

# LArFCS Cryogenic System progress

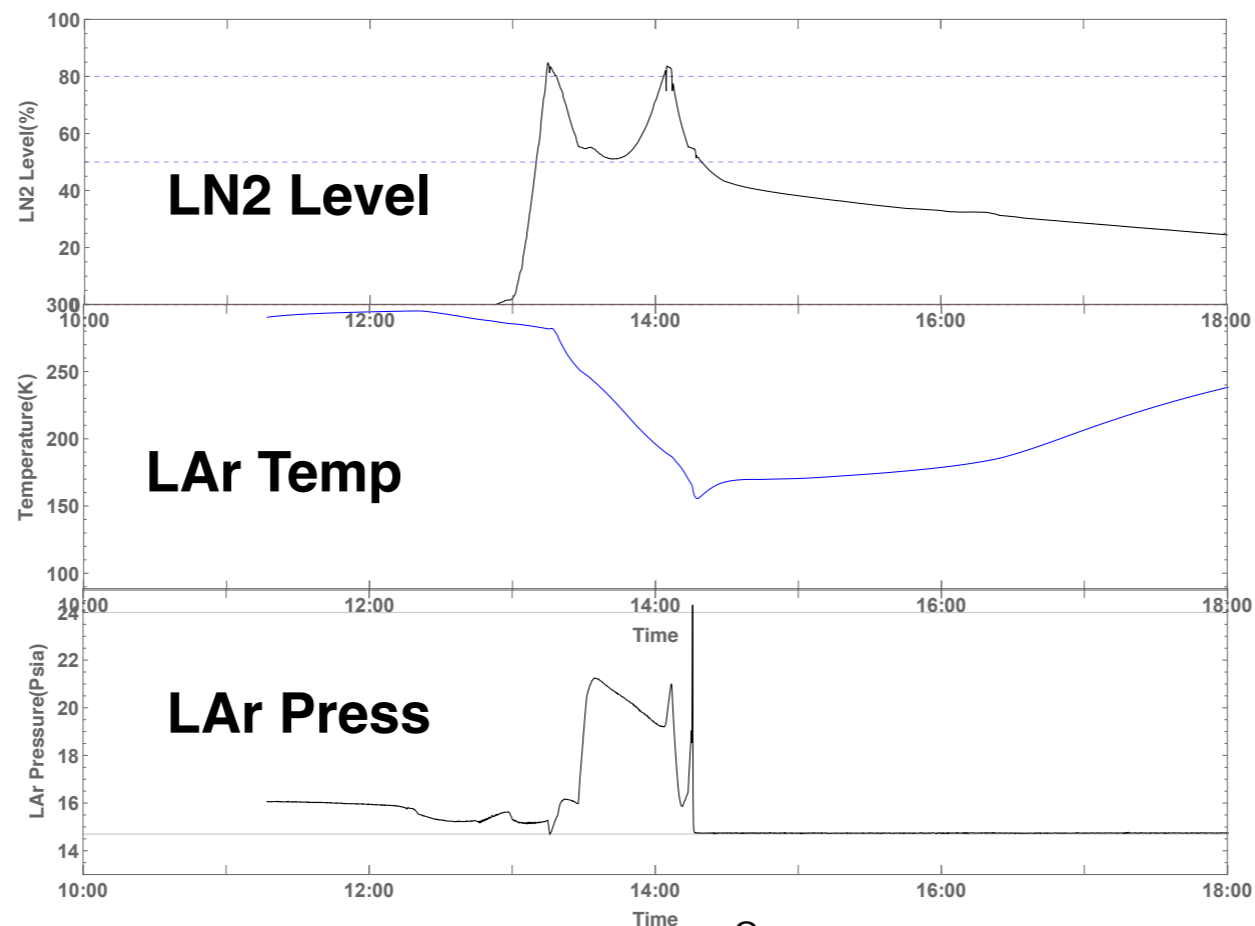
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4/20/21

# LArFCS Cryogenic Operation

## ► LArFCS Cryogenic Operation 2nd Run

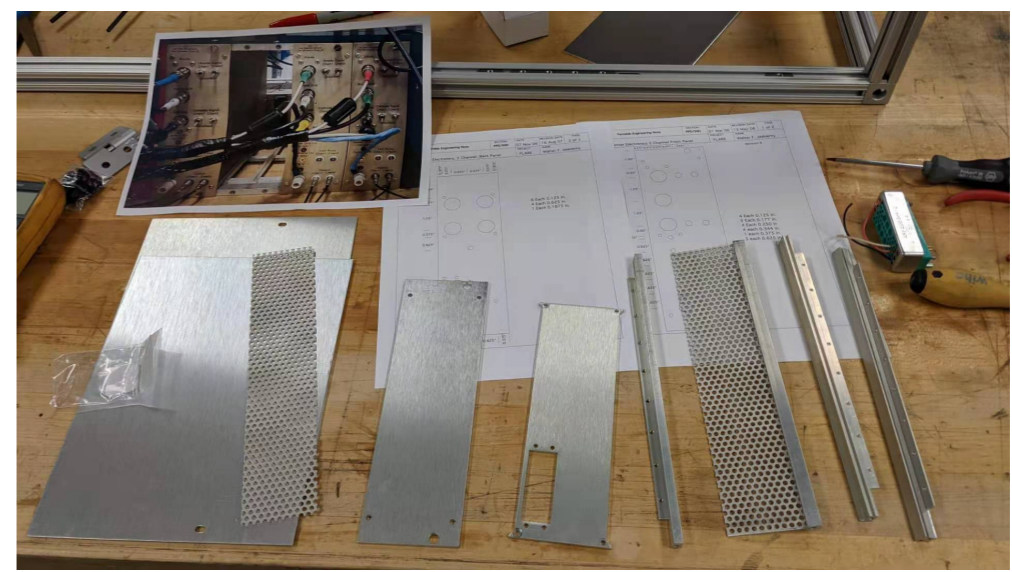
- Tried to pre-cool the system with condenser circulation with LN2 instead of LAr
  - Fill the dewar with LAr supply dewar crack opening
  - Vent closed, pressure relief by the solenoid on pressure feedback+relief valve
- Worked well at the beginning with fast cooling down at the bottom
  - When the hose cooled down, a blast of LAr entering the dewar
  - Instant pressure increase overwhelmed the solenoid+relief valve
  - The optimal solution is to fill with boiling off Ar with controlled pressure



# LArFCS Purity Monitor

## ► PrM Implementation in LArFCS system

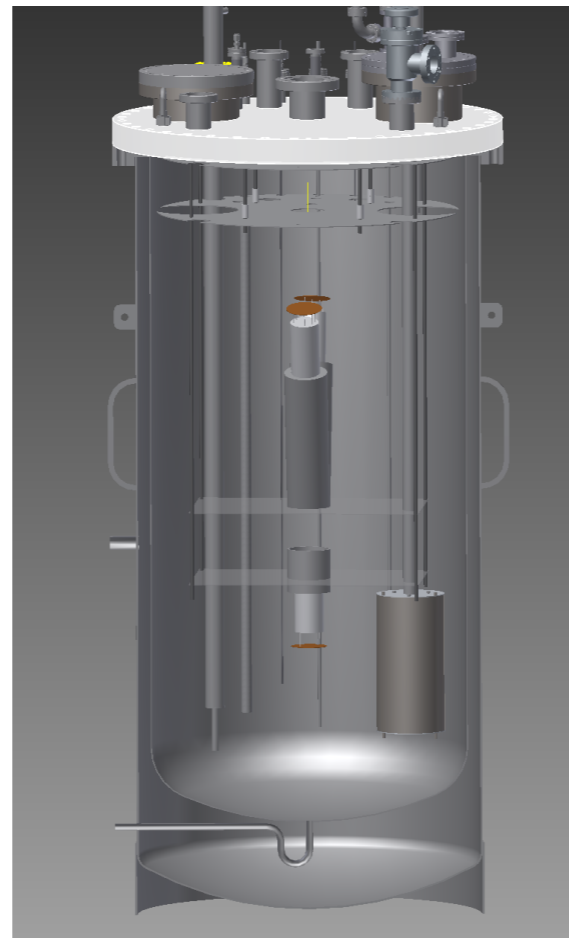
- Shopping list available on: <https://docs.google.com/spreadsheets/d/1ndD-xamtC7HblSJEFe-VAf91CYFjeBOacgttRnNWC-A/edit?usp=sharing>
  - Current total: \$11240.18
- Some electronics parts ordered from vendors
- Quote received from Edmunds for the Xenon lamp
  - Checked with Chris, no laser safety concern, i.e. no need of SOP and review
  - Only need to update it in the ESR
- Spare NIM box found in our lab
  - Russ is machining the holes with provided pattern
- Going to ship the NIM box with the electronics parts to UCI to get it started



# LArFCS Purity Monitor

## ► PrM Implementation in LArFCS system

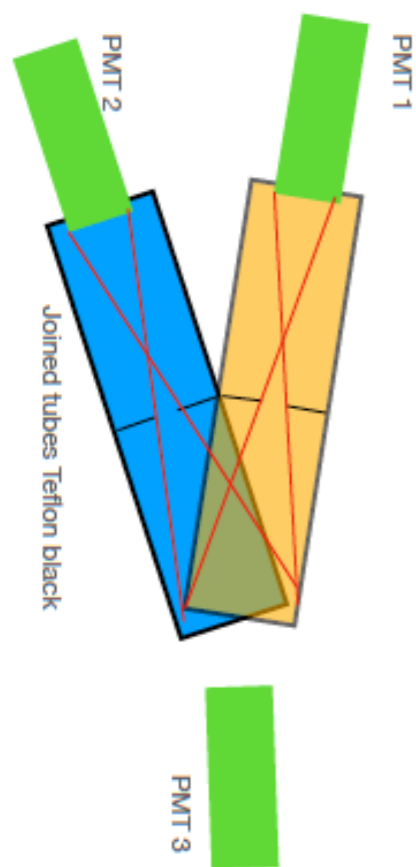
- System mechanical model updated with suggestions from Jianming
- Vertical arrangement with a SS tube to the top flange, ref to protoDUNE solution
- The entire assembly can be moved in/out from the 8" flange
- Our dewar contains sufficient volume to such arrangement



# LArFCS Measurement

## ▶ LArFCS system PMT setup

- TPB coated PMTs from INFN model into LArFCS
- Schematic model built from Milind's suggestion
- Sufficient room to arrange the 3 PMTs
- Another spare 8" conflate flange can be used for cabling



From Milind

