Coldbox Calibration

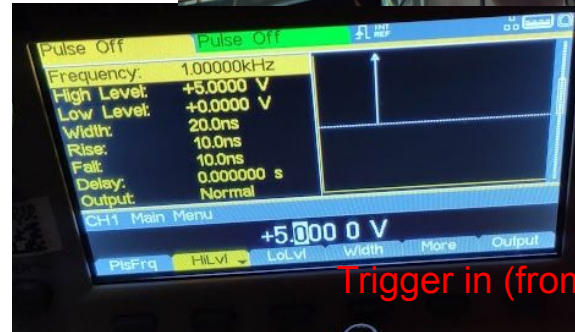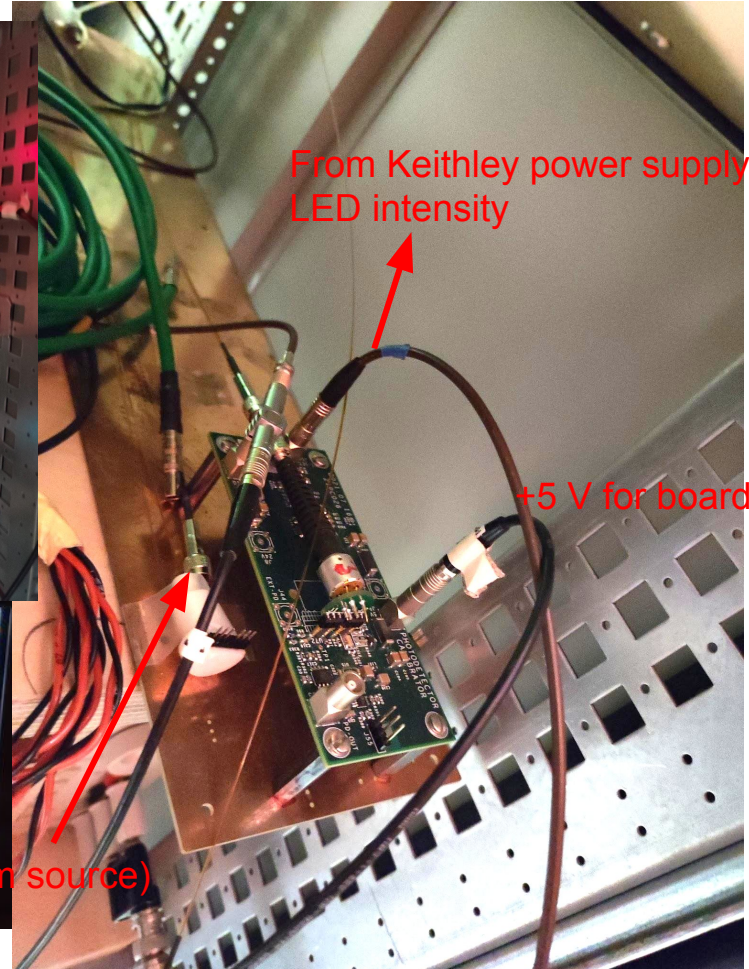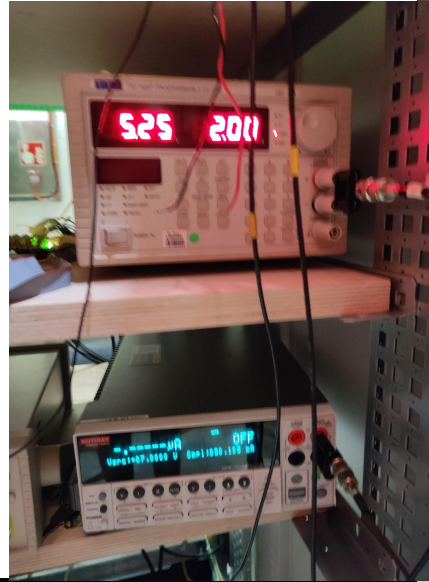APC - 01/02/2023

Coldbox - LED calibration

The laser can be changed

275 nm (labeled #3) used for SPE

This is the configuration used to trigger the LED.
Ch1 -> LED
Ch2 -> digitizer/oscilloscope.

From Keithley power supply
LED intensity

+5 V for board

Trigger in (from source)

Coldbox - LED calibration

Using DAPHNE:

- Trigger rate could not be higher than 50 Hz:
  Two configurations used:
  1)
  - LED and Trigger pulse set to 50 Hz
  - Acquisition of 16 us waveform
  Reliable method, but takes around 3 minutes to get 10k events
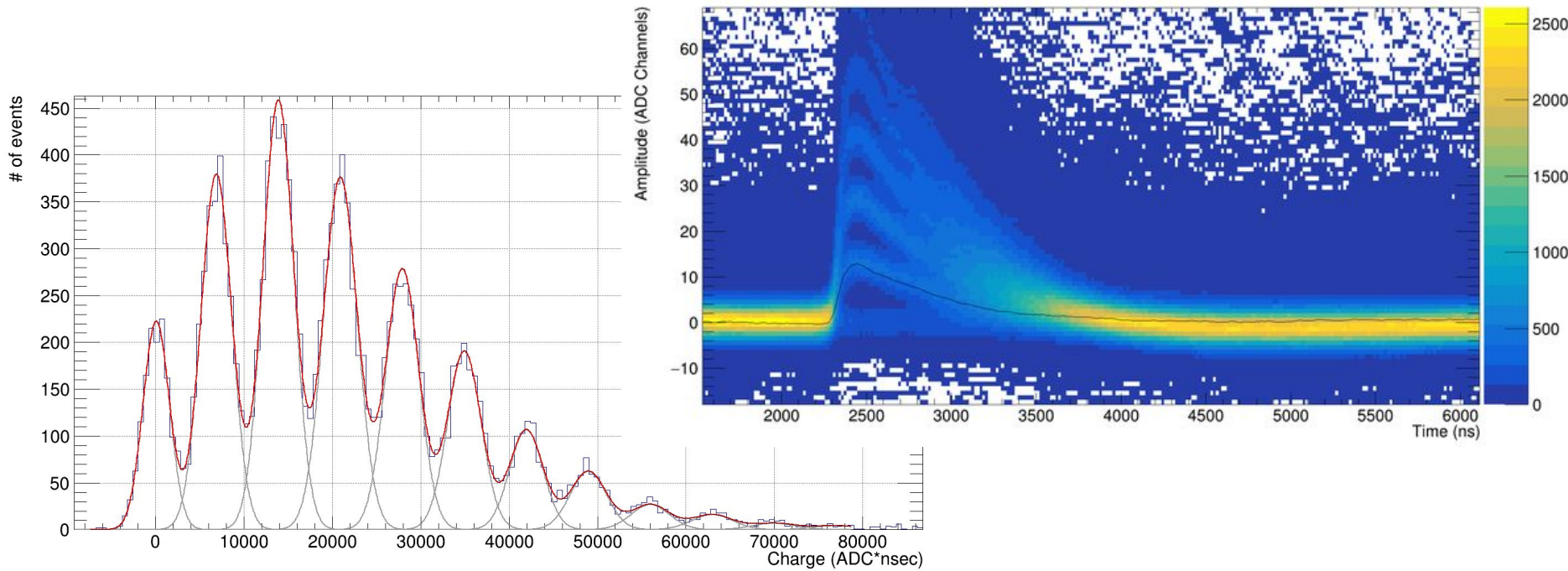 2)
  - LED set to 50 kHz (one pulse each 20 us)
  - Trigger pulse set to 50 Hz
  - Acquisition of 100 us waveforms (5 led pulses in each waveform)
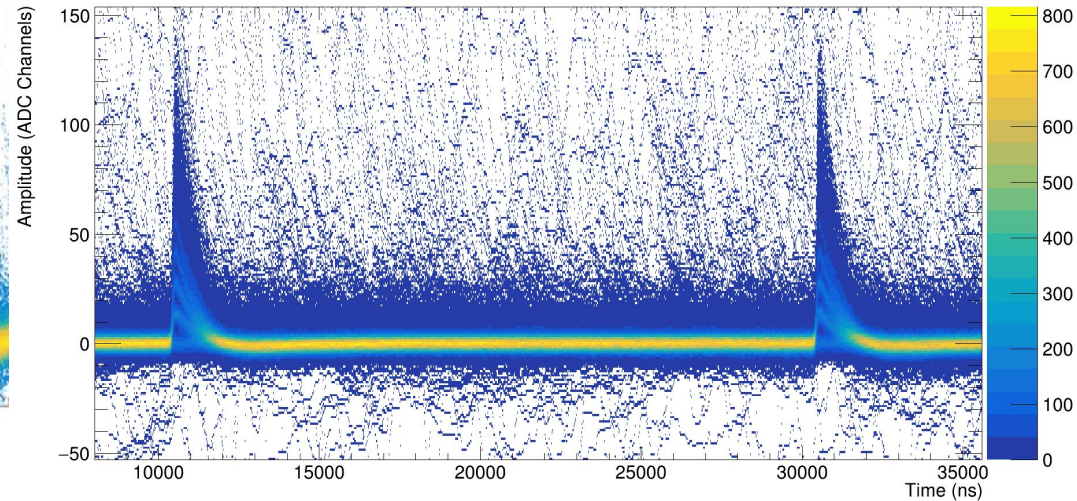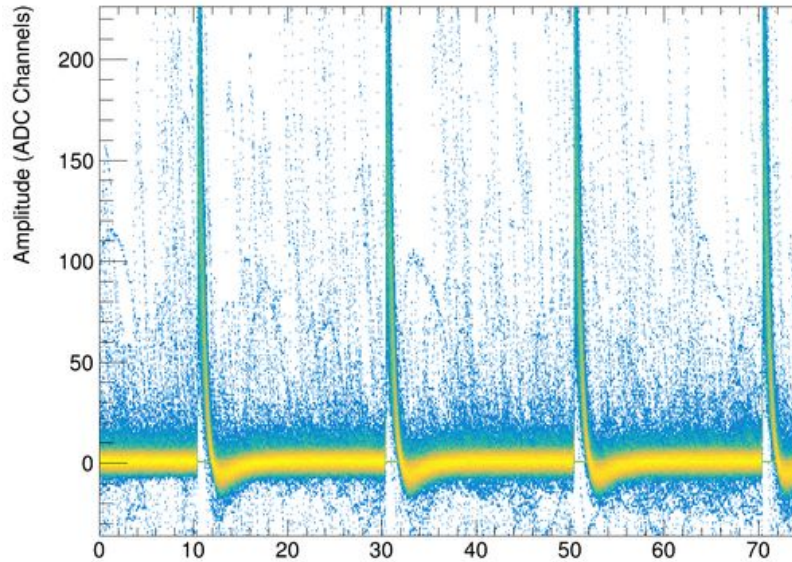 Still need to be fully tested, but takes around 40 seconds to get 10k events

1)

- LED and Trigger pulse set to 50 Hz

- Acquisition of 16 us waveform

Reliable method, but takes around 3 minutes to get 10k events

2)

- LED set to 50 kHz (one pulse each 20 us)

- Trigger pulse set to 50 Hz

- Acquisition of 100 us waveforms (5 led pulses in each waveform)

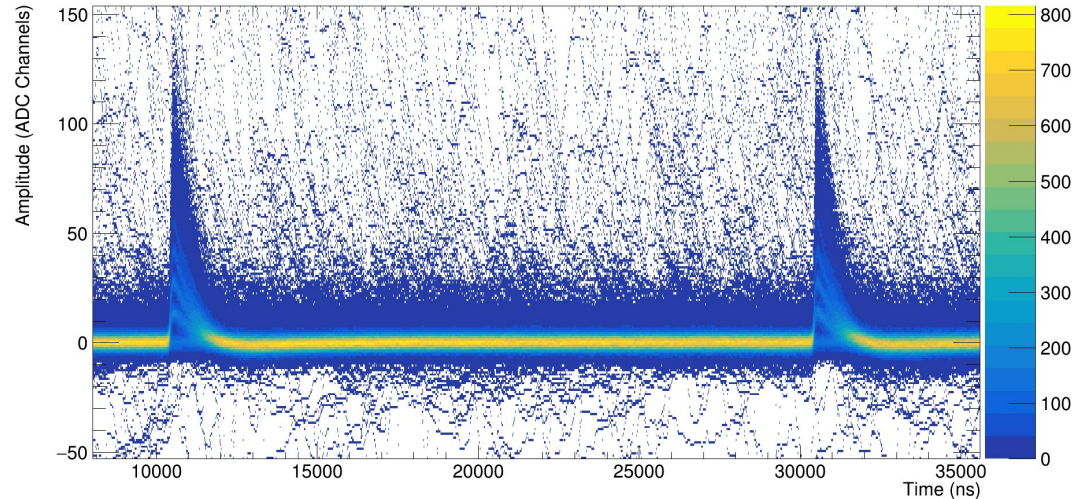Still need to be fully tested, but takes around 40 seconds to get 10k events

2)
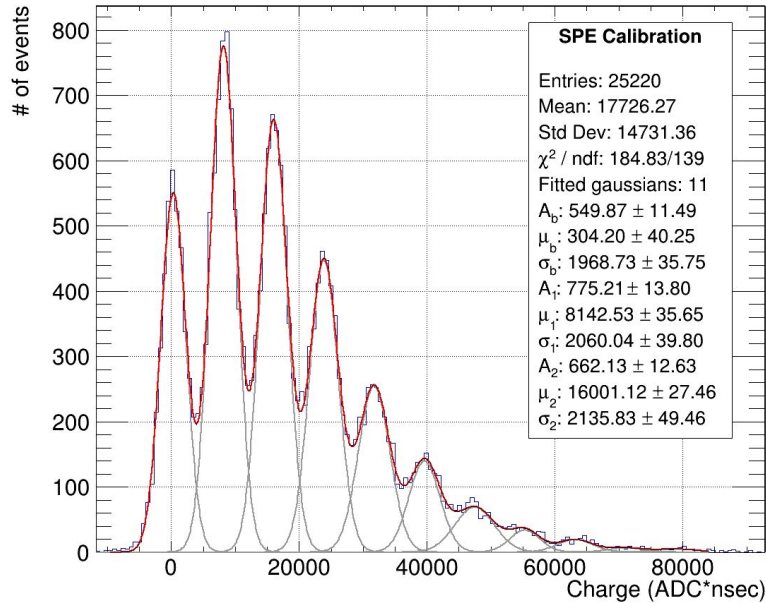
- LED set to 50 kHz (one pulse each 20 us)

- Trigger pulse set to 50 Hz

- Acquisition of 100 us waveforms (5 led pulses in each waveform)

Still need to be fully tested, but takes around 40 seconds to get 10k events

3)

Alternative to calibrate without external trigger:

- Two LEDs, with different intensities
- Flash first LED with low intensity and with a delay of ~1 us flash a high intensity LED
- Self triggering would be easy to spot second pulse, so we can use as reference for performing calibration same as (2)