Status Report

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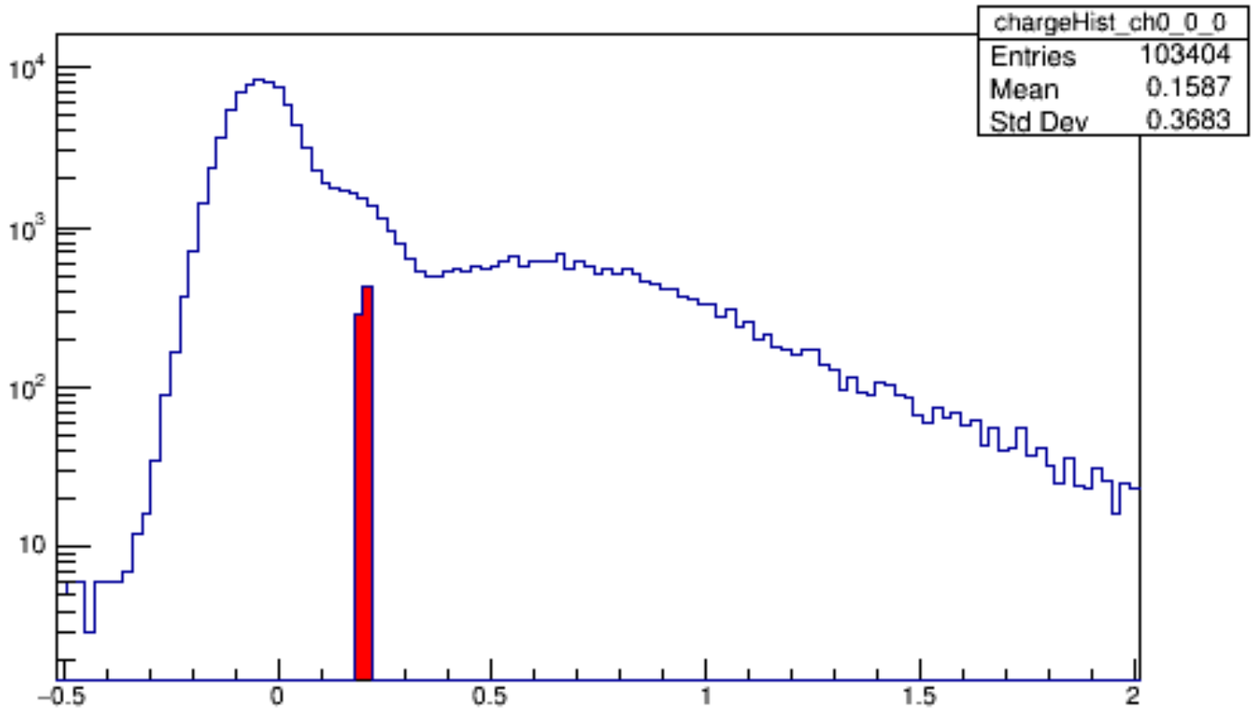
In this week…

- Bump in pedestal
  - Brought the waveforms of the bumps in charge hist. (but how do I show these waveforms, there are lots of events?)
  - Considered the method of calculating a baseline:
  - check charge histograms while changing the method of calculating the baseline.
- Investigation of a bump in a time histogram in terms of an after-pulse.
  - though a bump doesn’t seem to affect TTS calculation
- Stability for 3”PMT PMT
- Light Uniformity
  - need to enlarge light?

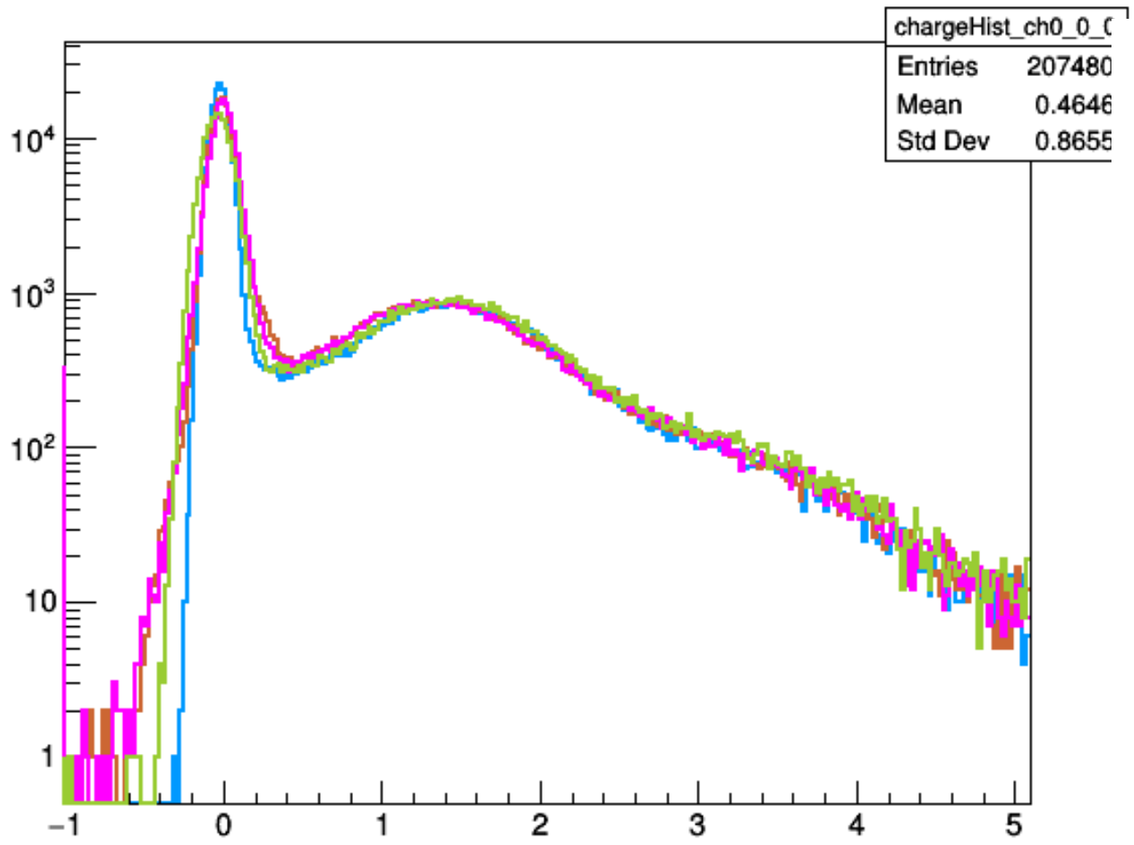
- The measurement was done for BC0035 / negative HV
- And the some data are processing:
  - the dependence on pos./neg. HV for BC0035 and on pos. HV for BC0038
  - the TTS dependence on number of p.e. for BC0035/38.

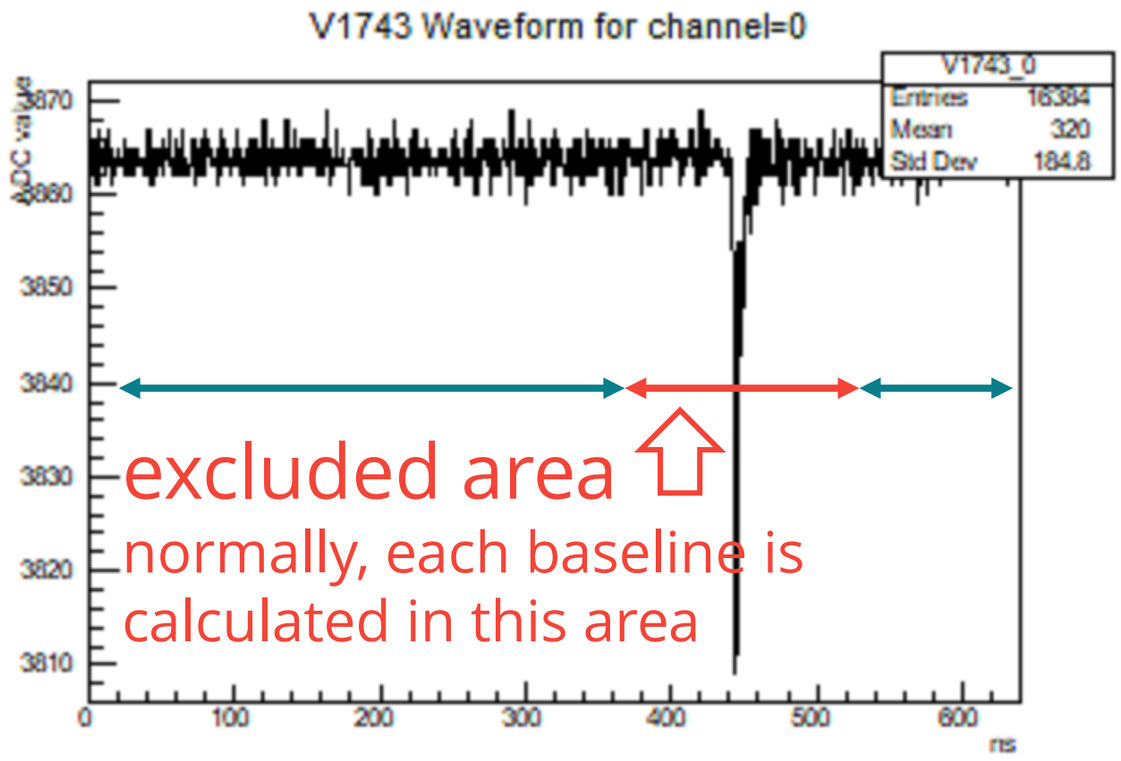
Waveform of pedestal bump



- Extract the bump event
  - with the restriction from charge value
  - we can check these waveforms in “testHMDec04_bumpWaveform.root”
  - it doesn’t seem there are some significant characteristics.

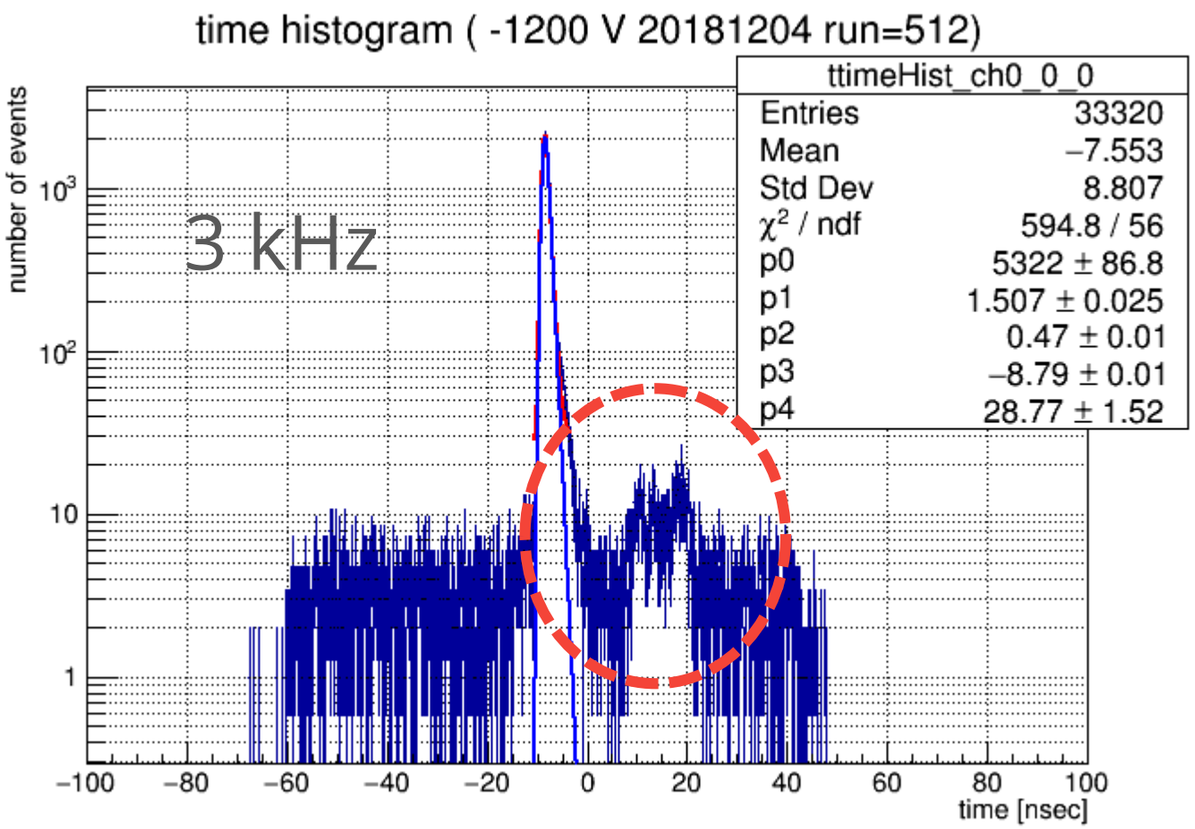
Method of calculating a baseline

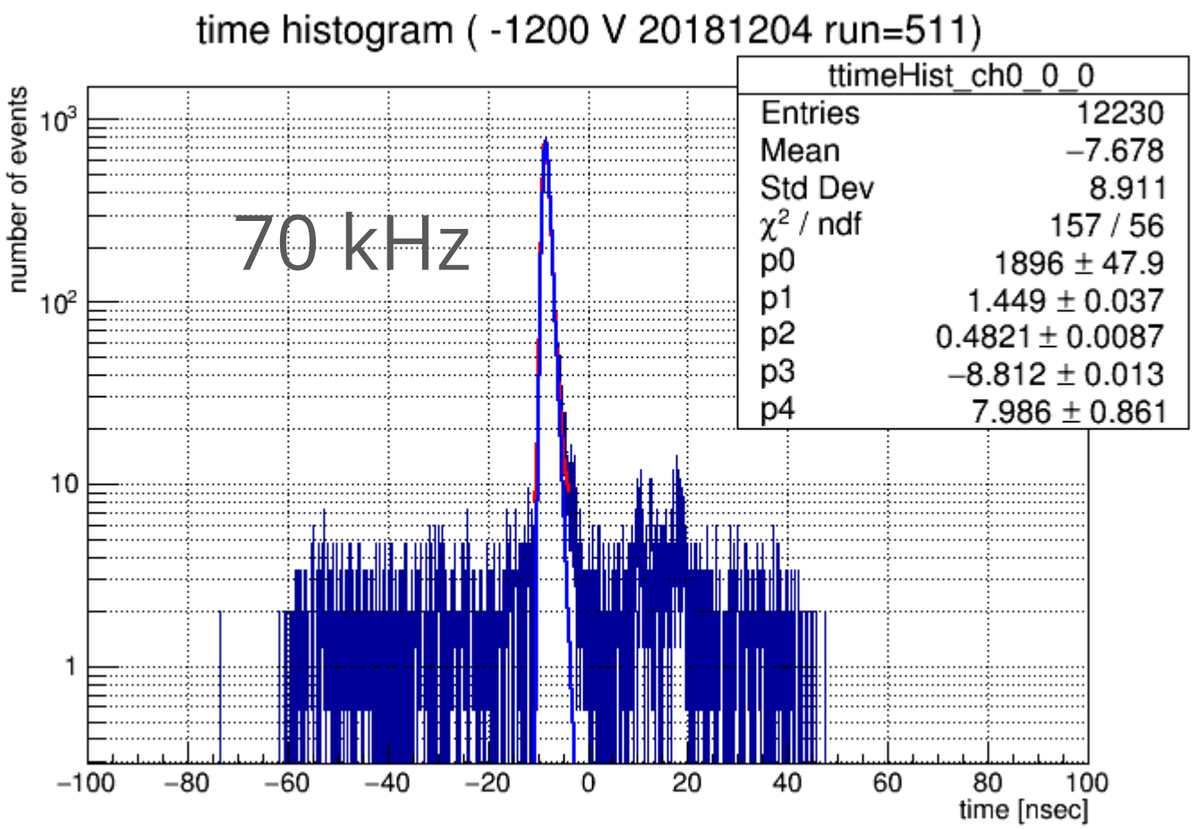


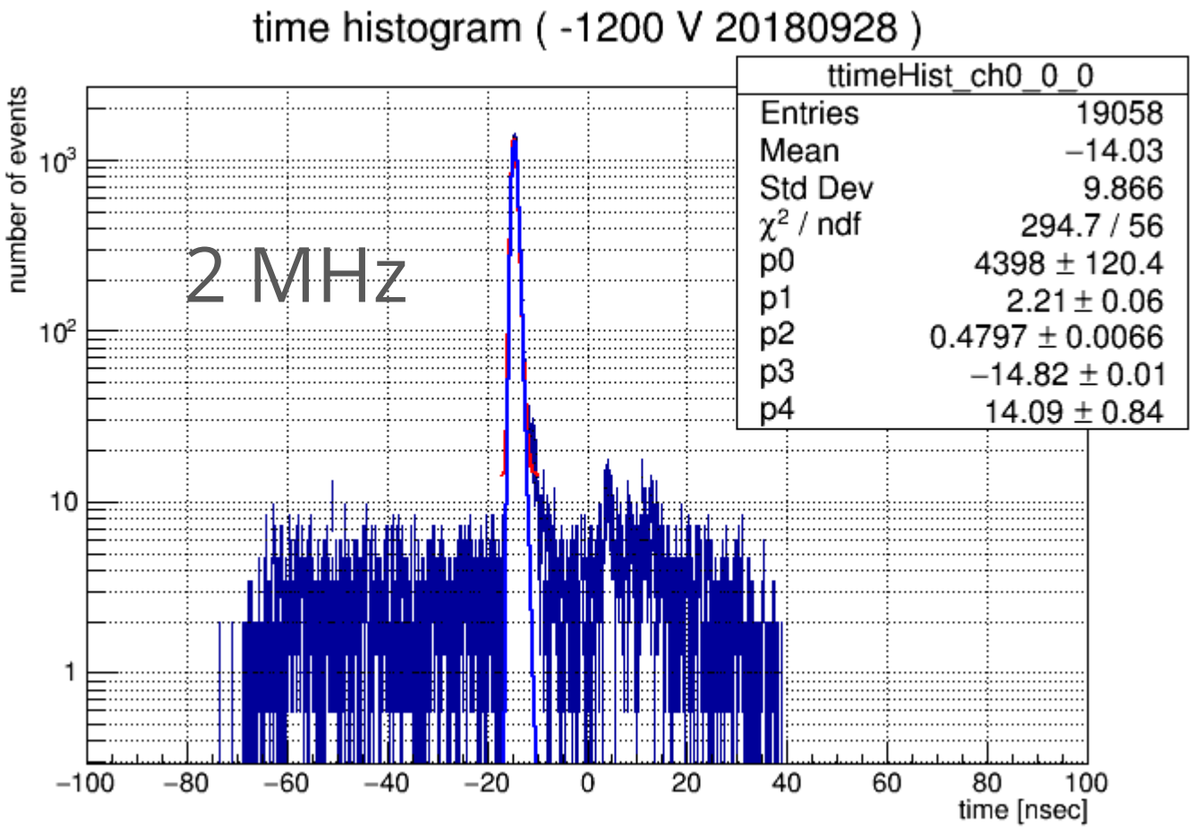


- Orange+5: previous method (not Gaussian fit)
- Magenta: Gaussian fit
- kSpring+5: excluded area=100 nsec
  - calculate a baseline in all area on both sides of the excluded area (i.e. in green area)
- Azure+7: excluded area=50 nsec
  - same as kSpring method

Bump in time histogram

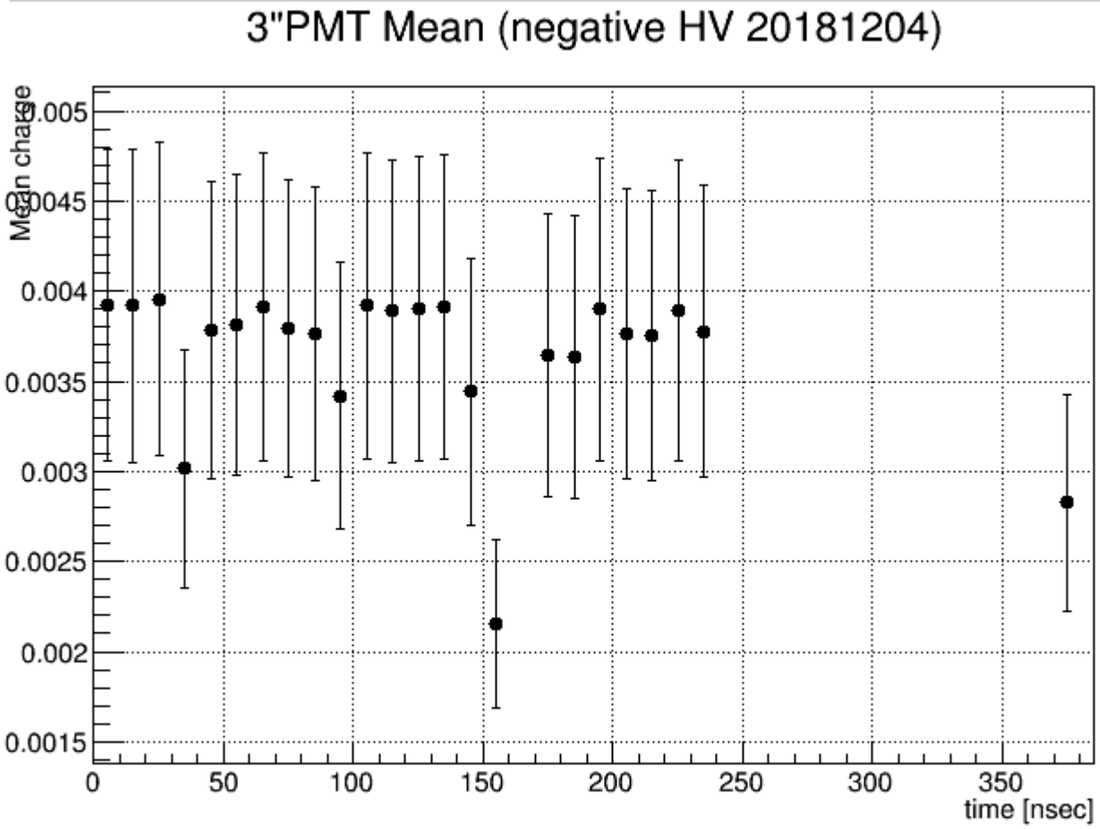


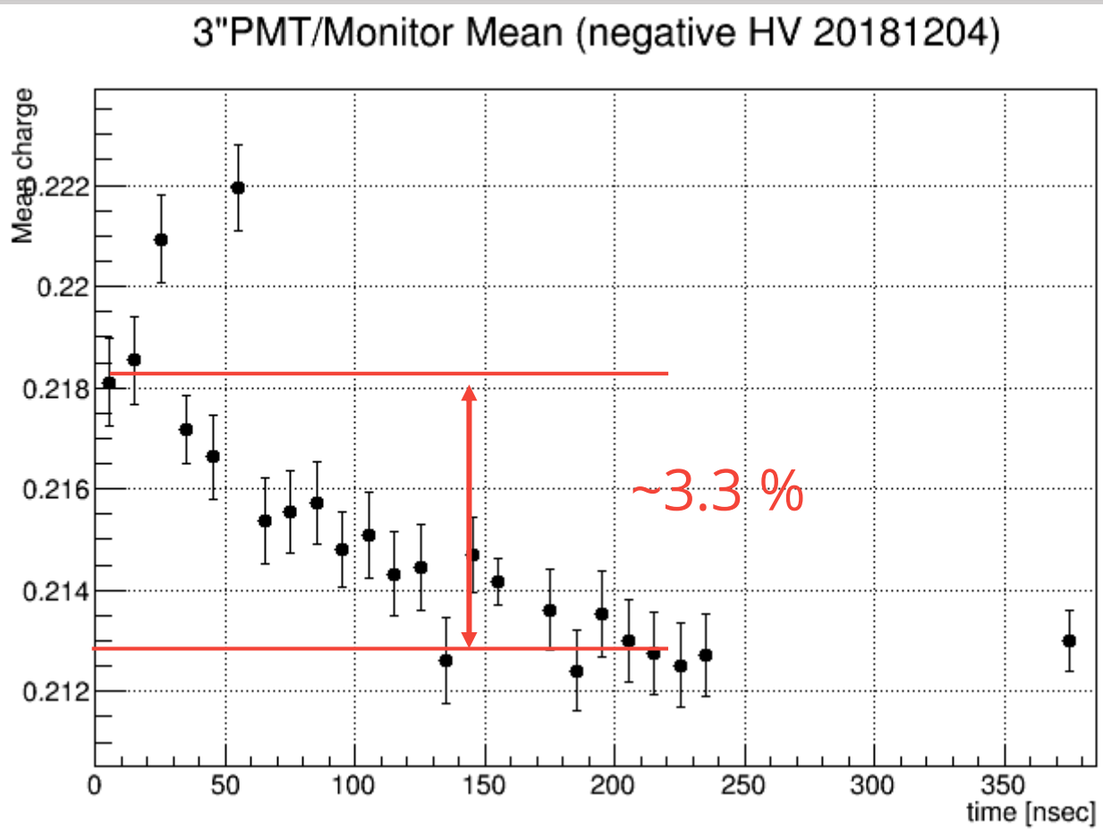


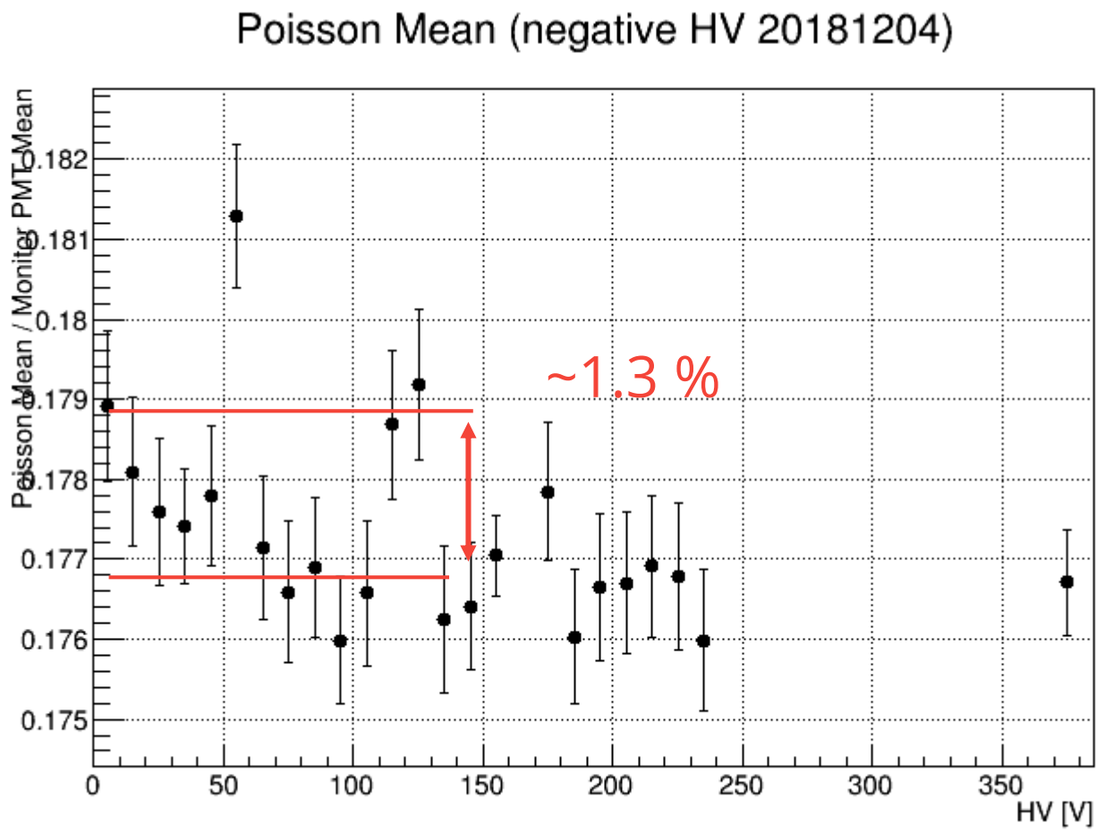


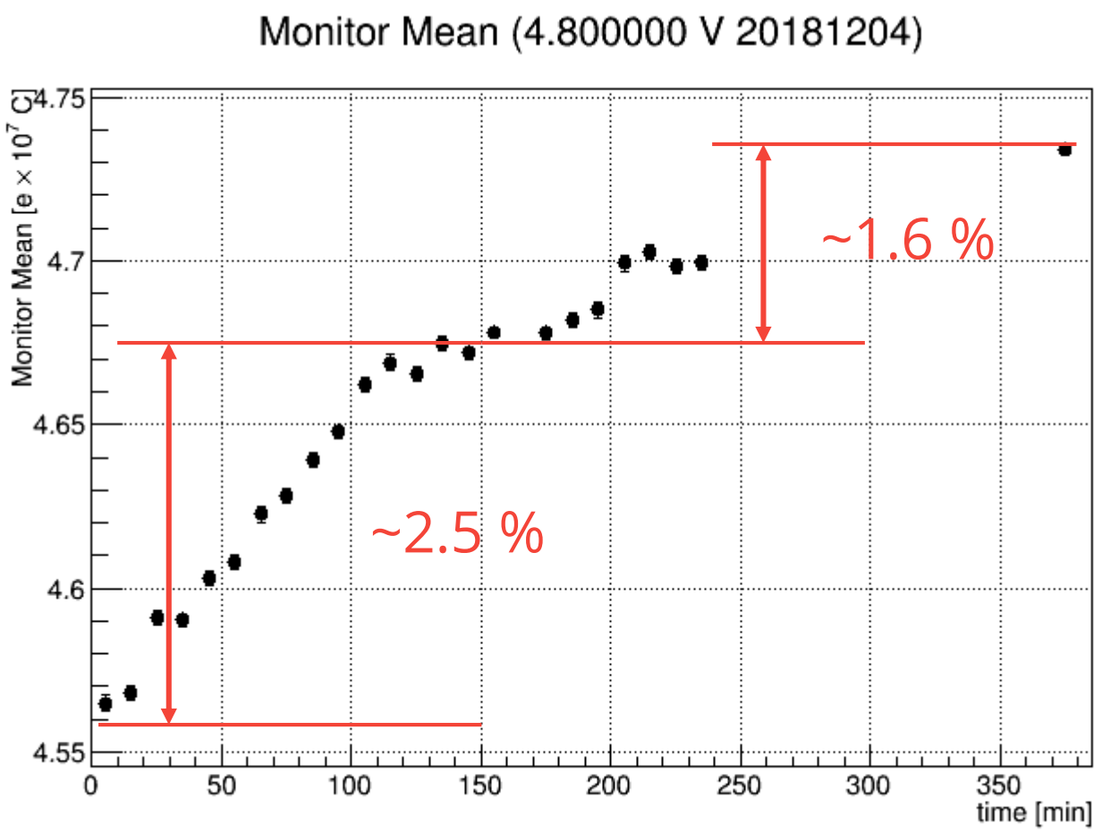
- Whether a after-pulse causes the bump?
  - this is only a brief check.
- Change trigger frequency
  - getting more lower frequency, a width of trigger pulse will increase
- But the bump still exists
  - the result suggests the bump doesn't come from after-pulses.

Stability: 3”PMT (2.5 hours leaving LED and Monitor on)





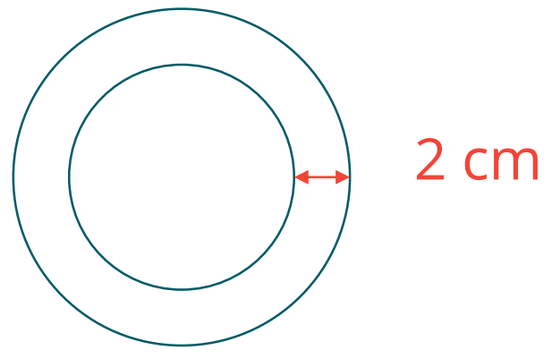




Light Uniformity

position [cm] left <-> right	-3	-2	-1	0	+1
“backward” Mean of charge hist. (Poiss. mean)	0.9677+/-0.0036 (0.7937+-0.0039)	0.9844+/-0.0036 (0.8078+/-0.0039)	0.9841+/-0.0036 (0.7893+-0.0039)	0.9697+/-0.0035 (0.7705+/-0.0036)	0.9594+/-0.0031 (0.7667+/-0.0033)
Mean of charge hist. (Poiss. mean)	1.035+/-0.003 (0.8458+/-0.0035)	1.055+/-0.004 (0.8642+/-0.0041)	1.09+/-0.004 (0.8912+/-0.0047)	1.091+/-0.004 (0.8869+/-0.0047)	

- “backward”: have 3”PMT away from the lens by ~1 cm
  - to get more enlarged light, but sometimes 3”PMT is pushed by the wall and moves a bit.
- we need at least 2 cm uniformity for the reflector meas.
  - in the current situation, the size of light area might not enough?



Summary and to do

- Stability…
  - 3”PMT itself looks like more stable than Monitor/LED.
  - Monitor/LED increase depends on…?
- Measure the uniformity
  - need to enlarge the light size?
- TTS plots against # of p.e.
  - measurement had already done, only need to process.
- Gain/TTS for BC0035
  - and positive HV for BC0038
- Reflector measurement
  - compare number of p.e.