

# **LAr R&D Progress Updates**

## **05/19/26**

**Yichen**



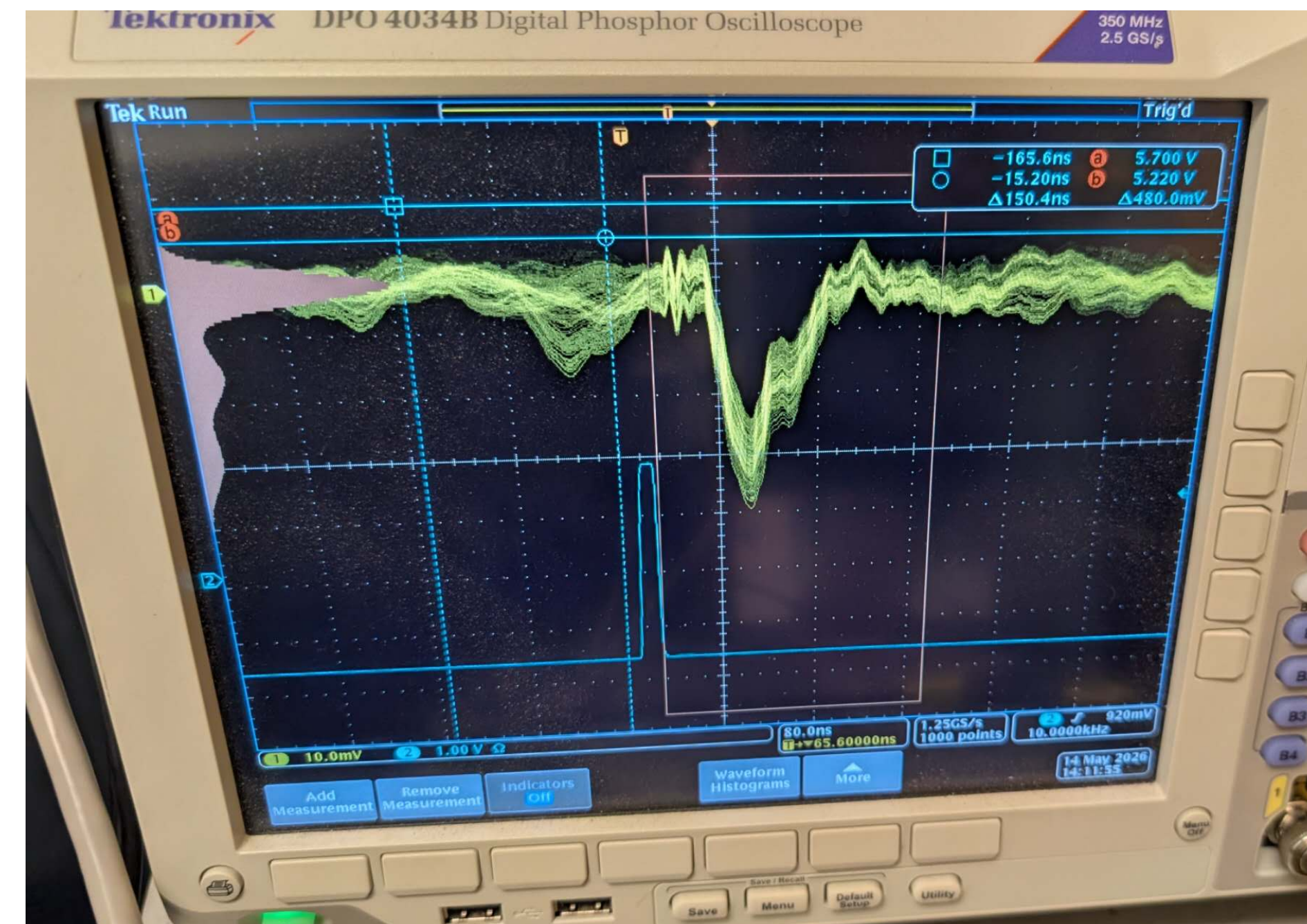
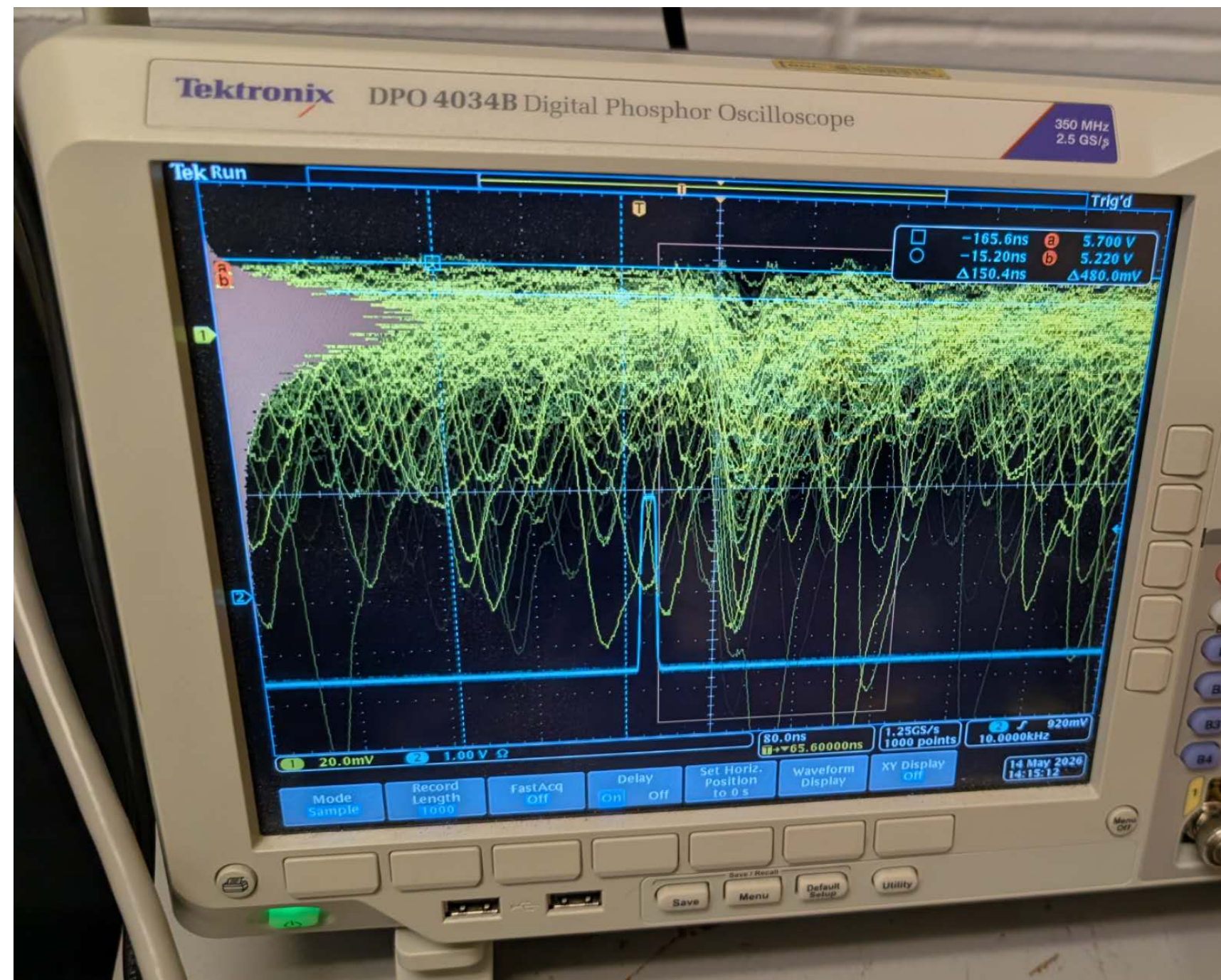
# Lab Safety and Space Management

- 6000-gallon LN2 refill delivered
  - Ordered 4800 gallon,
  - Actual filled volume is 4026 gallon
  - The pressure level gauge has an large offset now, new calibration established with this fill



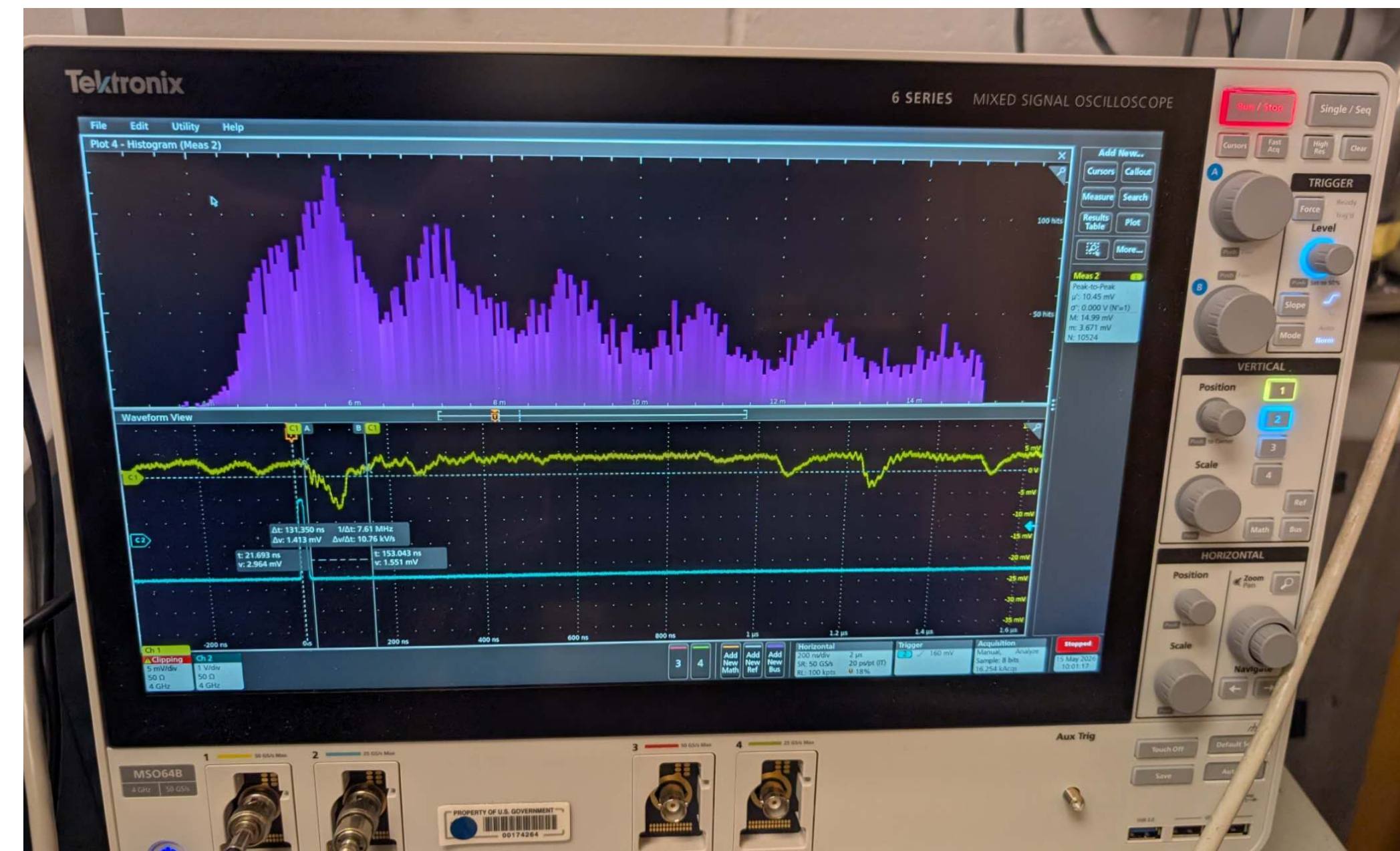
# SPE measurement with LED(Previous)

- S12572-015 sPhenix SiPM signals
  - LED signal visible with direct coupling
  - The single photo signal appears but smeared due to noise(both baseline shifting and running noise)
  - The single photo peaks appears after averaging
  - Need to troubleshooting to reduce the noise
  - Will try the VUV SiPMs later



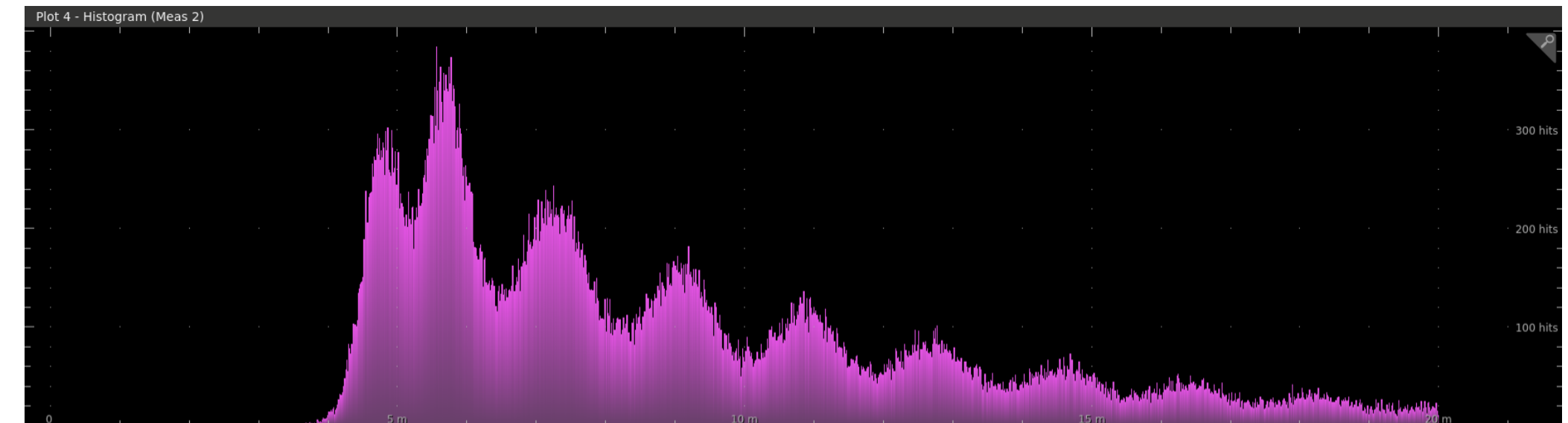
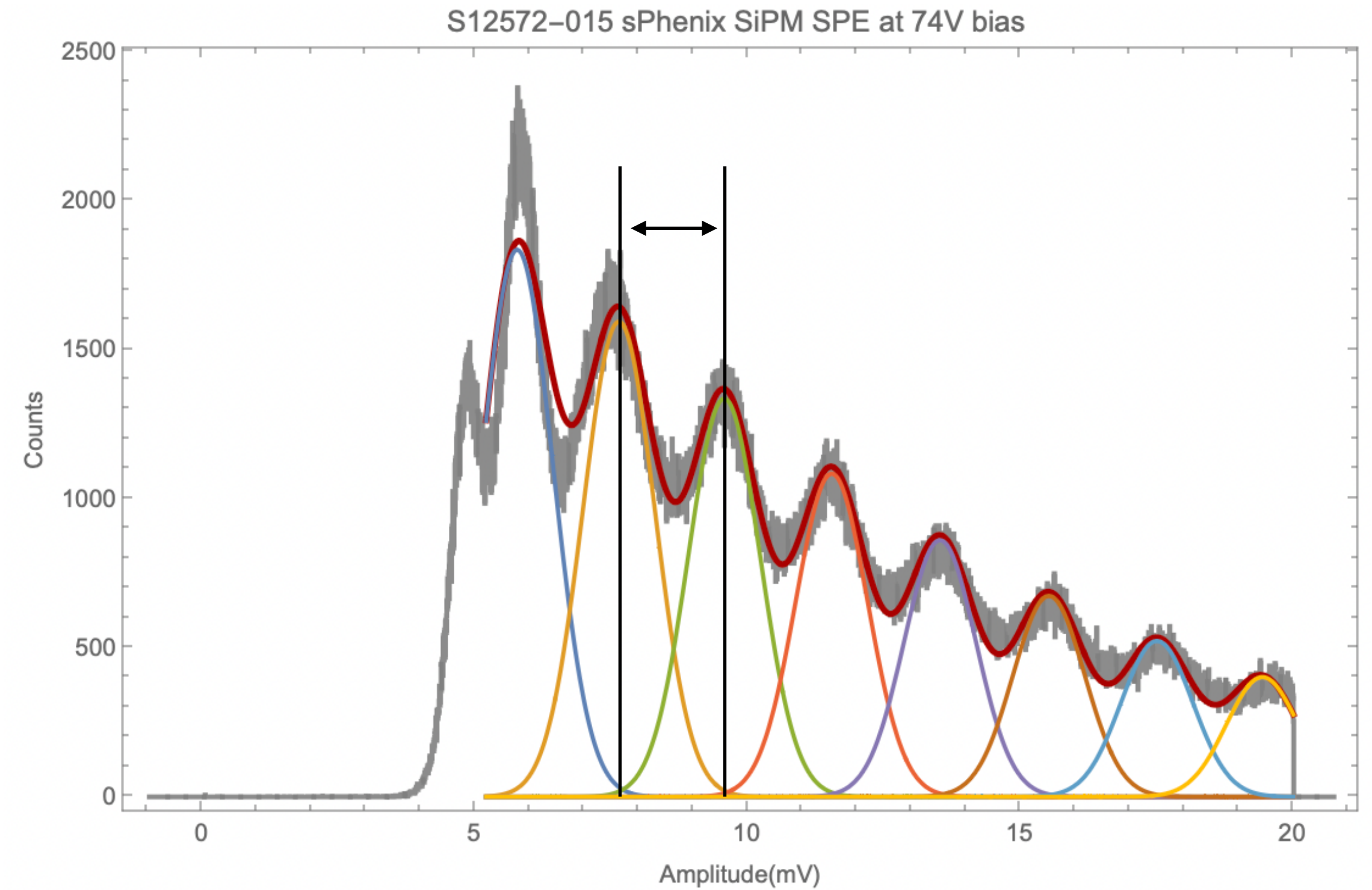
# SPE measurement with LED

- S12572-015 sPhenix SiPM signals
  - The previous measurement is limited by the performance of the oscilloscope
    - Previous oscilloscope simply project to Y-axis for hitogramming
  - Borrowed a high-end oscilloscope MSO64B from Yifan
    - Has more advanced functionalities for histogram, i.e. measuring the peak value, area, etc.
  - The busy off trigger pulse is the after pulse is normal of SiPM,
  - Baseline shift is similar to the setup in Chemistry, mitigating by measuring peak amplitude
  - The SPE spectrum is clear after a few minutes integration
    - The histogram of peak amplitude shown here



# SiPM calibration

- The calibration can be done with the SPE spectrum
  - Just started with different overbias voltages
  - The SPE with 74 Volt bias shown here with multiple peak fits, showing about 1.93mV/p.e.
  - With go through a few more overbias voltages
  - Next is to repeat with the S13370-6050CN VUV SiPMs
  - The calibration will be completed this week



# Miscellaneous

- Summer student
  - Talked to Henry from Rutgers on Monday about the plan
- Efficiency Measurement at Chemistry Department
  - Sasmit is busy this week
  - I will bring the sample to the technician for cutting tomorrow and conduct the measurement next week
- Coating thickness measurement at IO
  - Abudl is checking the availability of the profilometer
  - Rado provide 4 sample with edge to measure
- Emission spectrum measurement with UTA samples
  - Abudl has a student with 1x1 sample
  - I will discuss the measurement plan with him tomorrow