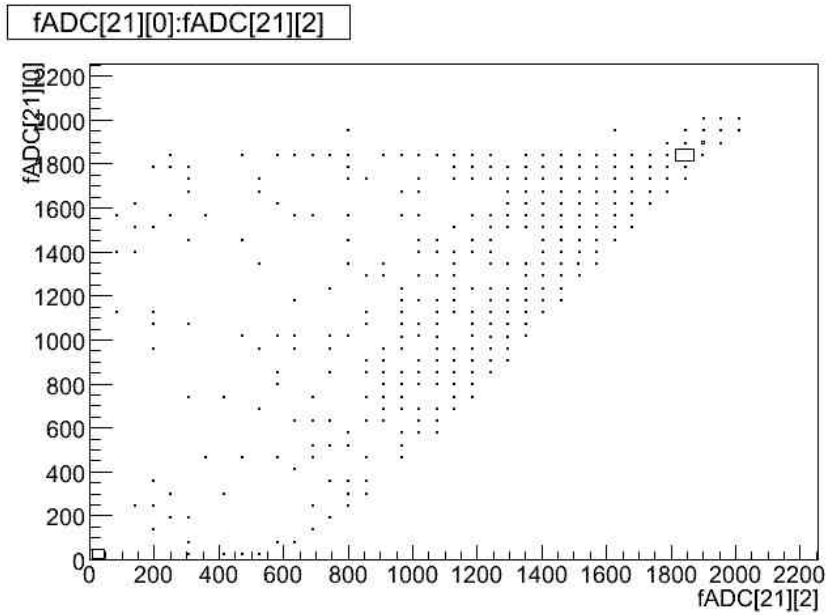
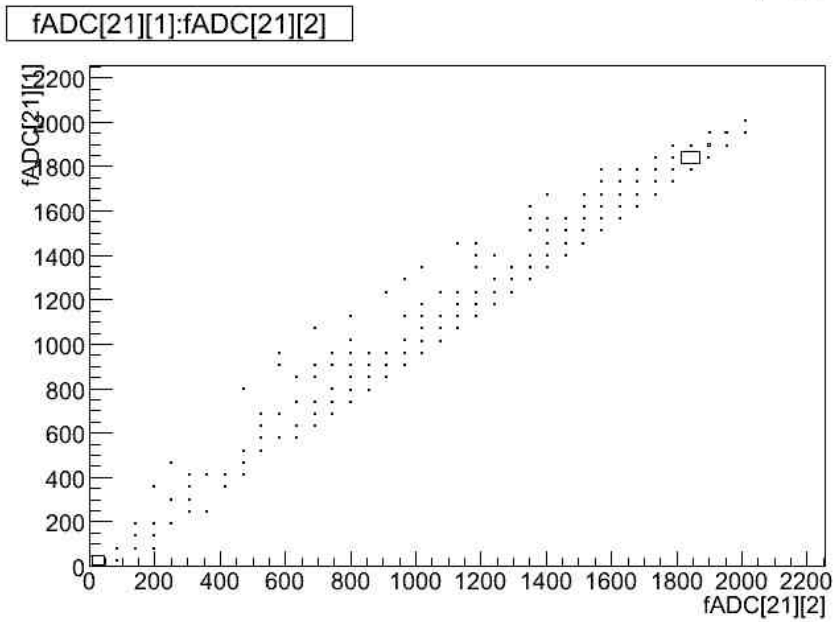
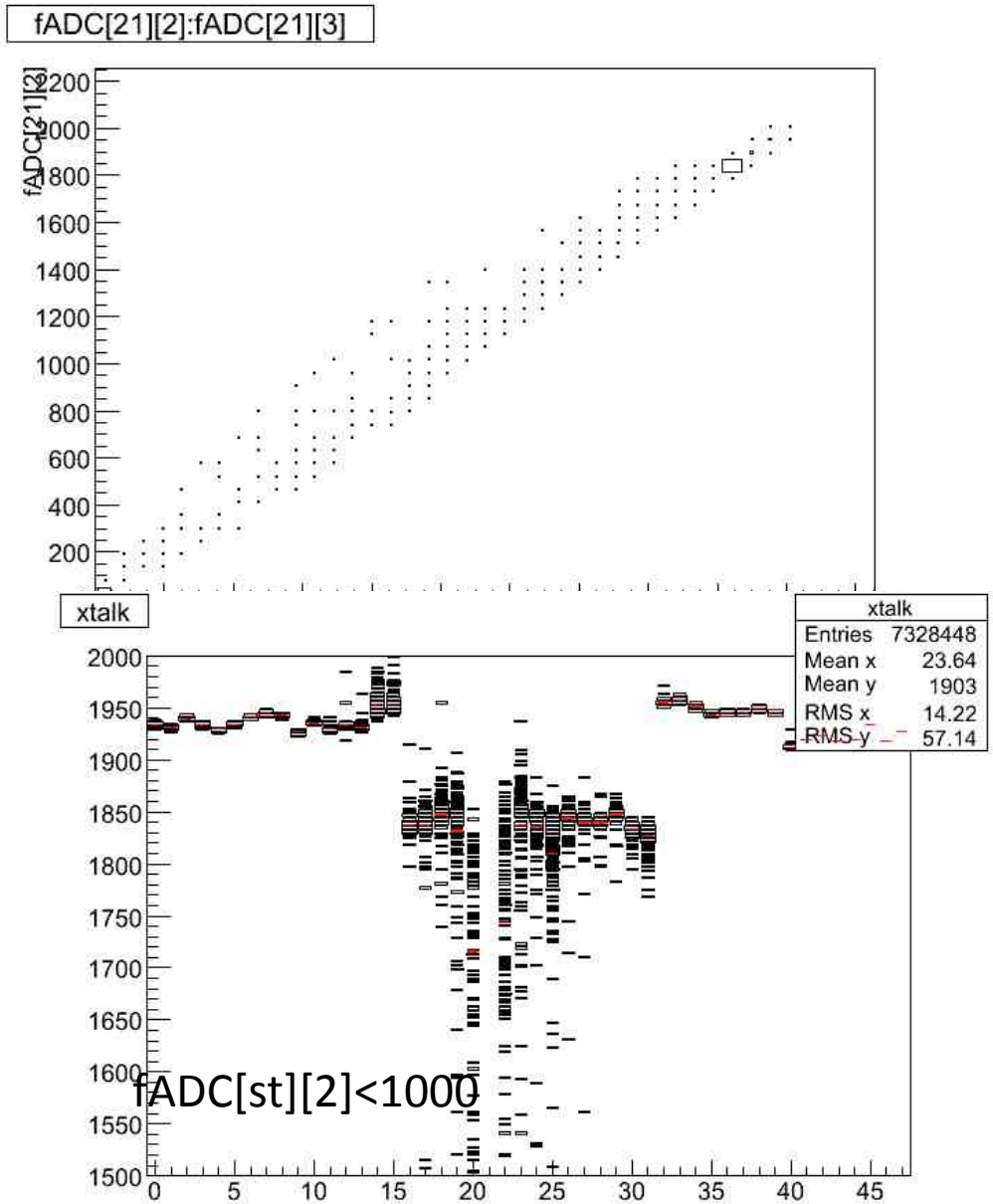
- As long as one sticks with fADC[st][], there is no filtering in contained events in feeclus000.root. Difference between fADC[st][]'s in these files is difference in pedestal subtracted or not.

# Clustering .vs raw data




dat100601/feeclus002.dat




dat100601/feedata002.dat

# dat100601/feedata002