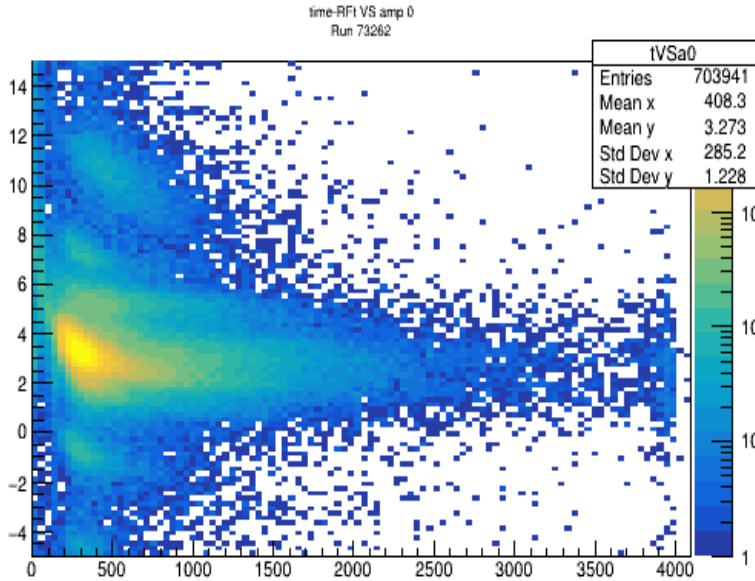
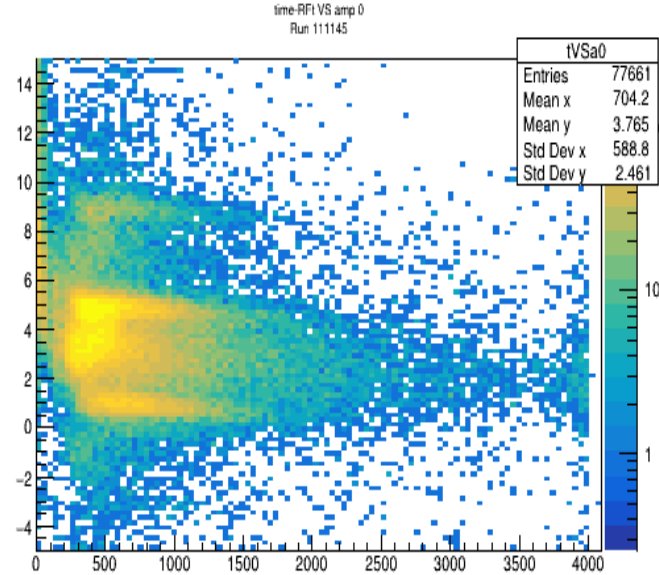


Start Counter data: dt Vs Amp where dt is t\_TDC minus RF\_t and Amp is Start counter signal amplitude. look at two different runs 111145 of current run period and run 73262 from Fall19

Run 73262

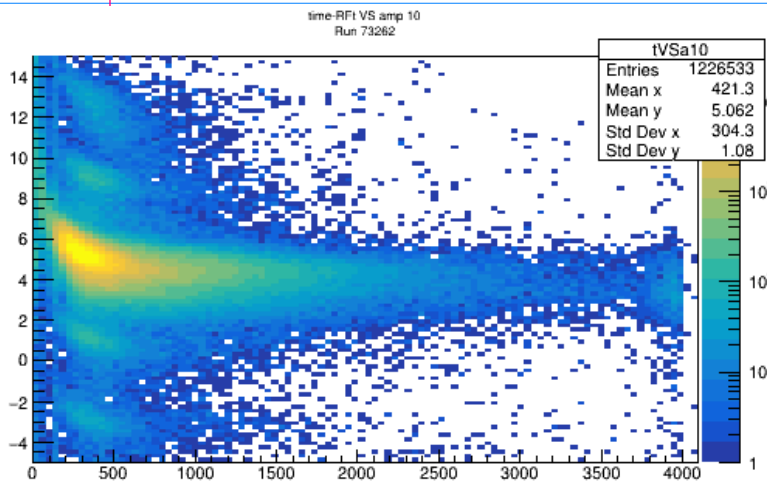


Run 111145

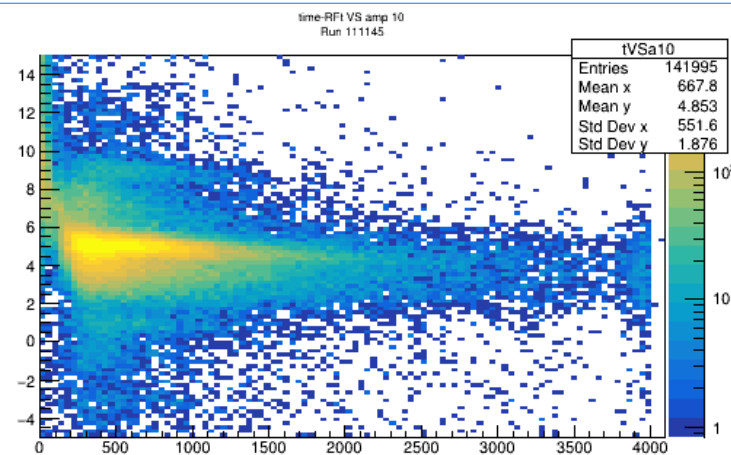


This is at  $z=60$  half way to the bend section in the start counter  
next look at the same plots but at  $z=80$

Run 73262



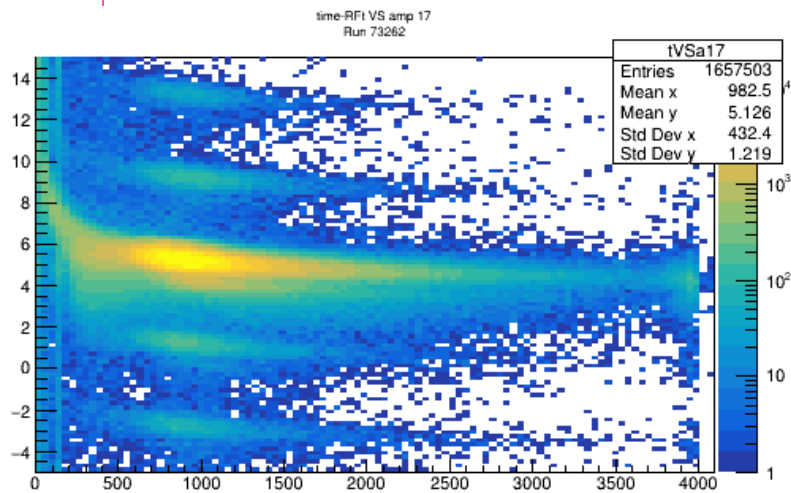
Run 111145



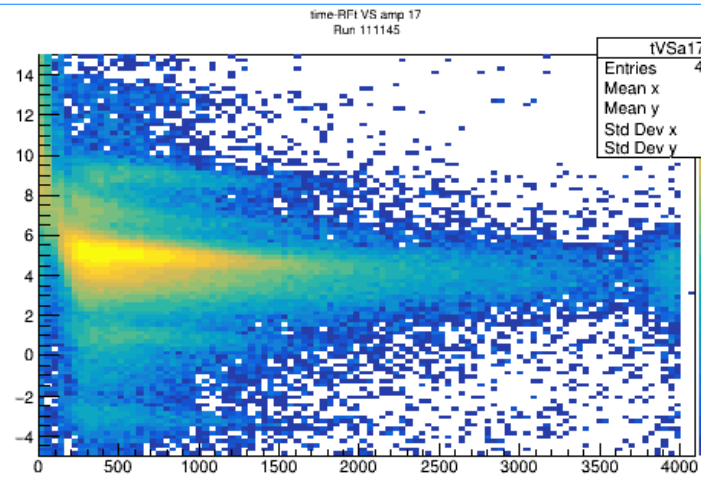
For run 73262 the different RF bunches are nicely visible which for run 111145 is somewhat harder. The amplitude of the signals are much wider distributed in run 111145 and generally a much flatter pattern as in the first plot.

Now look close to the nose end of the start counter at  $z=94\text{cm}$

Run 73262



Run 111145



Now it looks a little more clear that the gain seems to be the issue. The minimum ionizing peak is nicely identified in the left plot sitting around 900 ADC counts where in the right plot the peak is not as nice and at much lower amplituded. The whole distribution is smeared out and there appear to be additional "lines" between the 4ns spacing of the beam bunch