



Questions for Adi

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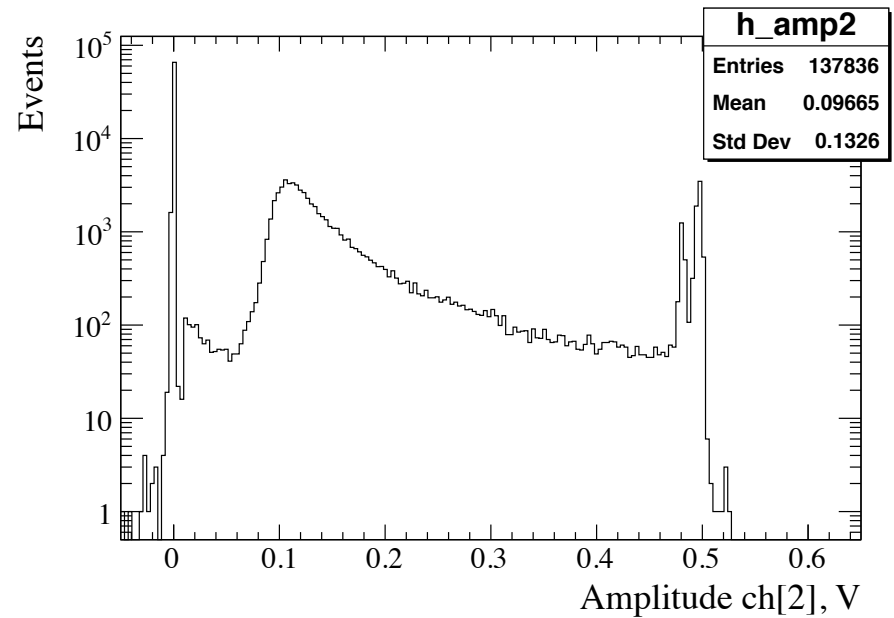
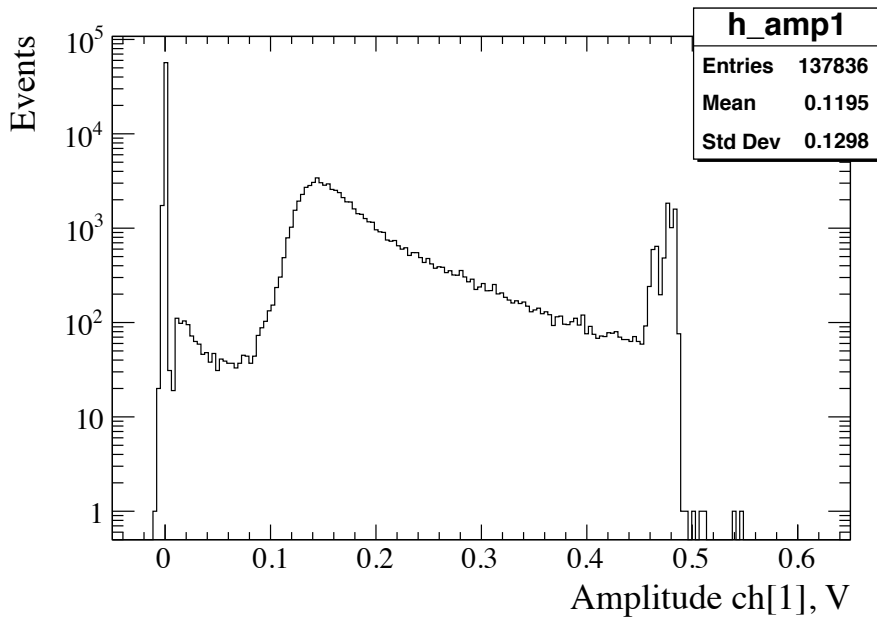
June 18th, 2017

Analysis of Runs 1259 – 1264

- Channel 1: 12x12x3mm LYSO, HPK 3x3mm, 10 micron pitch @ 72V
- Channel 2: 13x13x4mm LYSO, same HPK etc.

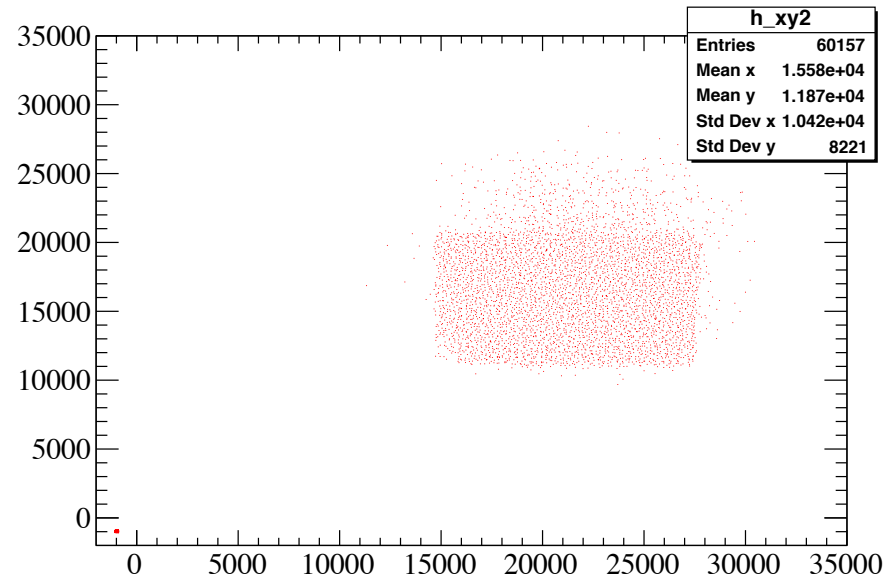
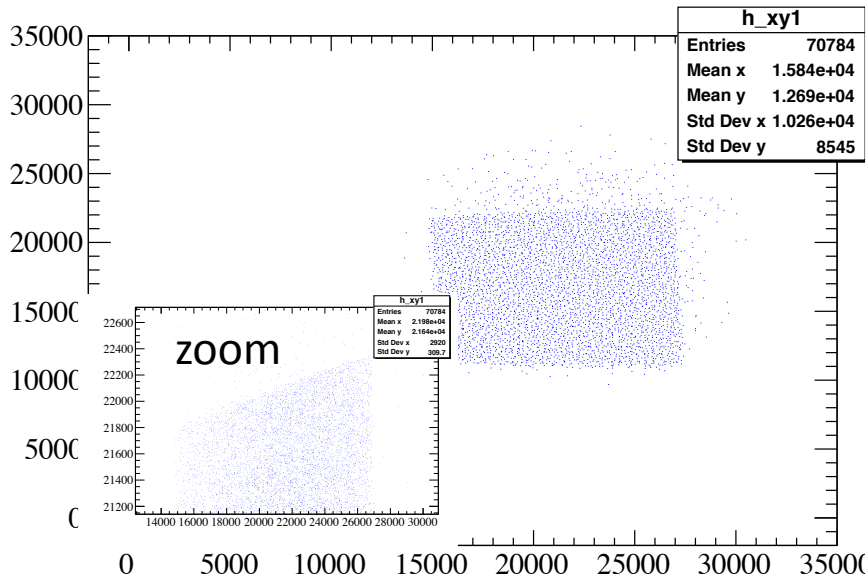
Amplitude

- If one cuts on the MIP peak, consider $[0.1, 0.45]$ for channel 1, and $[0.08, 0.45]$ for channel 2
 - NB: amplitude cut is sensor-dependent!
 - **Adi: does ranges make sense?**



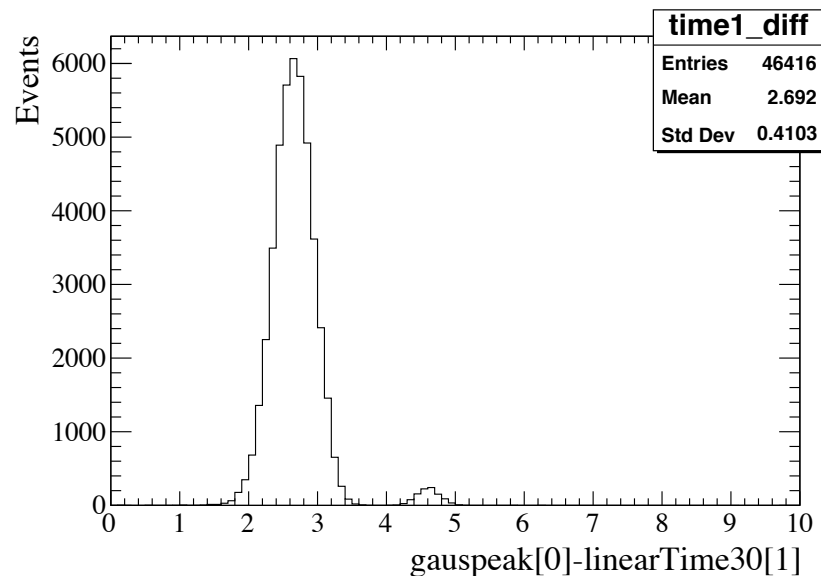
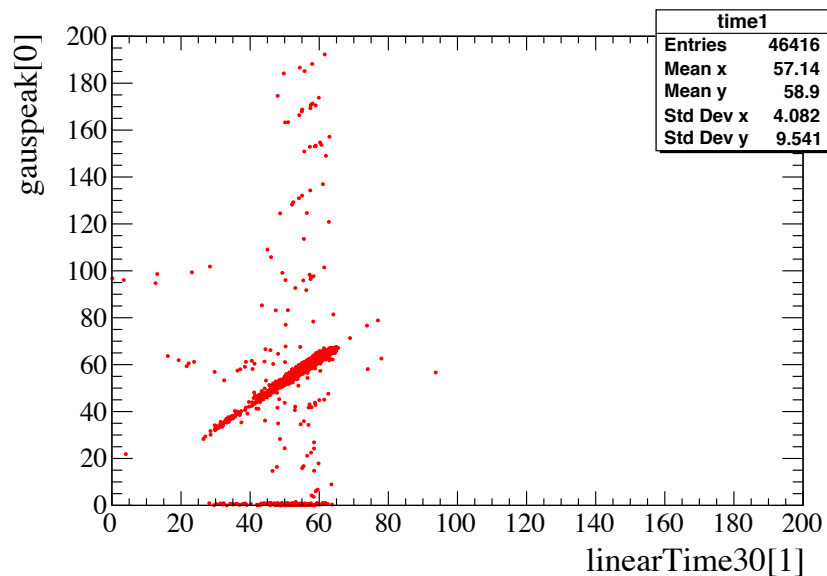
x-y of hits within amp cut

- Ch1 is tilted (see zoom)
 - Adi: should boundaries be run-dependent as well? Do people move sensors around when taking set of runs?
 - Proposal: for clear boundaries like that - assume run-independent scenarios
 - ch1: $11500 < x_1 < 21600$, $15500 < y_1 < 26600$,
 - ch2: $11200 < x_1 < 20500$, $15000 < y_1 < 27500$



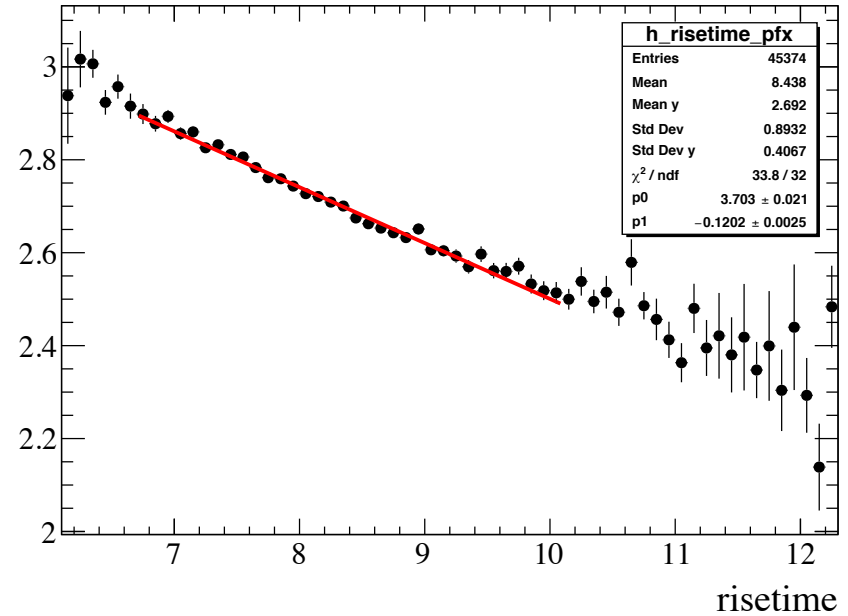
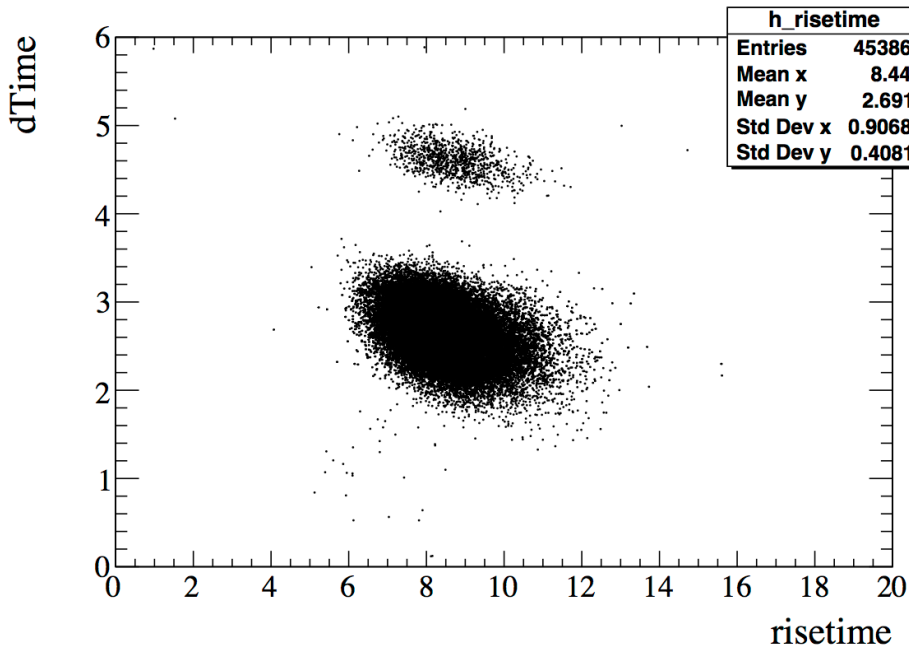
linearTime30 vs gauspeak

- I am not sure I understand the plot on the left
 - Clearly, most of the events have $\text{gauspeak}[0] = \text{linearTime30}[1]$
 - A number of events have $\text{gauspeak}[0] = 0$, how could that be? No signal from the pulser at all? The rest is an offset of gauspeak by about 20 units. Do you understand what is going on?
- The plot on the right illustrates a range of the cut that you applied in your macro - difference between pulser and sensor - does it look good to you? I.e., double peak structure...



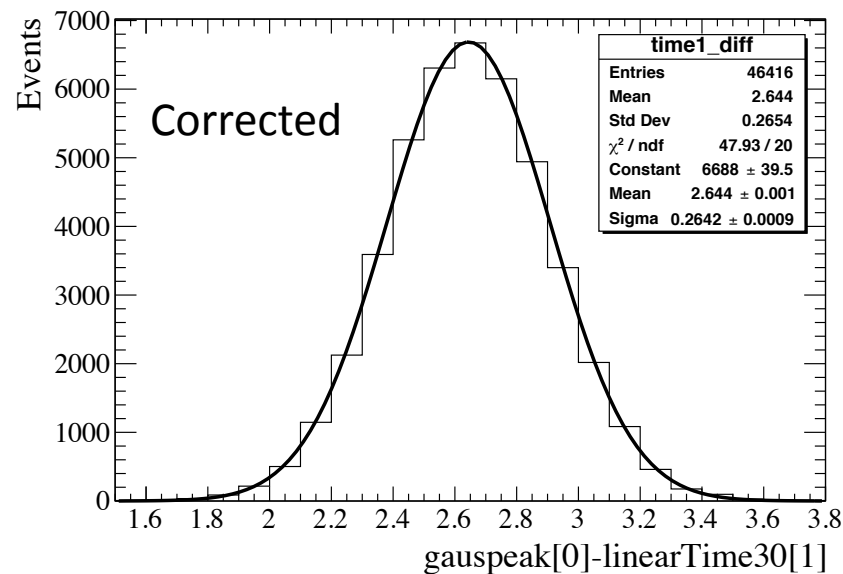
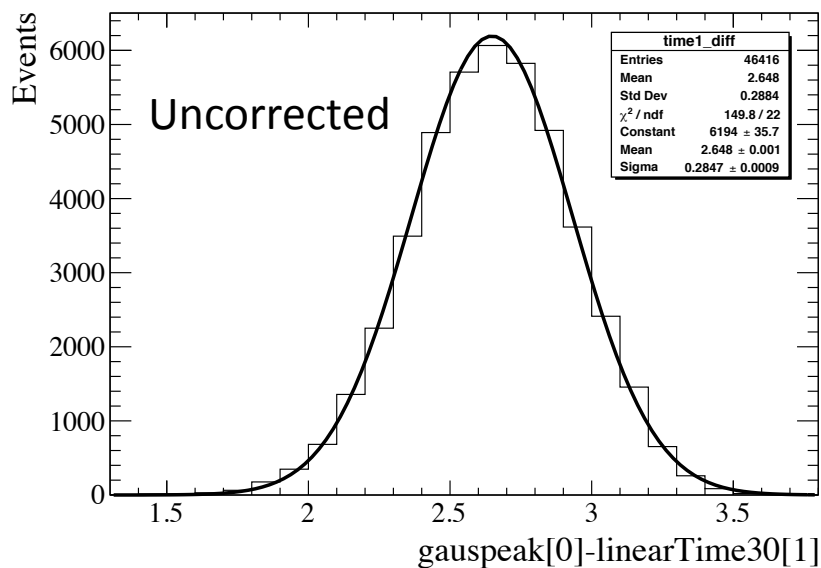
Correction for rise time

- I have made a projection to extract the correction factor: $f = 3.703 - 0.1202 \cdot \text{risetime}$
 - Correct dTime by $1/f(\text{risetime}) \times f(\text{average_risetime})$

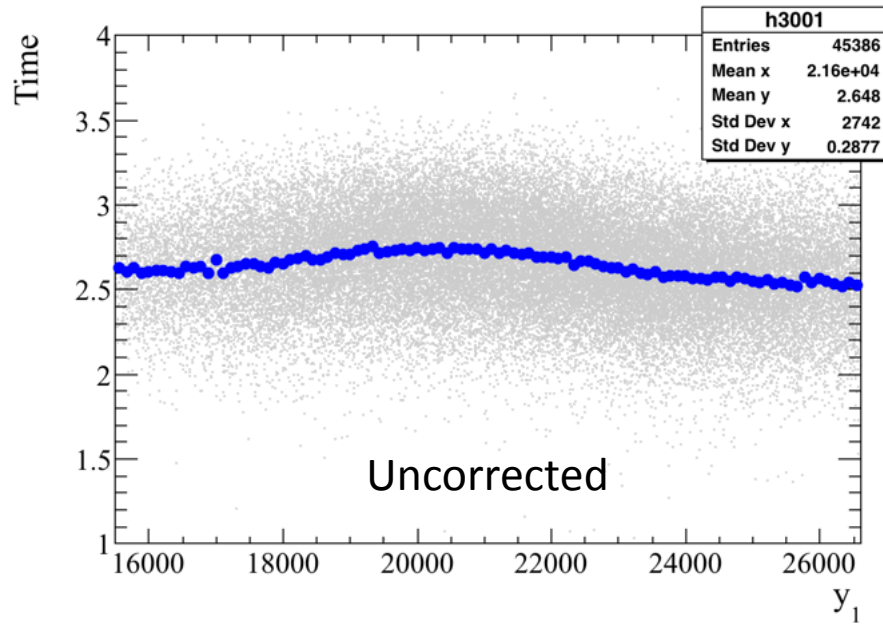
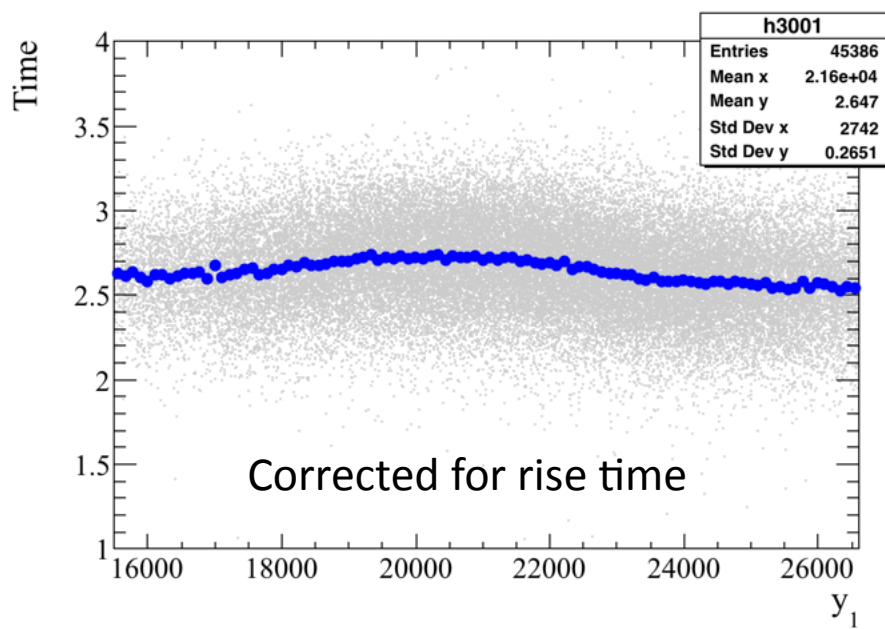
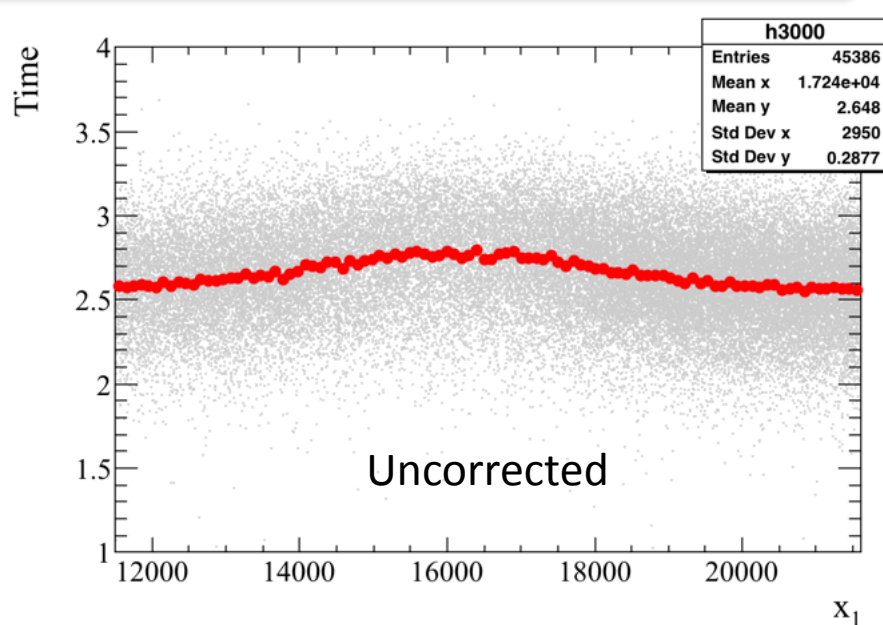
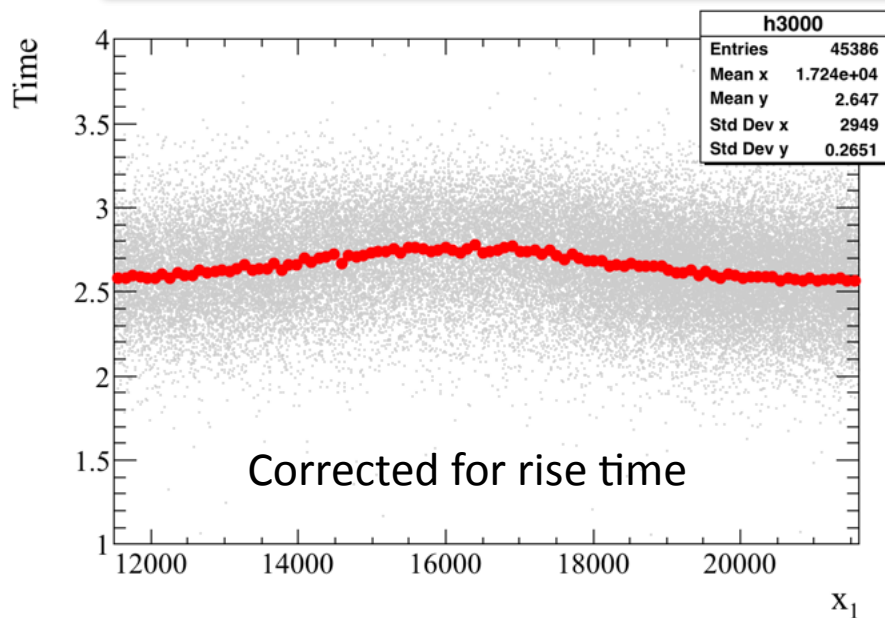


Correction for rise time

- Width changes from 0.285 to 0.264 (285 ps to 264 ps?)
 - I fit only the central peak

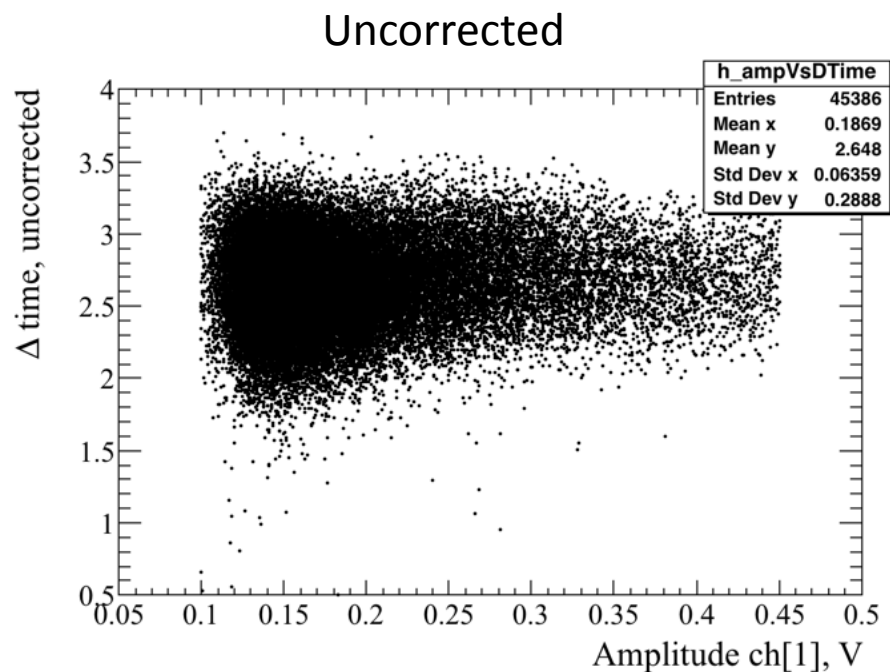
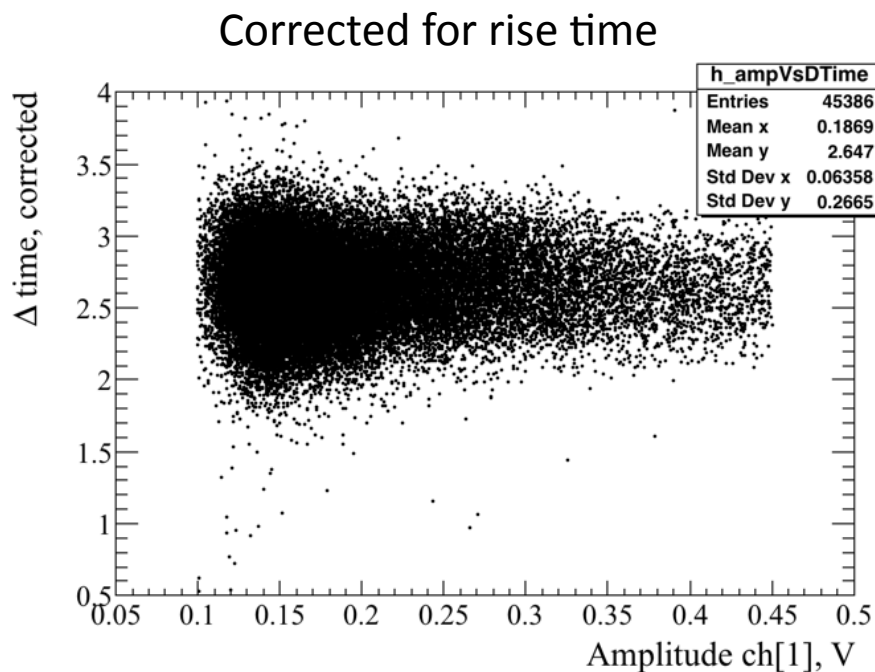


Profiles to X and Y



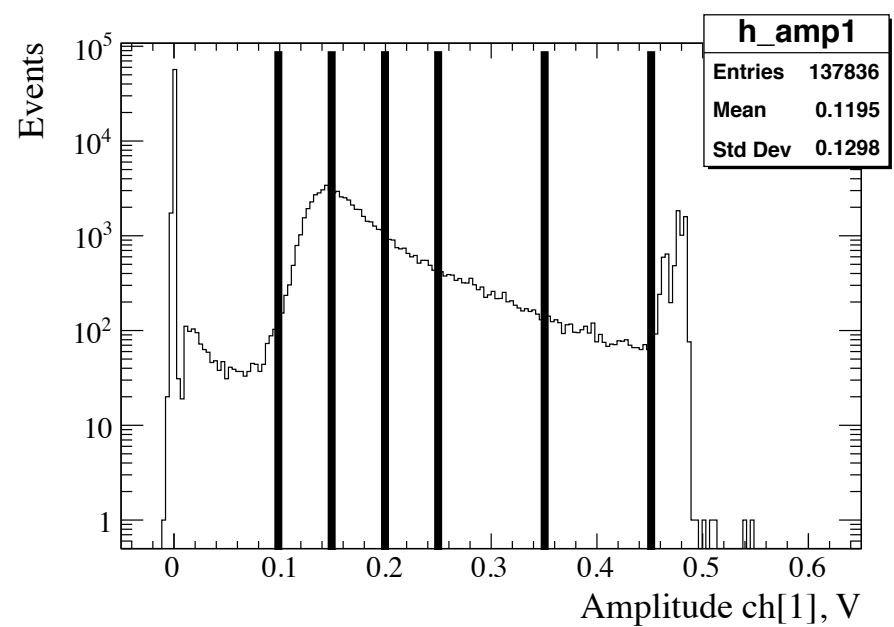
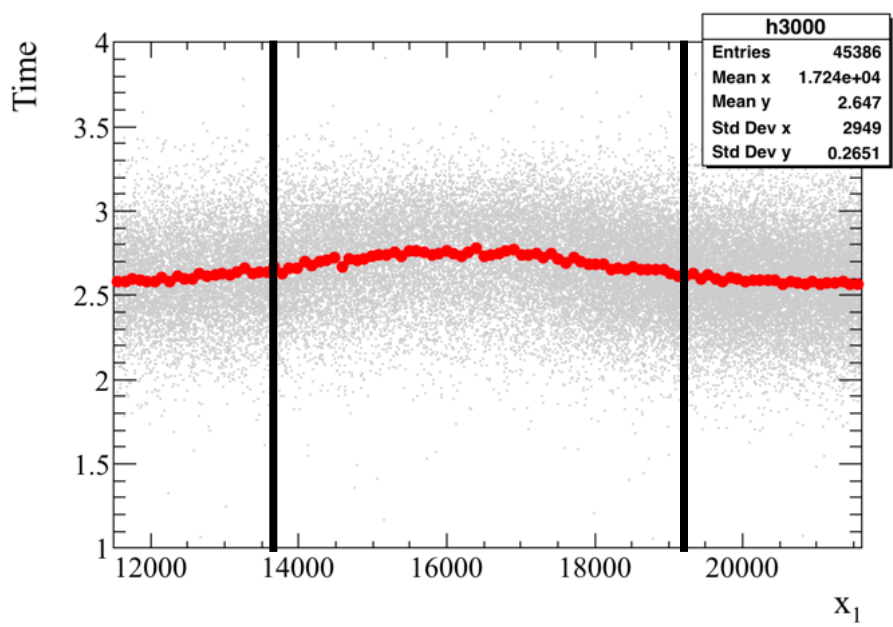
ΔT vs. amplitude

- These are the last plots in your btl.C file with the correction (left) and without (right)



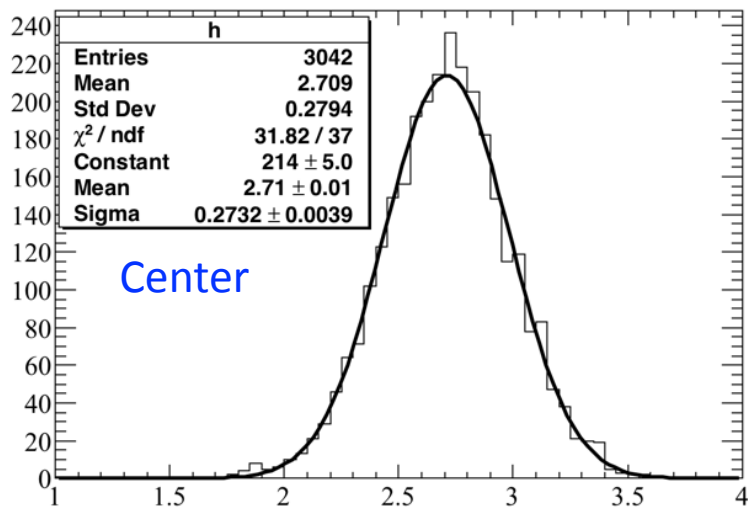
Fitting ΔT as a function of amplitude

- Split the area in two parts: center and edges

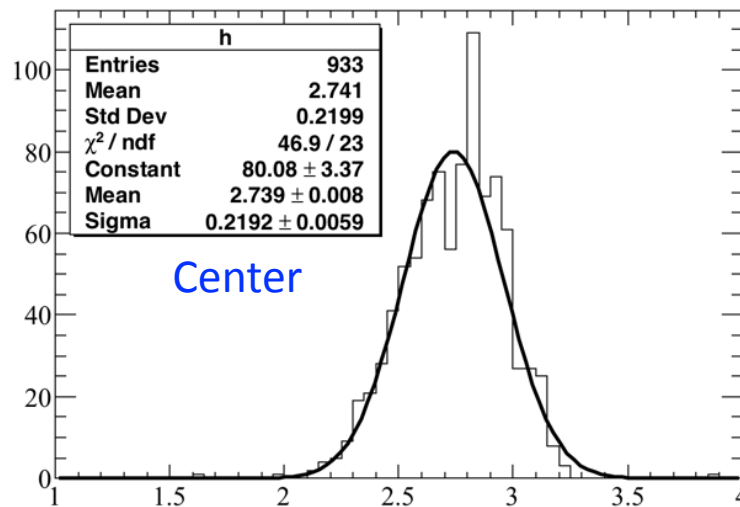


- Split the amplitude in 5 ranges: $0.1 < V < 0.15$, $0.15 < V < 0.2$, $0.2 < V < 0.35$, $0.35 < V < 0.45$

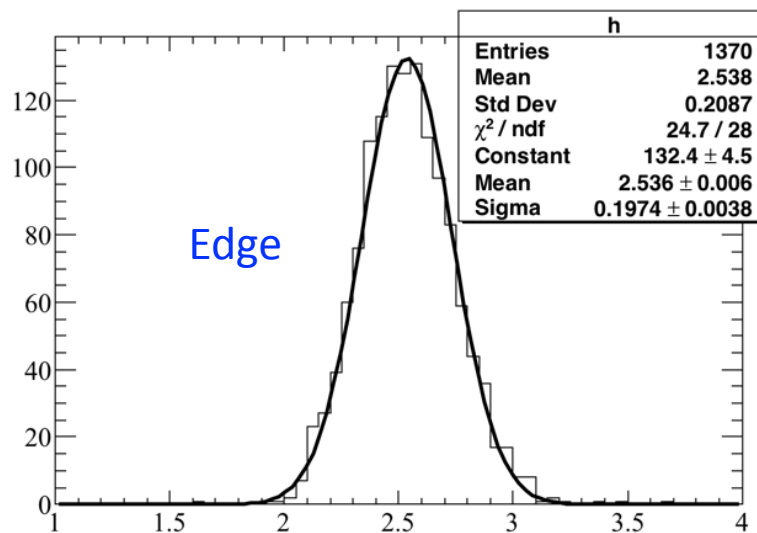
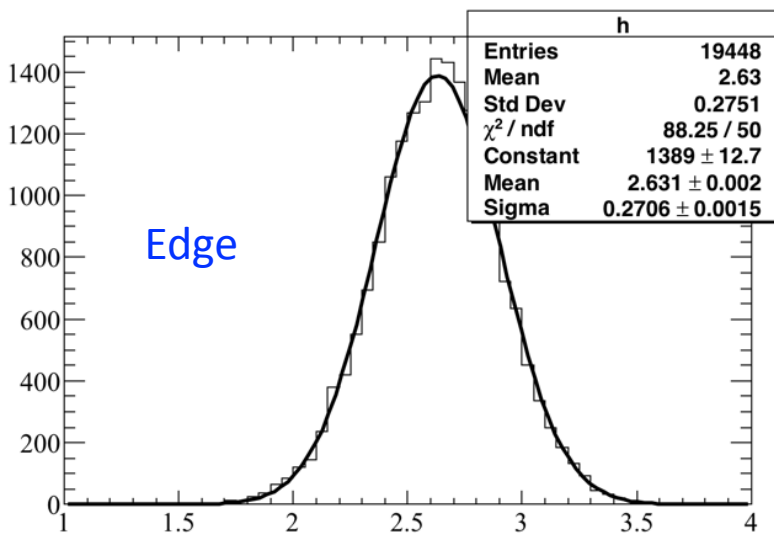
Examples of fits



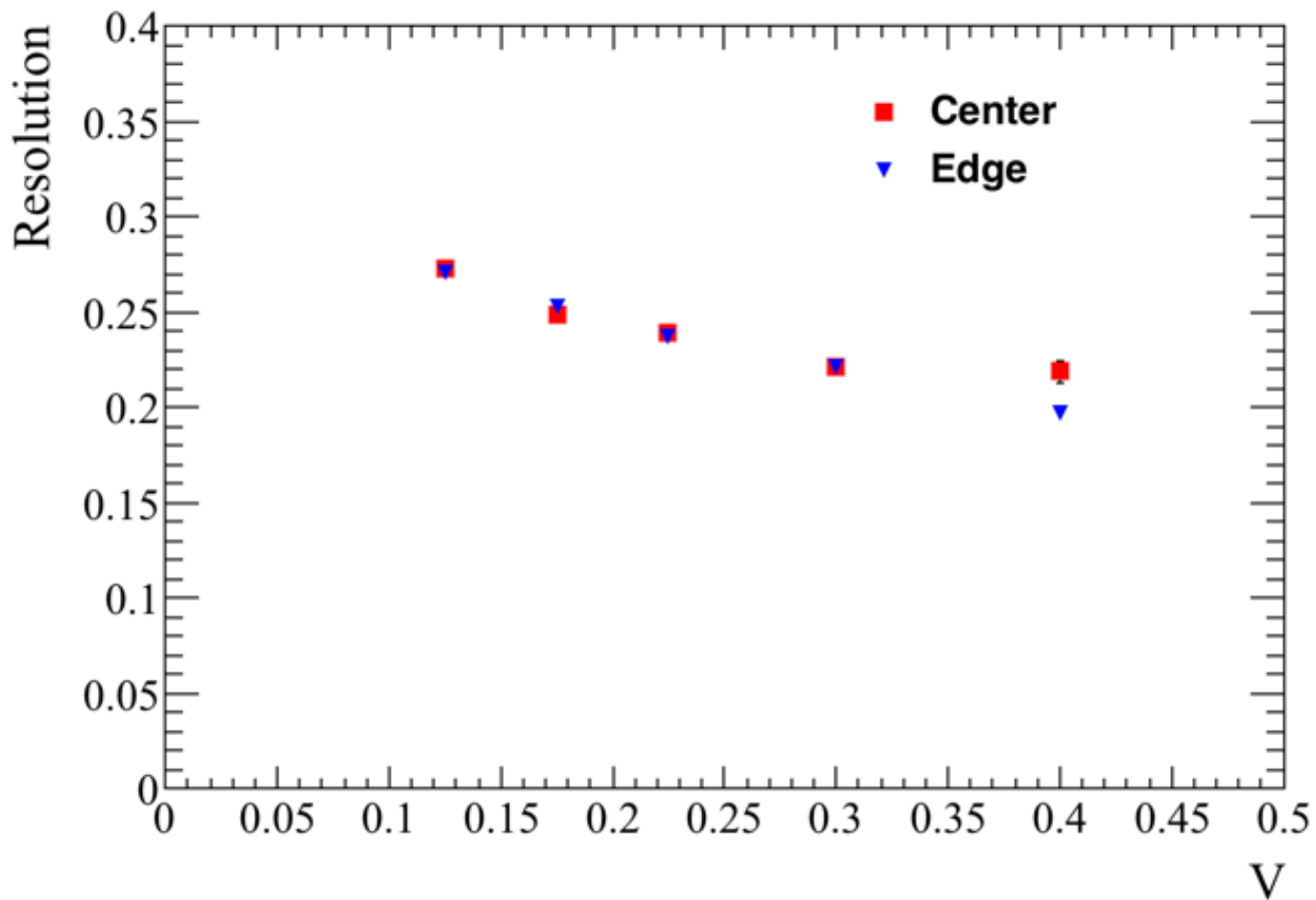
$0.1 < \text{amp} < 0.15$



$0.35 < \text{amp} < 0.45$

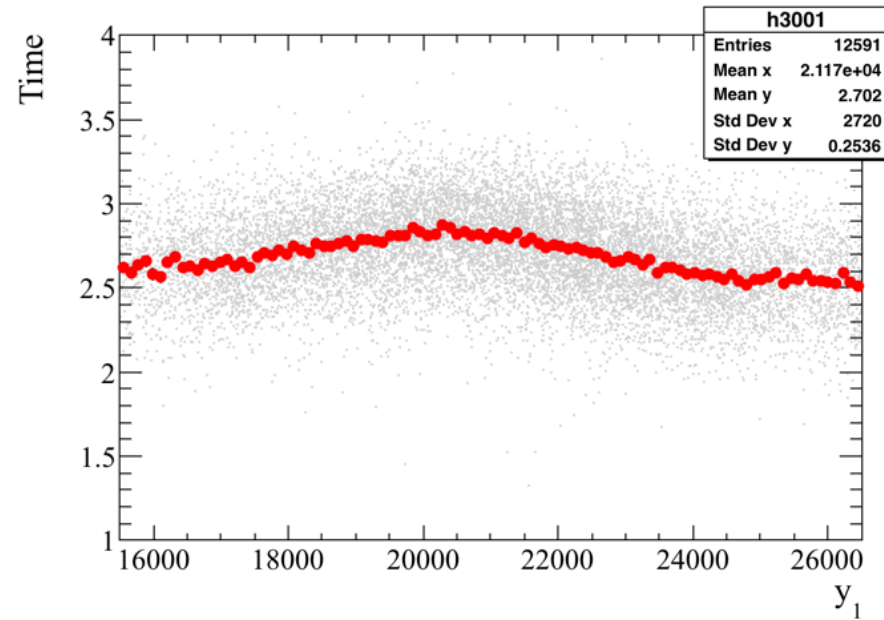
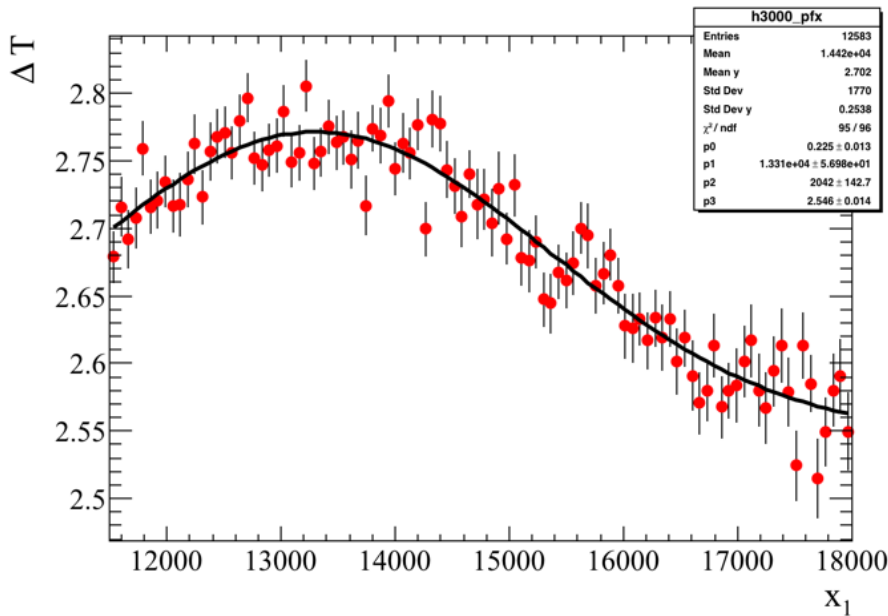


Resolution for edge/center



25 degree tilt runs

- ΔT vs. gauspeak[0] - linearTime30[1]
 - y-distributions seems OK, but the x-distribution is offset (was the tilt around y-axis?)



- Will define center in y to be 3000 around 21000, but for x, I will just consider a center < 15000, and above for an edge. Does this make sense?

Resolution for 25 degree tilt

- Here is the same plot as in slide 12, but with an addition of the results from tilted sensor
 - At low amplitude the resolution is similar to that in the no-tilt runs, but at high amplitude, the resolution seems to be better. However, note that no difference between center and edge

