

# LAr R&D Progress Report

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# Lab Safety and Space Management

- **Slippery conditions outdoor**
  - Please be careful when returning to the lab tomorrow
- **LN2 plumbing construction**
  - Technifab engineer is visiting on Feb. 15th for the site survey 9am
  - The plumbing route will be discussed and reviewed with Technifab
  - The engineering drawings for the plumbing is expected after the site survey
- **ECP monthly meeting**
  - ECPs are required to fill out the form of room in charge
    - I currently fill myself to the highbay lab
    - Volodya is the ECP for the robotic testing station
    - 2nd floor labs of our group?
- **Safety Inspection for the Xenon collection cylinders**
  - Mike Gaffney came over to high and inspected the cylinders
  - The cylinders are approved for use
  - The collection system construction can be started now
  - Need another safety inspection after the construction is complete

# 260L System Filling Status

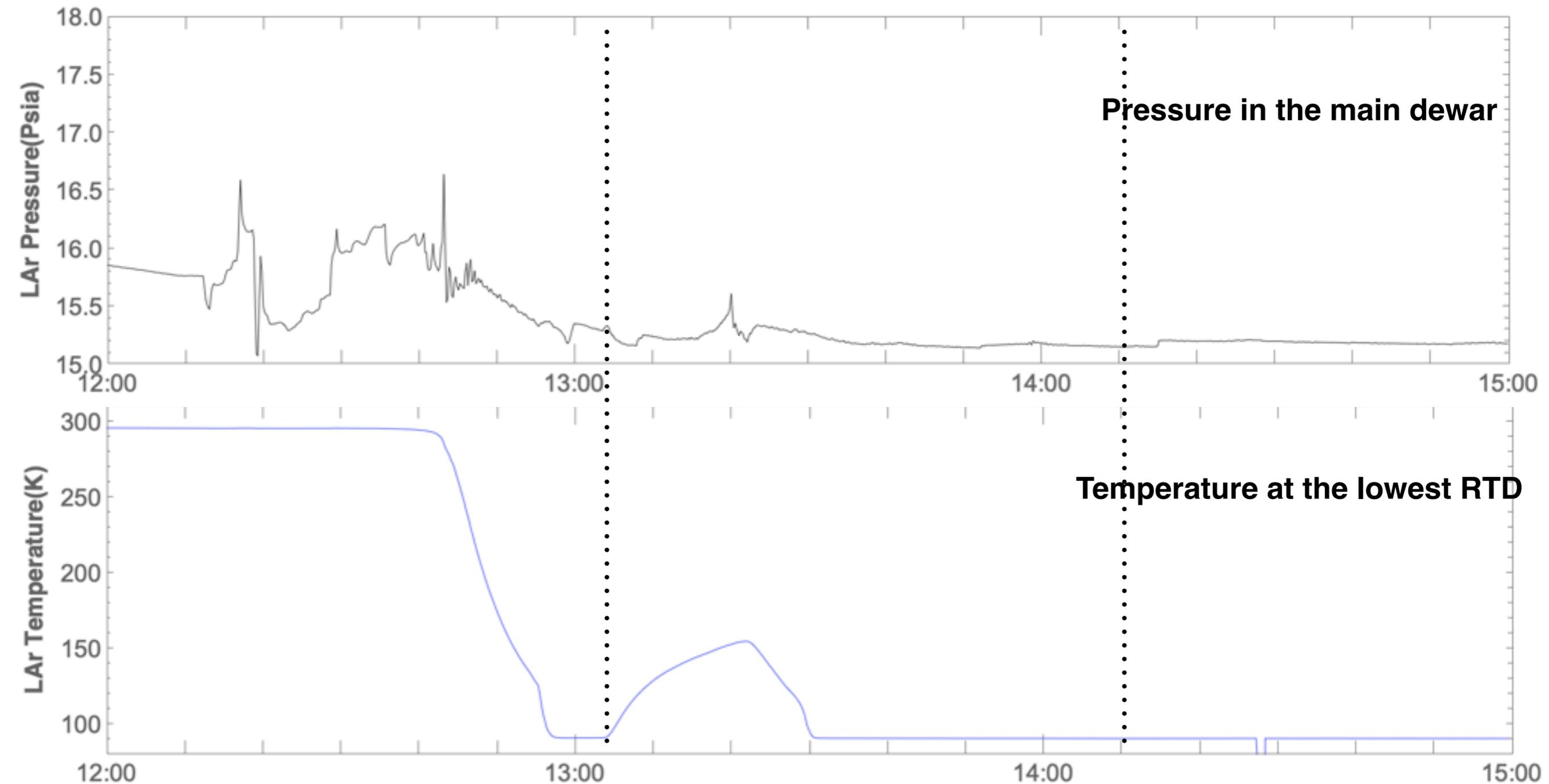
- 260 L system filling
  - The main dewar was filled last Tuesday through inline LAr filter
  - Two 230L LAr supply dewars were used
    - One of the cylinder lost large volume due to back insulation quality
    - Using 1 cylinder first and switch to the second after the first one depleted
  - The filling was smooth at the beginning
  - Very small amount of LAr filled into the main dewar after both supply dewars fully depleted
    - Troubleshooting in the next slides



# 260L System Filling Status

First supply empty

Second supply empty



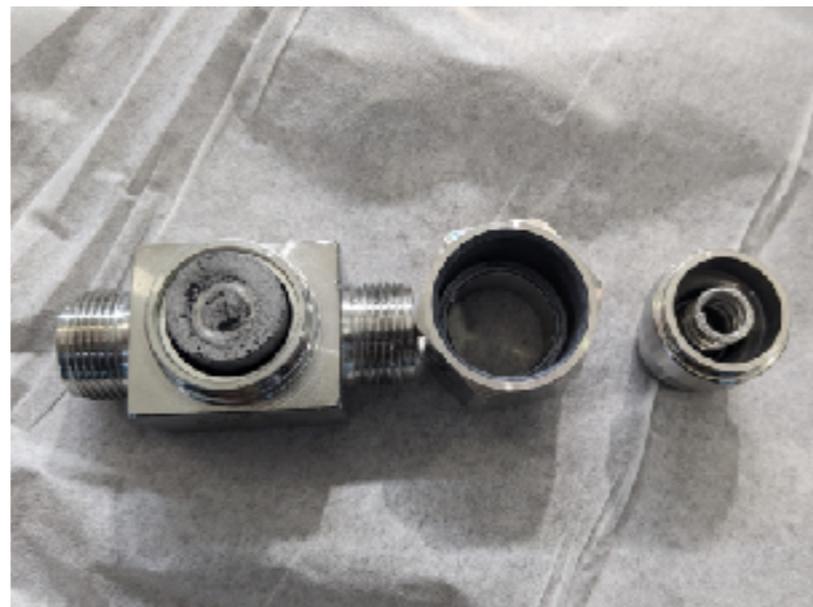
# Line Filter Heater Controller

- The heater controller was found malfunctioning
  - Heater controllers were used to monitor the temperature at different locations during filling
  - The controller for the inline filter cylinder activation was stuck at 100 C after powered on, never seen before
  - The heater was on during the filling process
  - Most of LAr was boiled off during the process
  - Not observed due to the existence of large amount of cryogen
  - This is believed to be the main reason for the small filling amount
  - Replacing the controller and revise the procedures to disconnect the heating tape before filling



# Inline Particulate Filter Check

- First time using the 7um particulate filter
  - Black powder from the inline LAr filter scrubber materials observed in the previous run, commonly observed in other experiments using the same materials
  - 7um inline particulate filter was used to remove the powder
  - The filter is expected to restrain the filling flow rate
  - There is a possibility the filter is fully clogged by the powder
  - The filter was taken out to investigate
    - The filter trapped a lot of powder but not clogged
    - Need to clean and replace the cartridge for each fill
    - Need to open the main dewar to verify if the powder being sufficiently removed



# Plan for this week

- Sample the purity by gas analyzers
- Run the PrM in GAr
- Open up the system to check for the effectiveness of the particulate filter
- Replace the particulate filter cartridge
- Replace the heater controller
- Order new LAr for the next fill

# Xenon Collection

- **Cylinders were inspected and approved by safety**
  - Mike Gaffney visited the lab and inspected the cylinder in person
  - We did a mocking moving of the cylinder into open-mouth dewar
  - Given all the plumbing will be rigid tubing, we need to mount the cylinder and use a jack to lift the dewar, this procedure is approved by Mike as well
  - The lifting structure immersed in LN2 is not recommended, lifting clamp was pointed by Mike for secure the cylinder

