LAr R&D Progress Updates

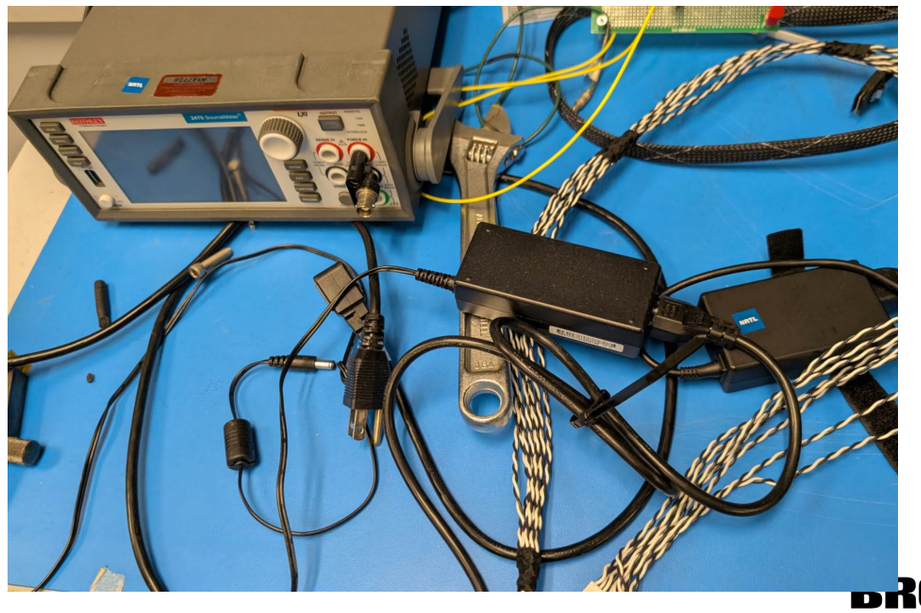
Yichen

1/20/26

BROOKHAVEN NATIONAL LABORATORY

Lab Safety and Space Management

- **Electrical Safety**
  - Kin is inspecting CE testing lab 1-216 on Thursday
  - Lab safety is coming
  - Put NRTL stickers on the devices
- **LN2 dewar inquiry**
  - Provided the info to Hucheng and Volodya
  - The funding is tight, Volodya asked me to looking further for other sources, e.g. China

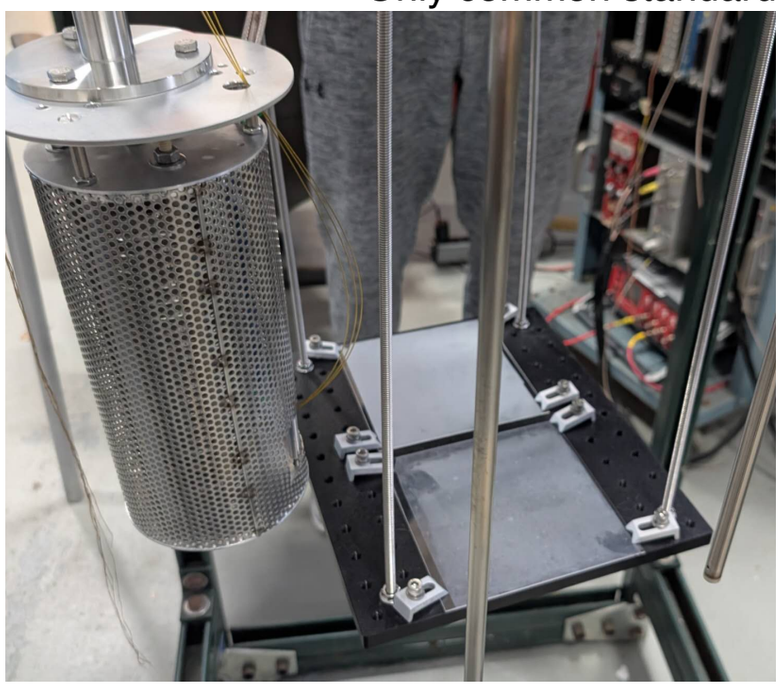


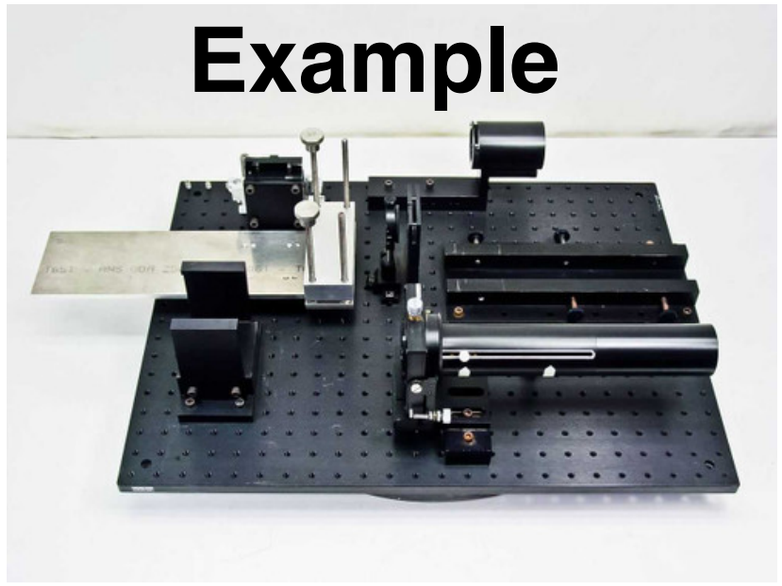
260 Stand Cryogenic Operation Preparation

- **Pumping down and Leak check**
  - All the fittings are tightened
  - Started pumping and leak check
    - Initial pumping took a few resets, succeed with the leak detector pumping together
    - There is a noticeable leak on the main seal, improved after tightening with 2x10^-8 mbar.l/h
    - Left the system under pumping over the weekend
    - Finishing up the leak check today with better sensitivity
- **LAr ordering**
  - There is no funds in the 16536 account, need another account to proceed with the purchase

260 PDS Testing Design

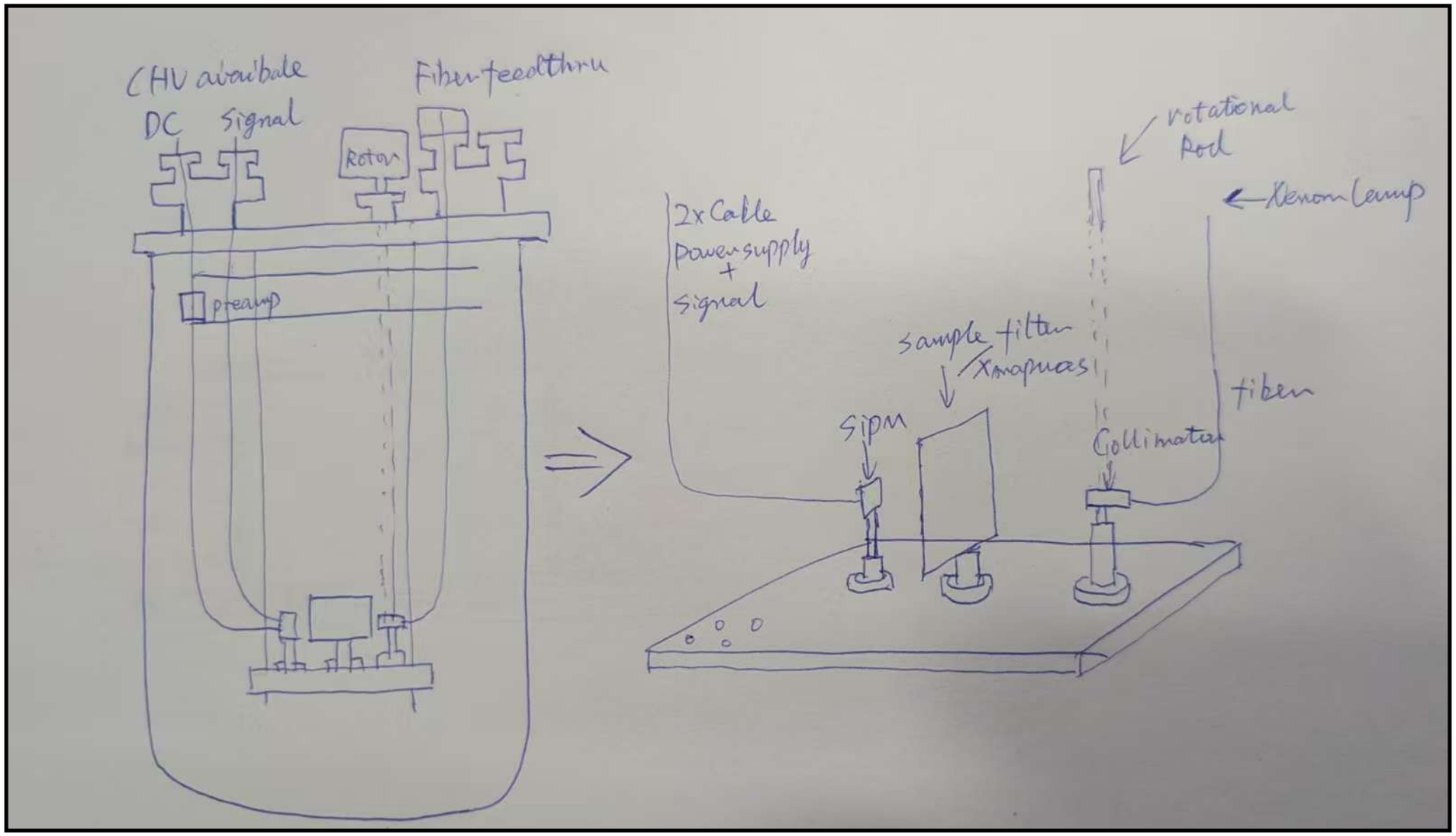
- **Concepts for the PDS testing design**
  - The system is an optical system to be immersed in LAr
    - Initial concept test in the coming cryogenic test
  - Using the optical board as a mounting base for the configuration of devices
    - Pros:
      - Sufficient parts available from vendors: Thorlabs, Edmund, Newports, with quick lead time
      - Flexibility in configuration, Plenty of existing CAD models
      - Vacuum cleaned components available
    - Cons:
      - May not be very compact due to the fixed intervals on the optical board
      - Only common standard sizes available, may need some customized machining





260 PDS Testing Concept Design

- Full detection system needs:
  - Optical input to the filter
  - HV/power supply to the detector
  - Signal readout
- Started with basic filter test in the system



260 PDS Testing Concept Design

- We have the ports resolved and fittings ready
  - For the LDRD-A, there should be a mini TPC with charge readout and photon readout with SiPMs
  - Currently thinking about a box structure TPC with metal strip on the inner wall
    - Using a source for signal generation
    - DUNE readout with PCB readout
    - Optical system readout configuration TBD