



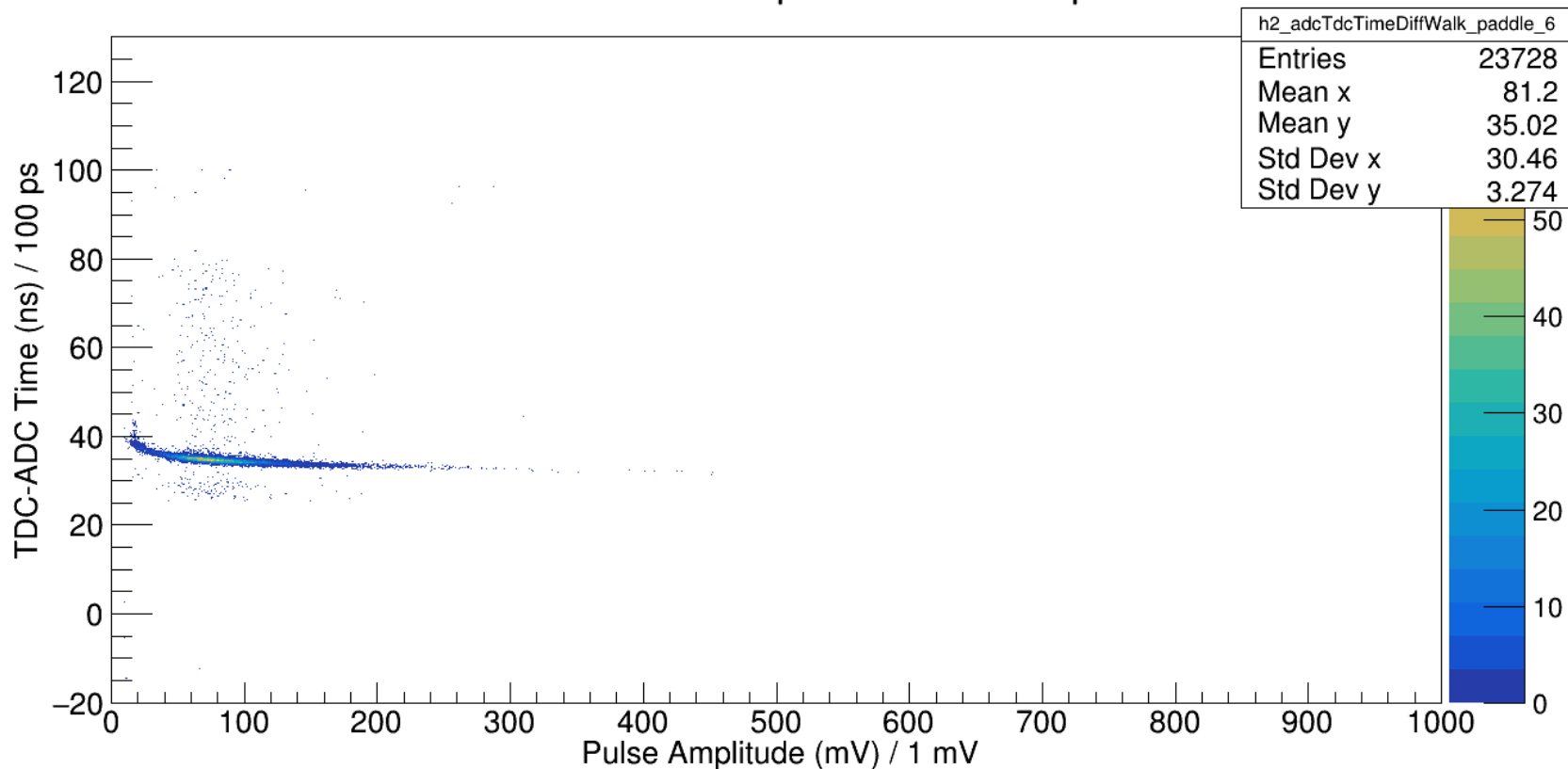
Hodoscope Calibration Update

2021, May 10

Nathan Heinrich

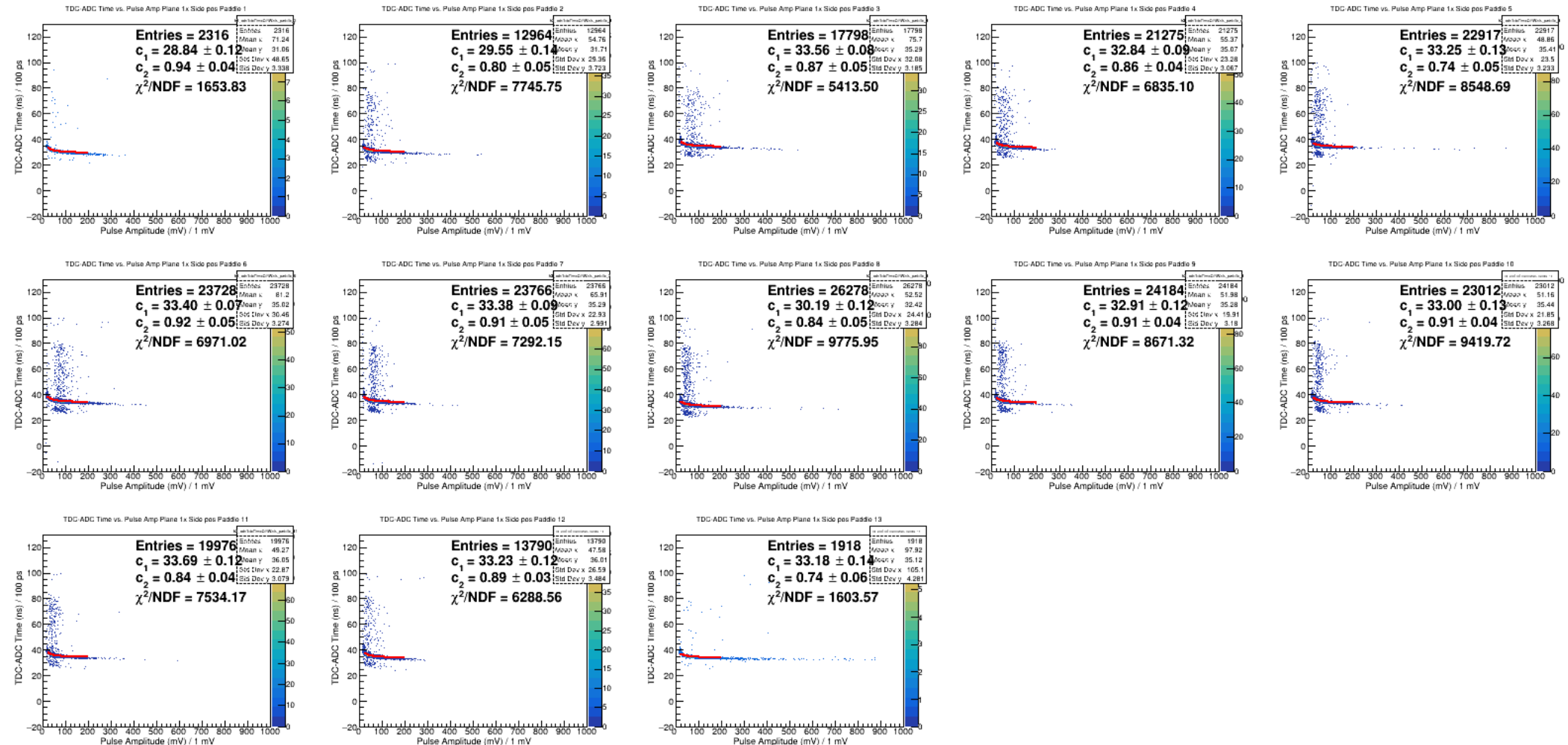
The First Stage of calibration (timeWalkHistos.C), produces plots which are fit in next step (timeWalkCalib.C)

TDC-ADC Time vs. Pulse Amp Plane 1x Side pos Paddle 6



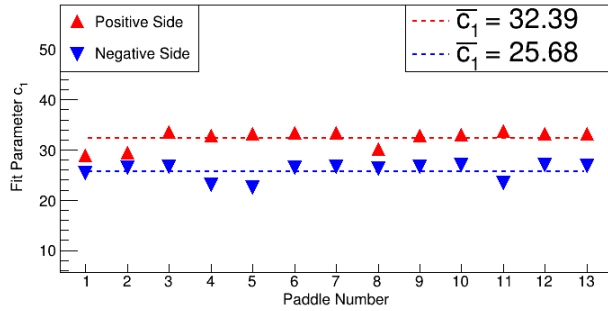
SHMS

timeWalkCalib.C Output (1x+)

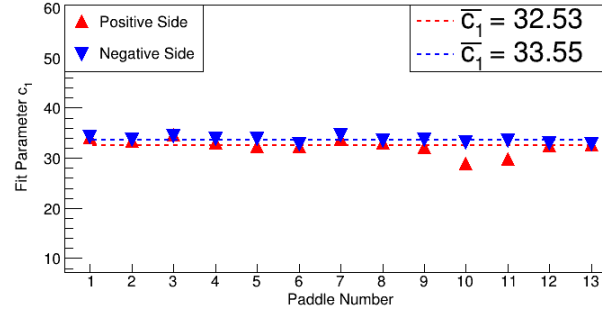


TimeWalkFit summary

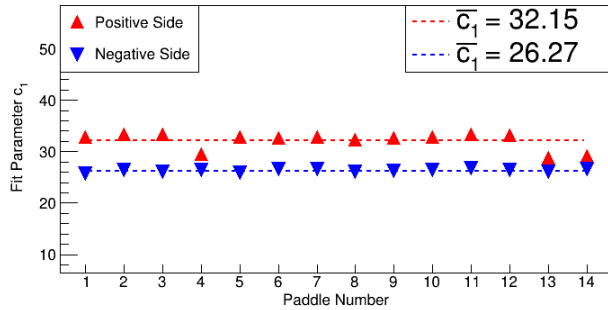
Plane 1x Parameter c_1



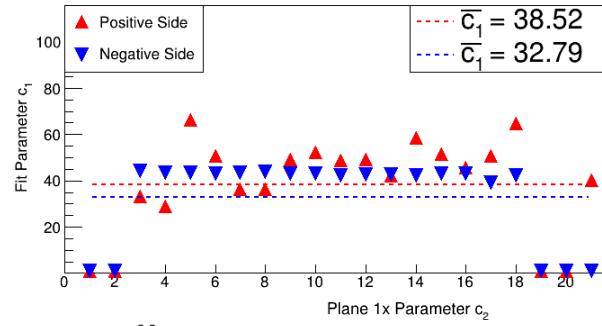
Plane 1y Parameter c_1



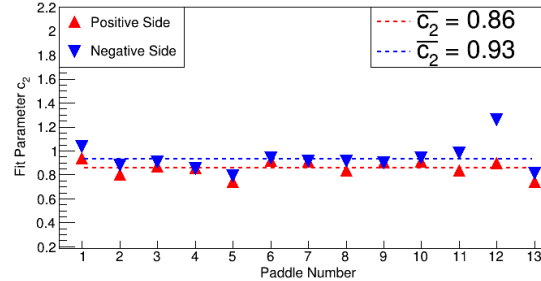
Plane 2x Parameter c_1



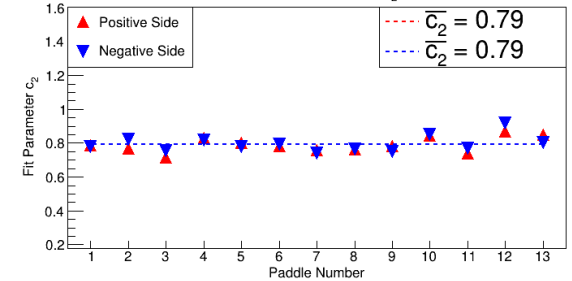
Plane 2y Parameter c_1



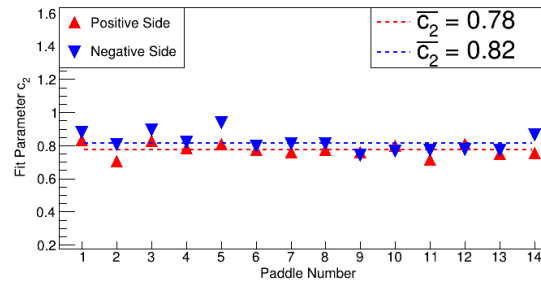
Plane 1x Parameter c_2



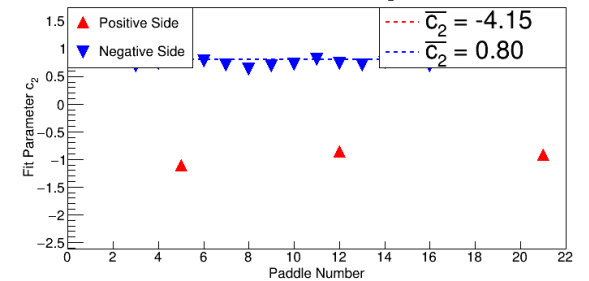
Plane 1y Parameter c_2



Plane 2x Parameter c_2



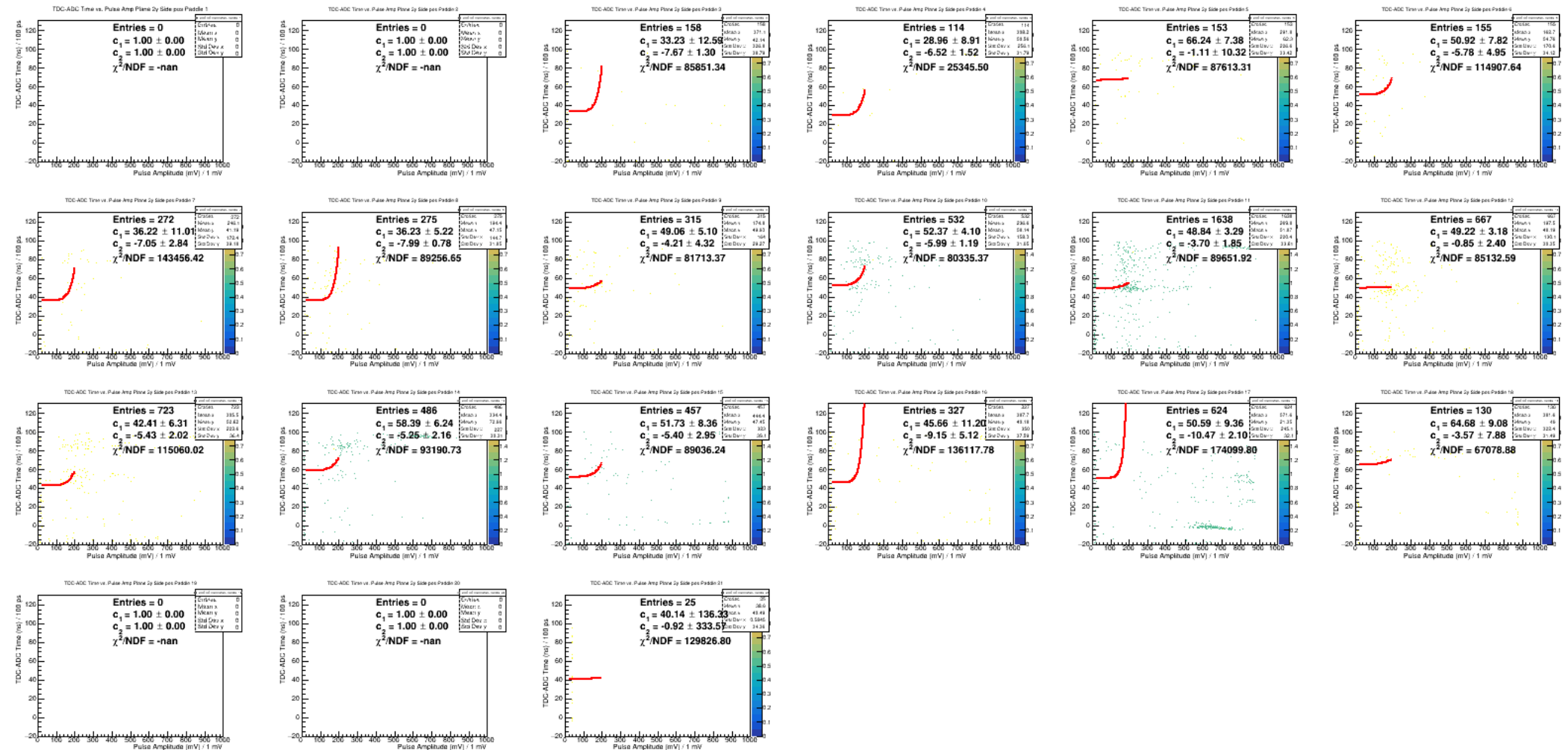
Plane 2y Parameter c_2



Summary of fit parameter values for run 7841. The Positive side of 2y plane is not working right.

2y+

This plane has little to no entries for some reason

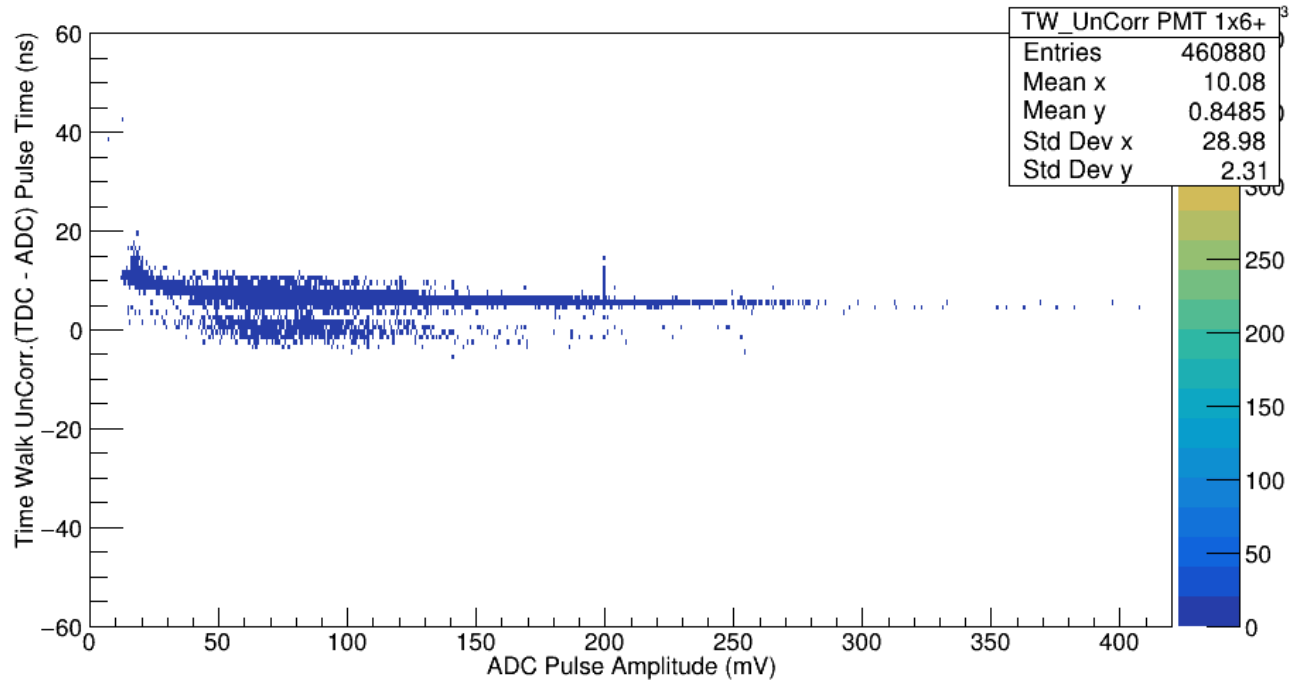


HodoCalibFit.C

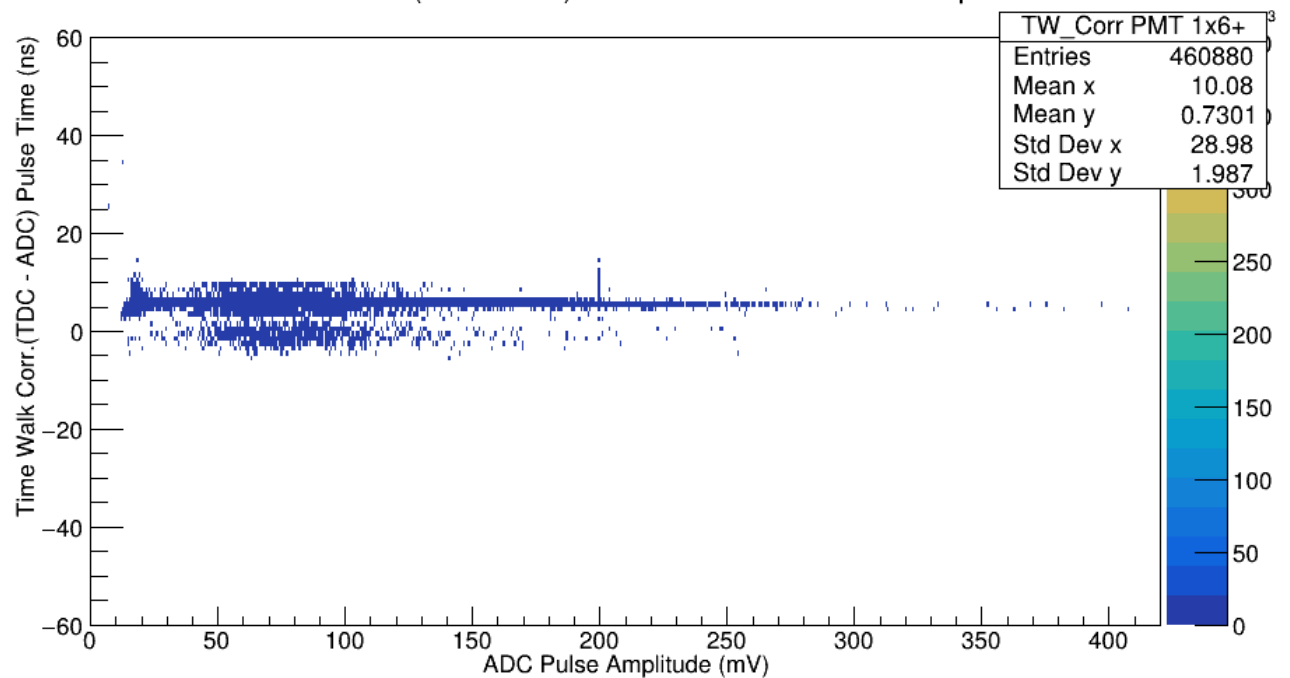
In this portion of the code it checks the TW calibration.

It also fits more parameters to calibrate the detector.

PMT 1x6+: UnCorr. (TDC - ADC) Pulse Time vs. ADC Pulse Amplitude

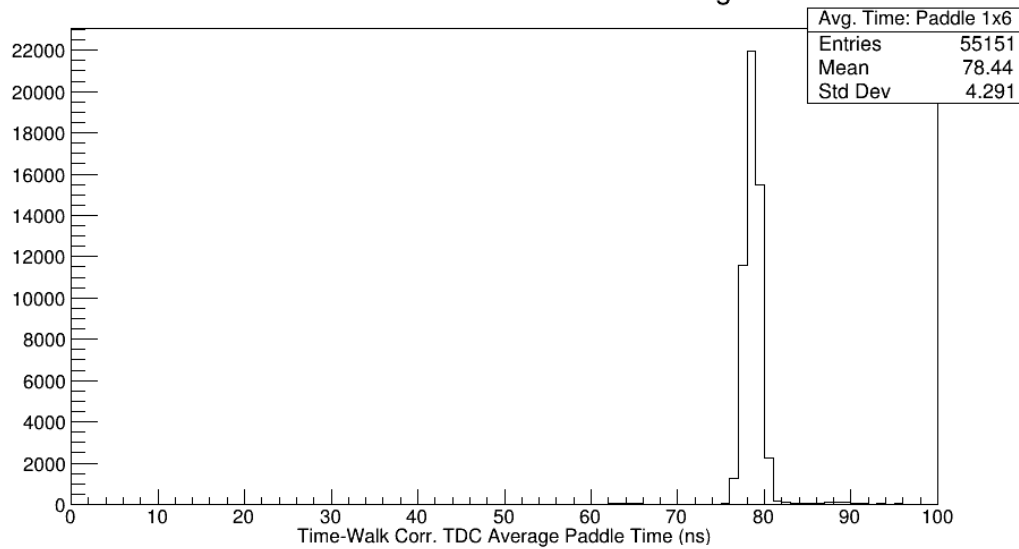


PMT 1x6+: Corr. (TDC - ADC) Pulse Time vs. ADC Pulse Amplitude

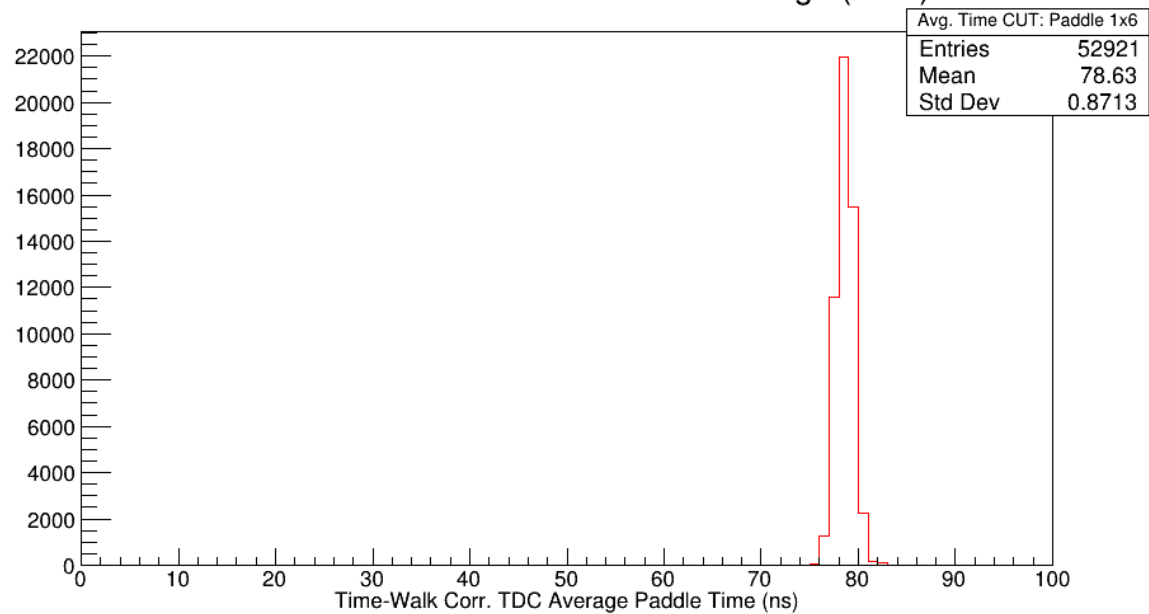


Average paddle time

Paddle 1x6: Time-Walk Corrected Average Time

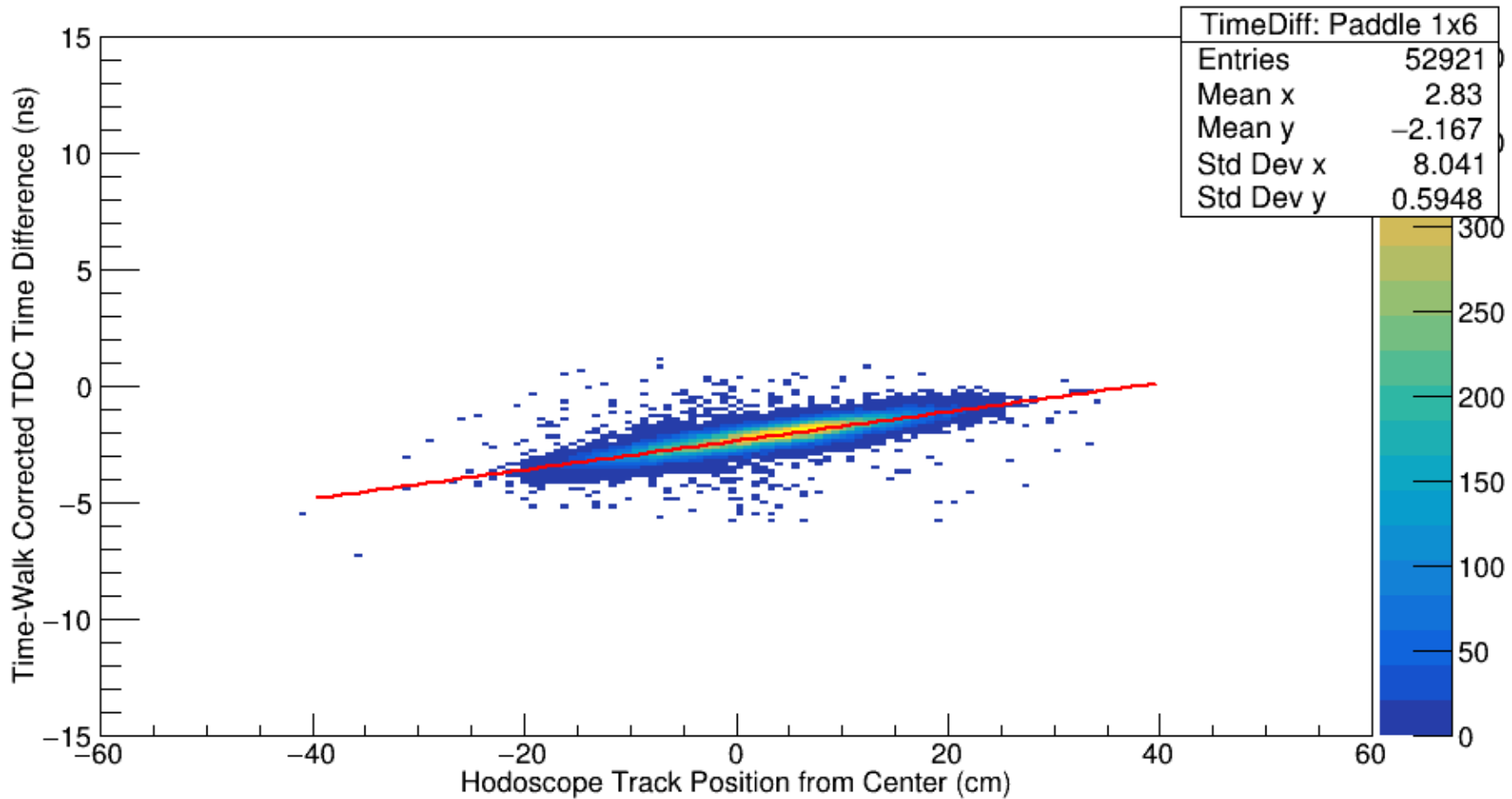


Paddle 1x6: Time-Walk Corrected Average (CUT)



Track position correction

Paddle 1x6: Time-Walk Corr. TimeDiff. vs. Hod Track Position



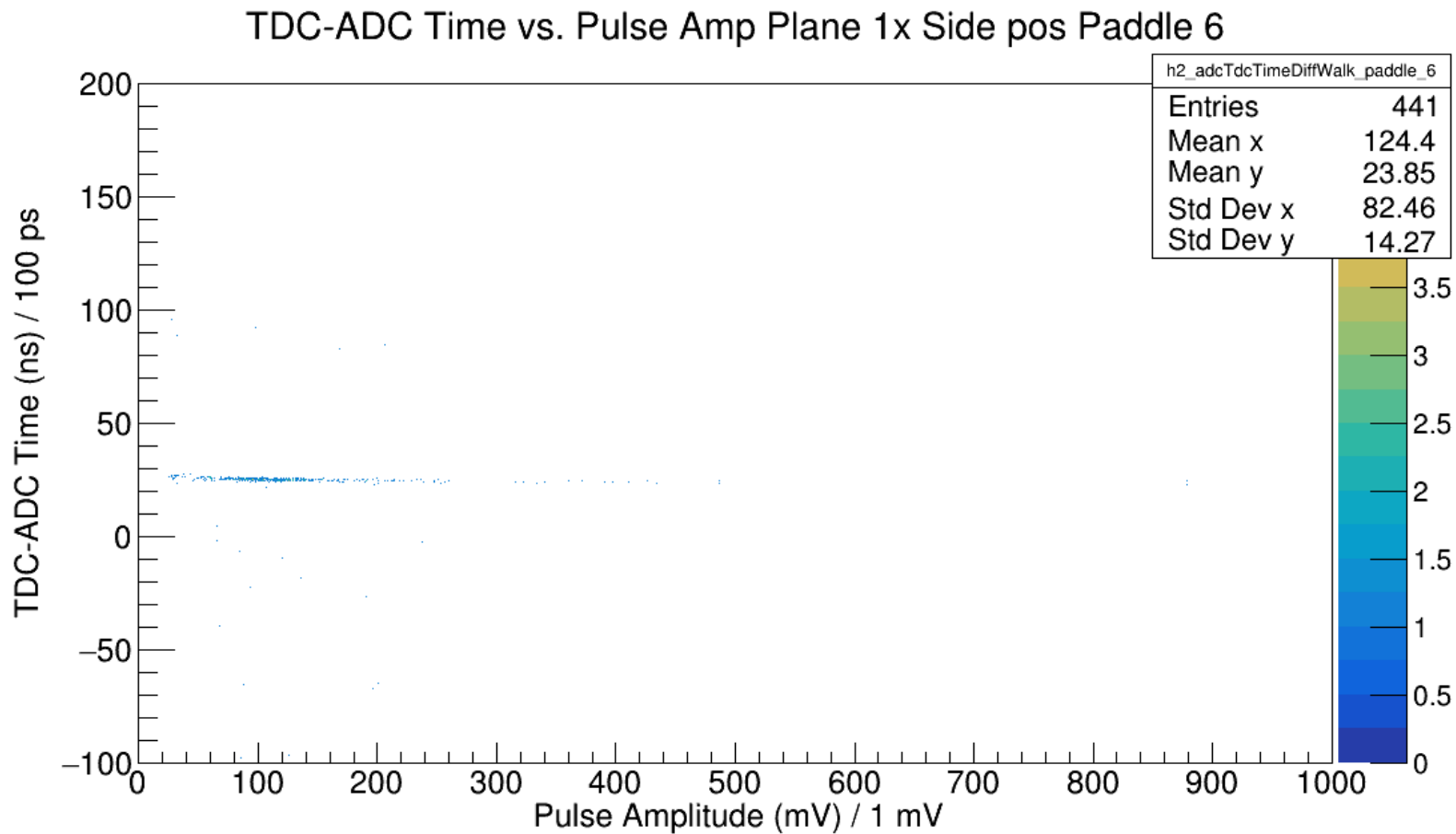


SHMS Summary

- For this run (7841) at least the 2y plane is doing something funny
- Everything else is making sense though
- The same can not be said for the HMS

HMS timeWalkHistos.C

This is just one PMT, but the rest are similar

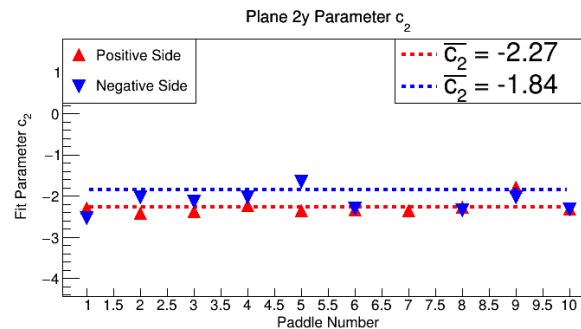
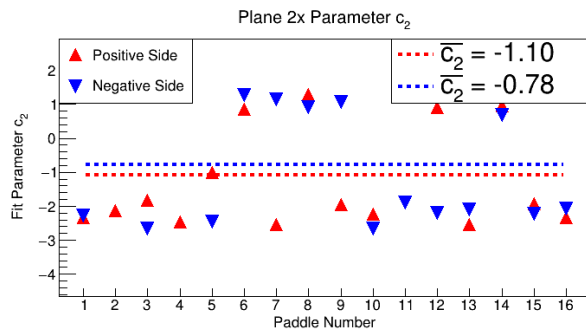
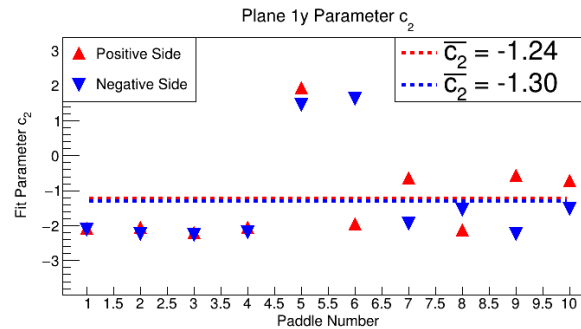
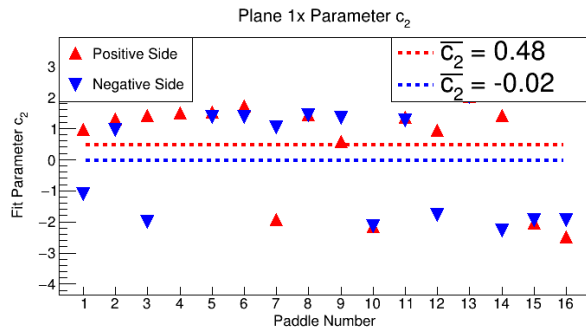
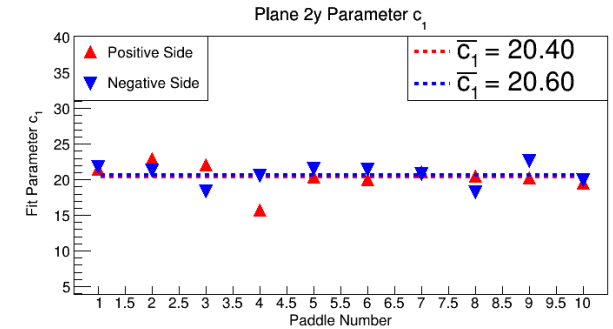
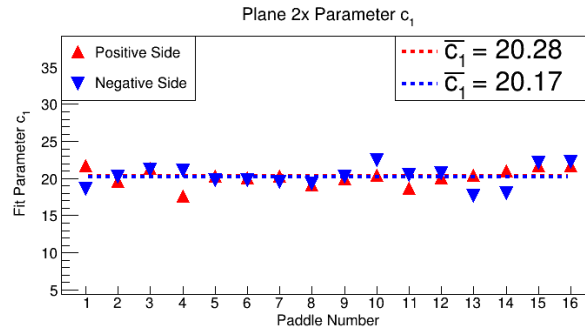
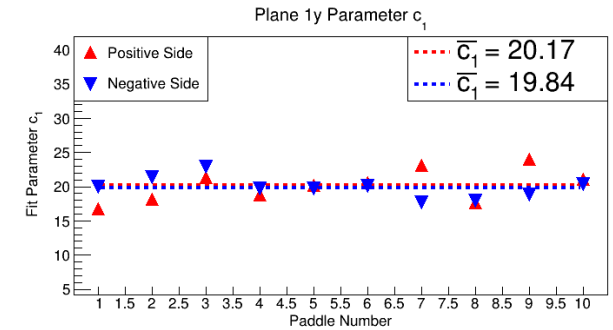
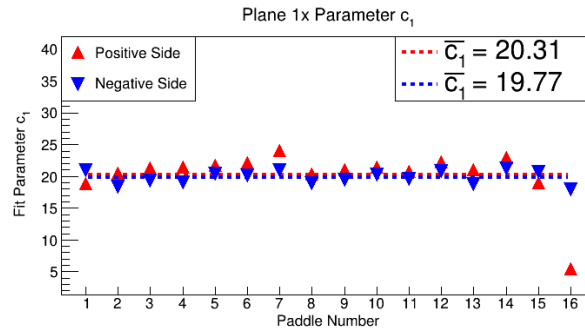


TimeWalkCalib.C

Unfortunately the multiplot for the HMS fits isn't working right now.

However it still outputs the parameters.

I don't trust these given what was on the last plot.

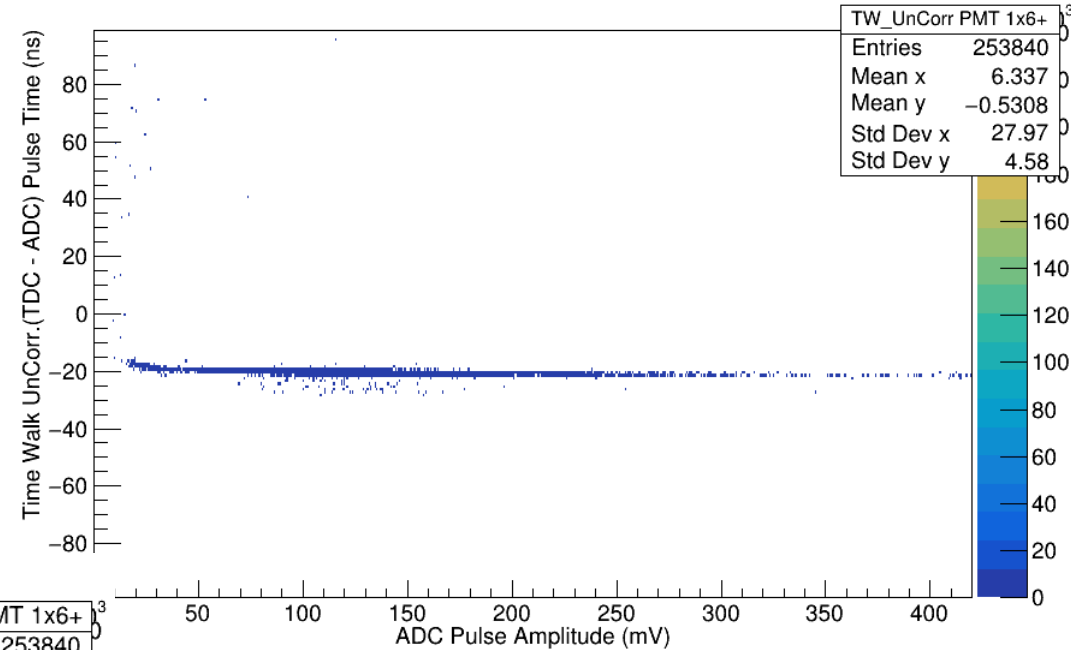


HodoCalibFit.C

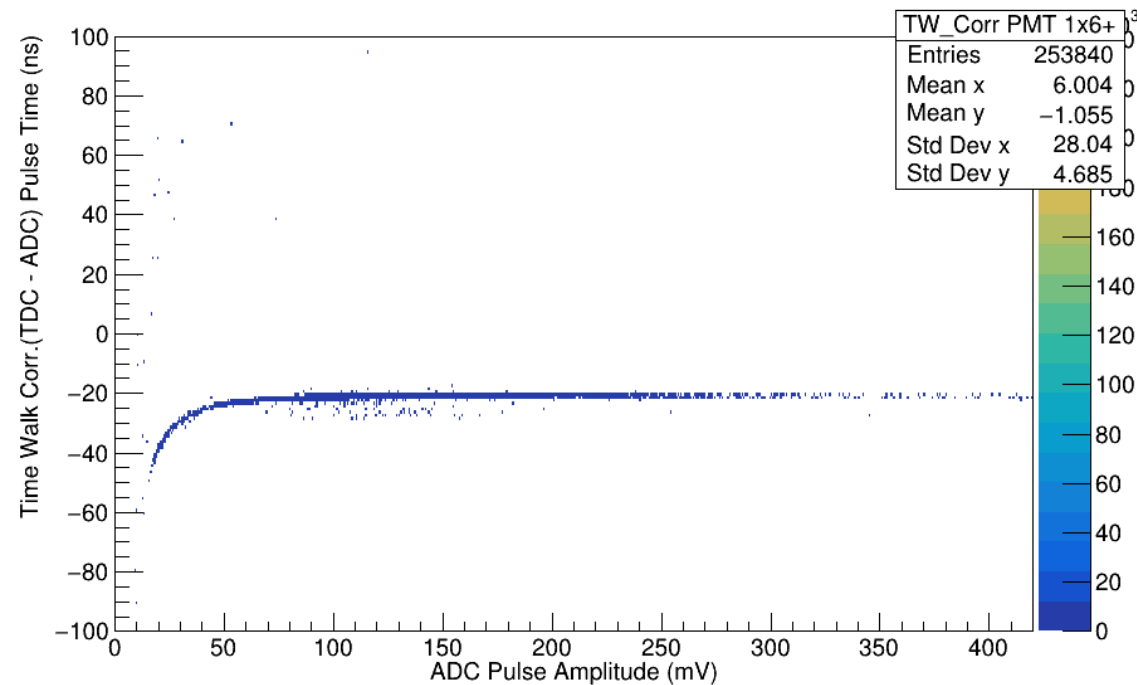
The time walk fits are broken for the HMS.

Also clearly there are suitable events in HMS timeWalkHistos.C is cutting them for some reason.

PMT 1x6+: UnCorr. (TDC - ADC) Pulse Time vs. ADC Pulse Amplitude



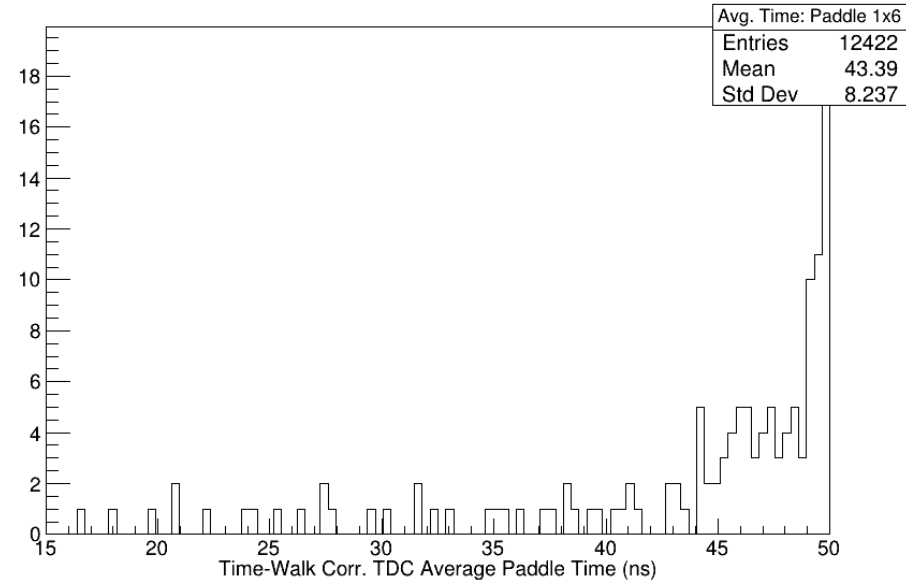
PMT 1x6+: Corr. (TDC - ADC) Pulse Time vs. ADC Pulse Amplitude



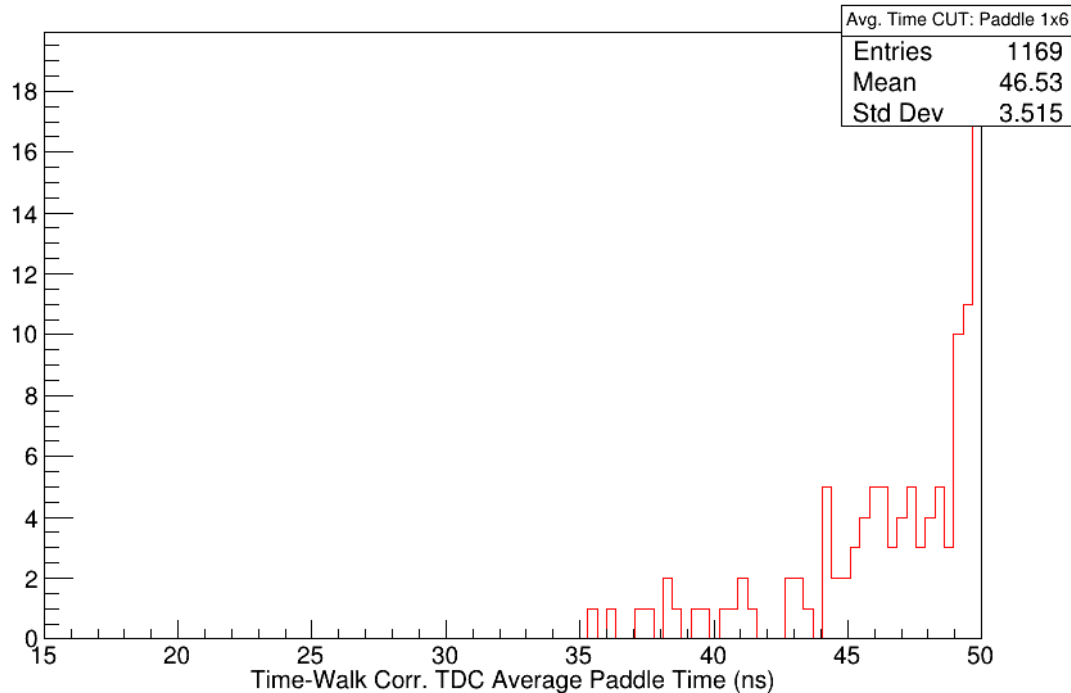
Average Paddle Time

Its clear that this is not selecting the peak because it was outside the expected range.

Paddle 1x6: Time-Walk Corrected Average Time

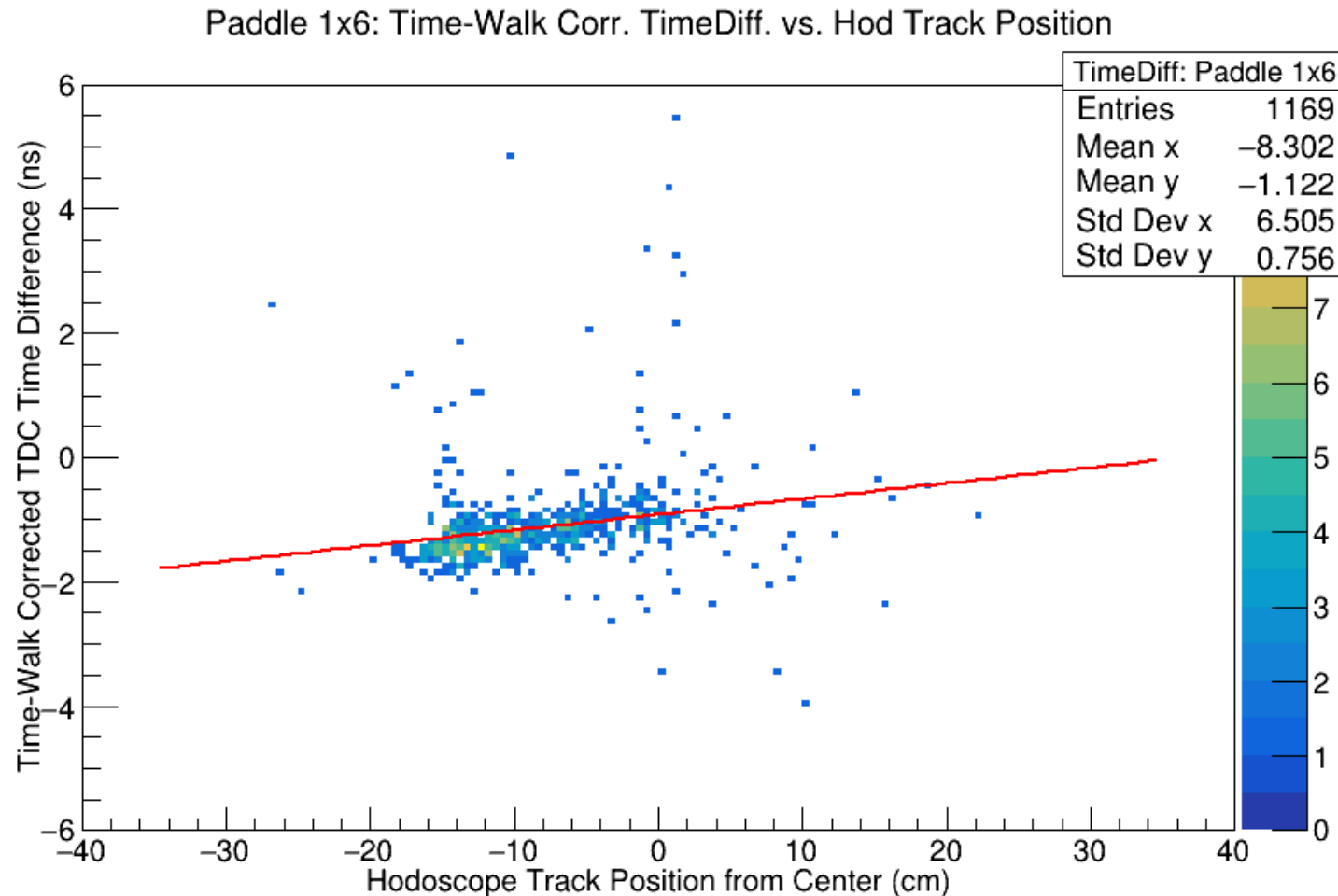


Paddle 1x6: Time-Walk Corrected Average (CUT)



Track position Correction

Suffers because most of its events got cut





HMS Summary

- TimeWalkHistos.C is cutting most of the data out of its plots.
 - This is causing TW fits to be done poorly.
- The range on the average Paddle time needs to be extended