# LAr R&D Progress Updates 03/31/26

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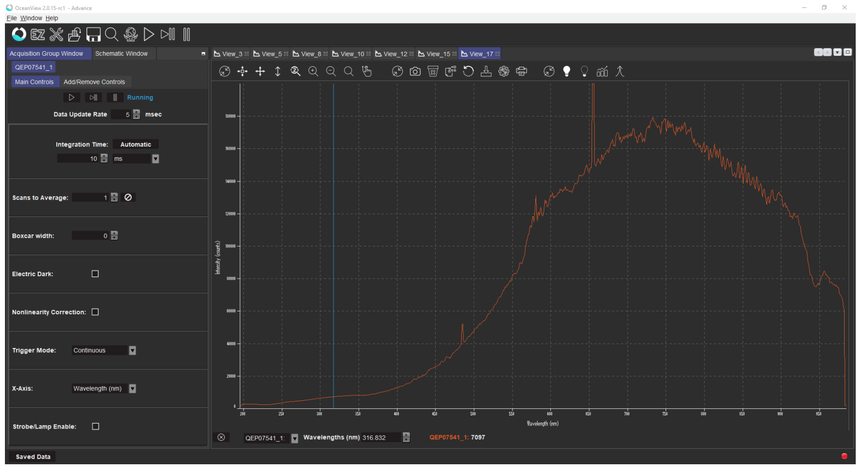
# Lab Safety and Space Management

- Xenon Collection Safety approval
  - Peter visited the lab and we went over the set up, Recommendation provided
    - Complete an updated operating procedure reflecting the revised design (i.e., removal of the hot getter and reduced number of valves and fittings) and include it in the work planning package.
    - The piping needs to be leak tested prior to use under both pressure and vacuum conditions. We recommend performing the pressure test first, followed by the vacuum leak checking.
      - Pressure test: 110% of the maximum operating pressure, held for 10 minutes
      - Recommend test medium: nitrogen gas
    - Full cryogenic PPE is required when introducing liquid nitrogen into the open mouth dewar (via a portable $LN_2$ dewar), including:
    - Once $LN_2$ is introduced, the aluminum cylinder and stainless-steel piping will act as significant thermal conductors. Assume the entire aluminum cylinder may reach approximately 80-100 K, and ensure appropriate PPE is worn throughout the operation.
    - We recommend using a fan or heater to mitigate ice buildup on the exterior of the cylinder and piping due to ambient moisture, particularly given seasonal conditions.
    - There is a possibility that cold xenon gas (~160 K, conservatively) may become trapped between the aluminum cylinder valve and the nearest upstream valve. A pressure relief device should be installed between these points to protect the piping and components.
      - Alternatively, if calculations can demonstrate that the pressure of the trapped cold gas, when warmed to 300 K, will remain within the design limits of the system, a pressure relief device may not be necessary
  - Working on the safety calculation and Work Permit now
- Physics Department Electrical Safety self-assessement
  - Steve, Milind, Xin and me were summoned
  - It is a part of QA of the lab, could be on any topics
  - Went well with the answer sheet I prepared
- Two more 230-L LN2 supply dewar order dispatched

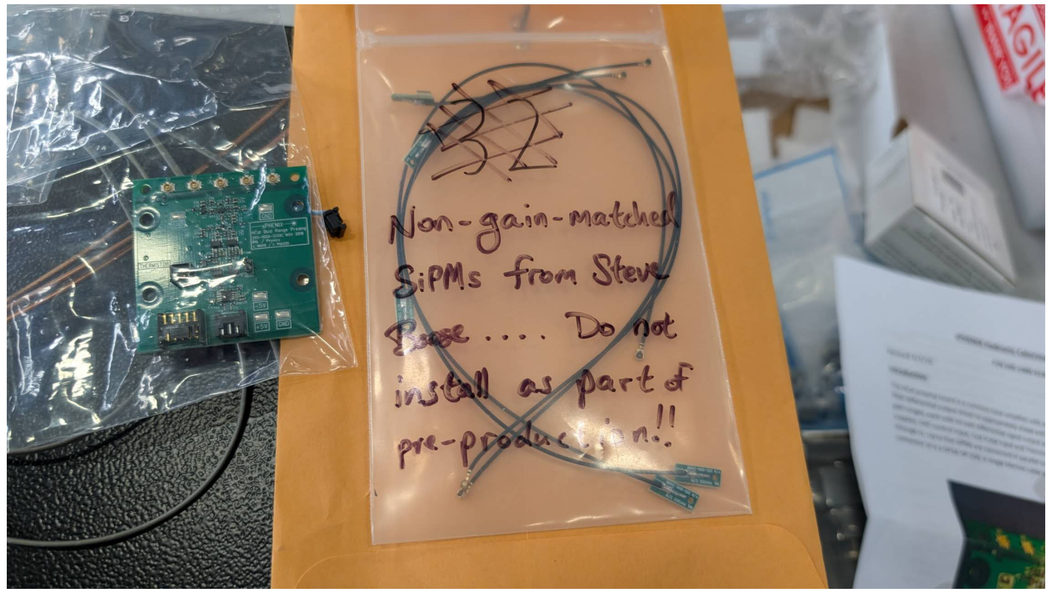
# Spectrometer Repair

- OceanOptics was not able to repeat the malfunctioning at their end
  - They claimed the symptoms cannot be reproduced at their lab even after running for a couple hours
  - They were inquiring for the details
    - I just had a conversation with the tech support, very inefficient…
    - Specifying our running schemes, wavelength range, integration time and etc.
    - It seems like they did not run with the cooling module on, which I suspect the source of the problem
    - They are running with cooling to inspect
- The monochromator exit slit has been rebuilt
  - Problem caused by aged vitton O-ring, Move well by visual now
  - The wavelength selection needs to be validated with the spectrometer



# SiPM Test

- Guang's SiPM setup in RM 2-224 was moved to Chemistry, expected to be back when I return
- We have received 5 readout board with 5 SiPMs from sPHENIX
  - The SiPM is Hamamatsu S12572-015
  - Use for sPHENIX HCal
  - There a few hundred SiPMs inventory available
- Will conduct basic performance test with the Guang's SiPM setup first



# Cryogenic Operation

- The LAr supply and LN2 supply are filling filling tomorrow morning
  - The new LN2 dewar will be used in this run
- Given the LAr supply is low
  - I assume we have the amount just fill to the bottom of the main dewar with the filter immersed\
  - No much returning to the supply dewar expected
- Plan for a very short run starting tomorrow to Saturday solely for the filter cryogenic compatibility test
  - Another comparison test is the cryogenic run at CIEMAT

# Paper Status

- Thanks for everyone provided their input
- I revised according to the comments on the text from everyone
  - All figures updated
  - https://www.overleaf.com/project/663a49981a73e6afddc9b27e
  - Will send around later
  - Please provide your comments by the end of next week

*—No Meeting Next Week—*