

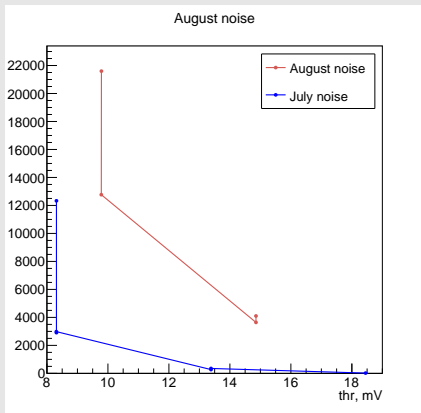
*status [2023-11-27 Mon]*

Straw TB team

November 27, 2023

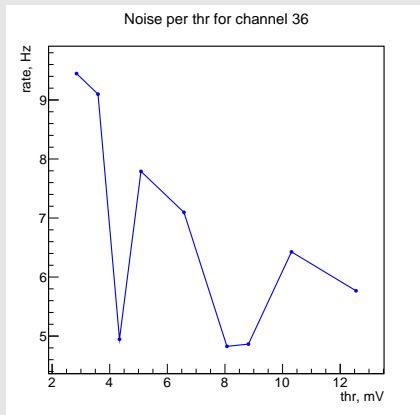
## Noise rates (10mm straw)

Tiger noise rates in July and August



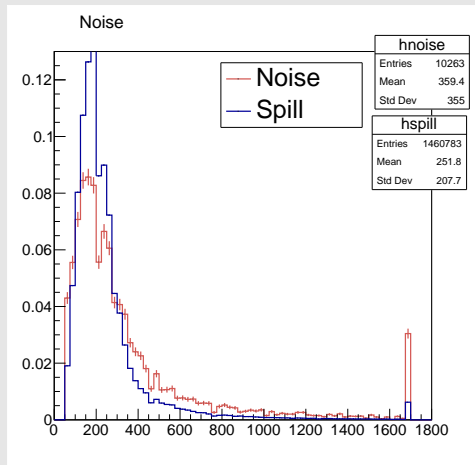
During TB-2023-April-H4 – about 250Hz  
Low noise rate for VMM and April TB

VMM: Noise rate per threshold (25ns peak time, channel 36)



## Noise charge (channel 36 – 10mm straw)

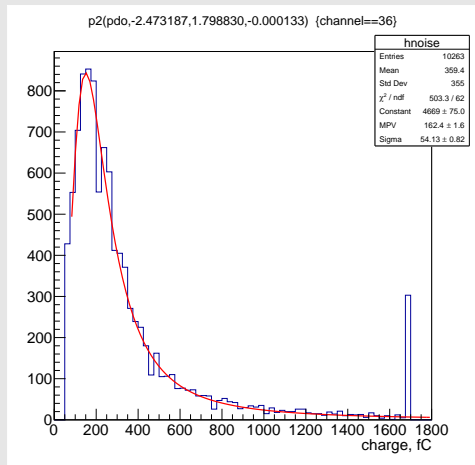
Noise and spill hit charges (200ns peak time)



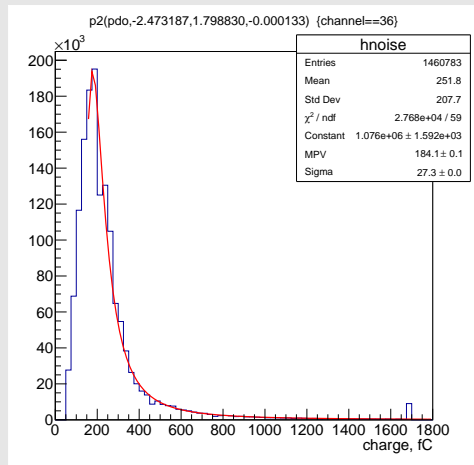
"Noise" – straw hits out of spill time. But most of data are not electronic noise.

# Noise charge (channel 36 – 10mm straw), fitted

## Noise hit charge (200ns peak time)



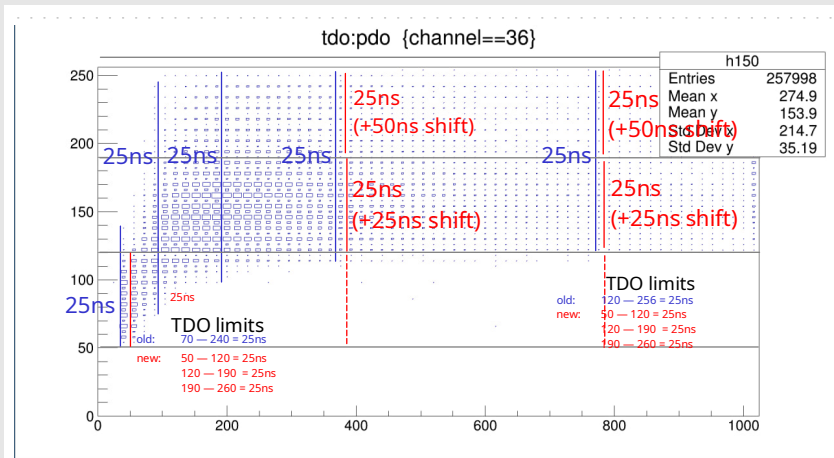
## Spill hit charge (200ns peak time)



## New TDO calibration

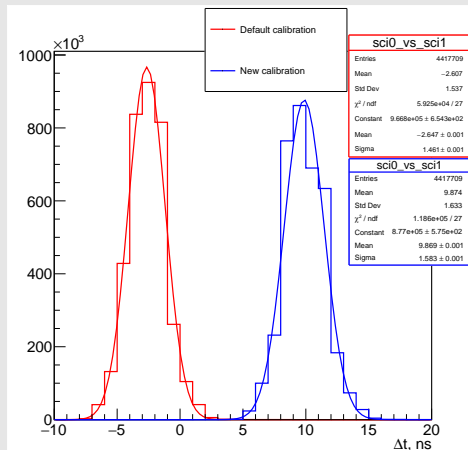
$$T = 25ns \cdot \left( BCID - \frac{TDO - Limit_{low}}{Limit_{up} - Limit_{low}} \right)$$

Comparison of old and new calibration (X - pdo, Y - tdo)



## New TDO calibration: sci vs sci (April 22)

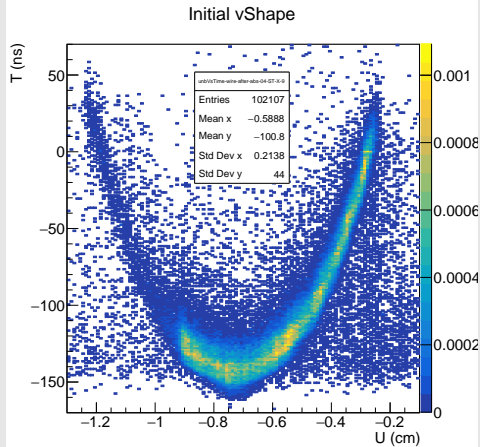
run TB-2022-April-H4-57



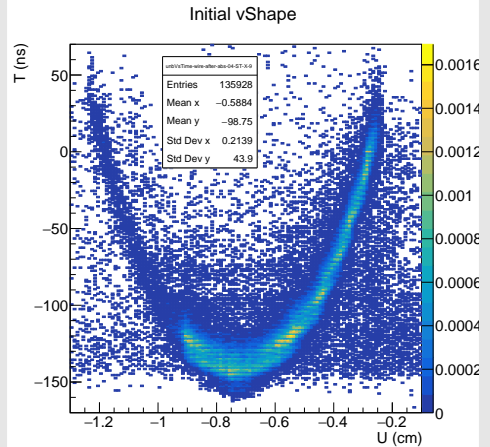
On TB-2022-April-H4 data with multiple scintillators on the VMM there is no difference between old and new calibration

# New TDO calibration: August 23 TB data

old tdo

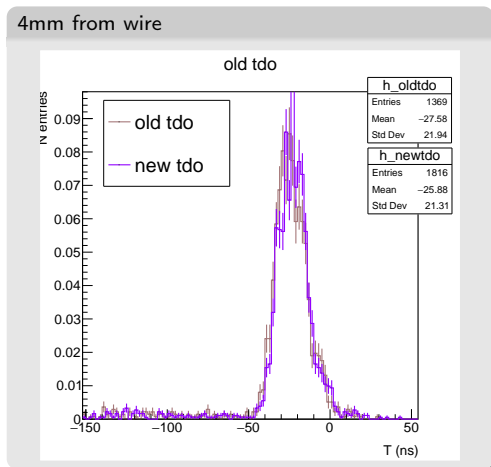
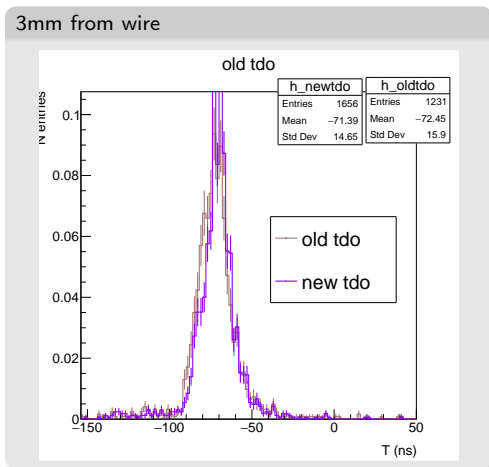


new tdo



Seems, new calibration has more noise inside RT, see next slides.

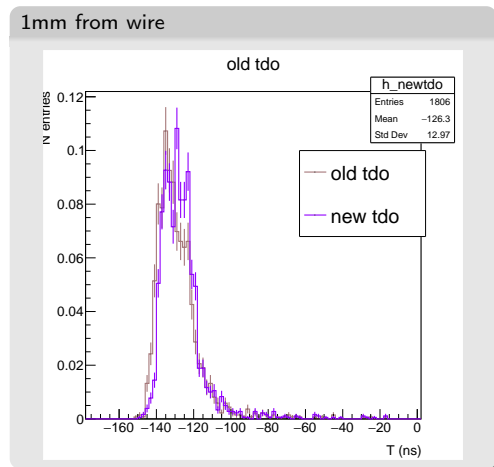
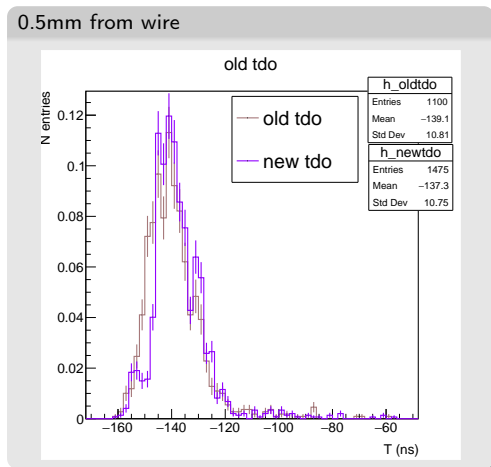
## New TDO calibration: August 23 TB data



There is no significant difference between old and new TDO calibration. Why?  
Maybe, for 3mm old distribution is a little wider. . .



## New TDO calibration: August 23 TB data

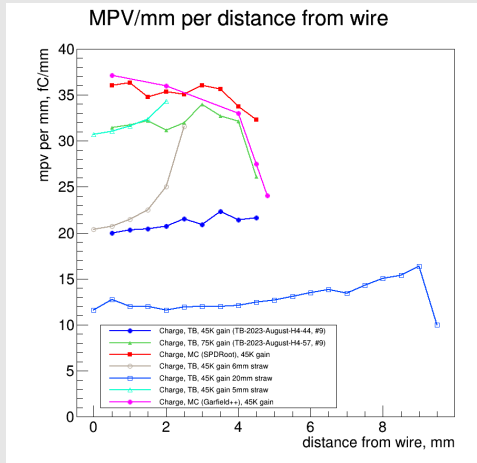


The main difference between calibration is on 0.5mm picture: peak around -130 increased. Seems, that peak is from wrongly-calculated BCID.

That is strange for me, that with such different calibrations we have about the same results.

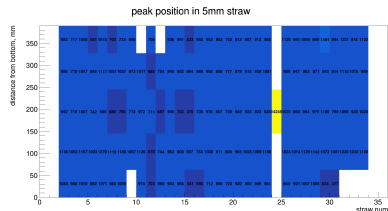
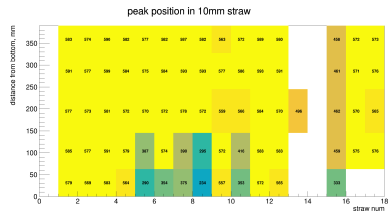
# Reminder: PDO calibration status

MPV per mm



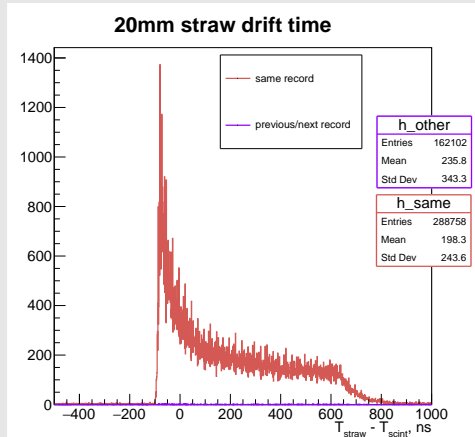
We checked old Fe55 data from July:

- 5mm has mean around 750
- 10mm – around 500



## Checked the same/other record in VMM3 data

August data



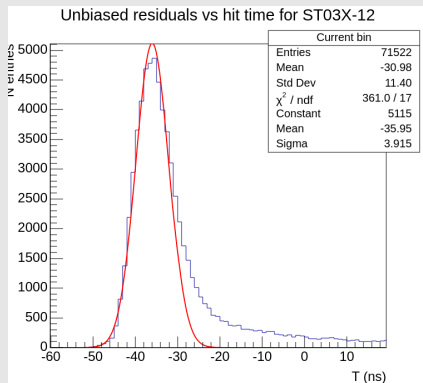
To check the correctness of using only one "entry" in VMM data tree, I checked time difference for events in the previous/next "entry" to entry with scintillator hit. I see couple events with correct time difference, so we can continue to use only the same TTree "entry".

## Which fit better?

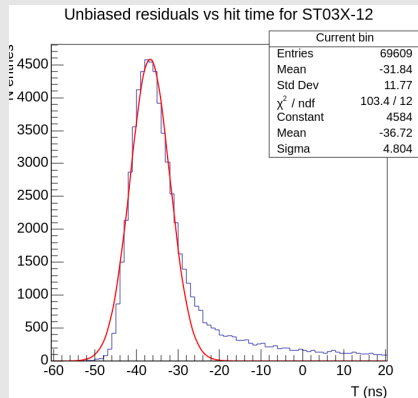
Andrei checked, that Crystal Ball function uses gauss "sigma", so we wanted to check if we can improve limit selection for gaussian fitting to reduce  $\sigma_t$ .

But that is the question, how we want to fit our time distributions. . .

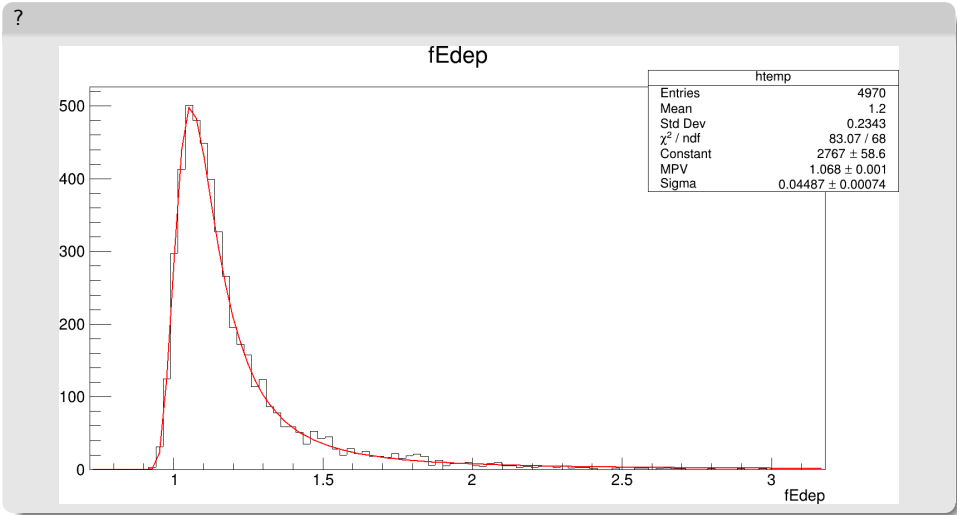
### Fit of left part of time distribution peak



### Fit of time distribution peak only



# Demijan data

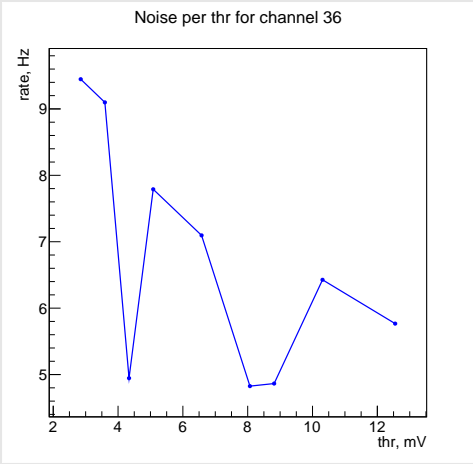


# Backup

backup

# VMM noise rate (channel 36 – 10mm straw)

VMM: Noise rate per threshold (25ns peak time)



VMM: Spill rate per threshold (25ns peak time)

