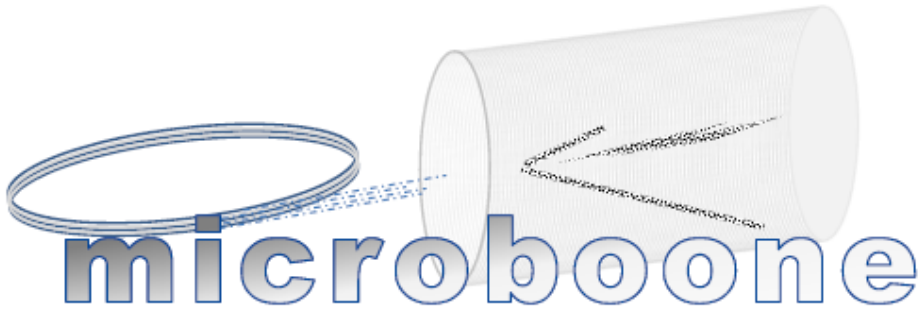


MicroBooNE Update

All Experimenters' Meeting

Sept. 9, 2013

Jen Raaf

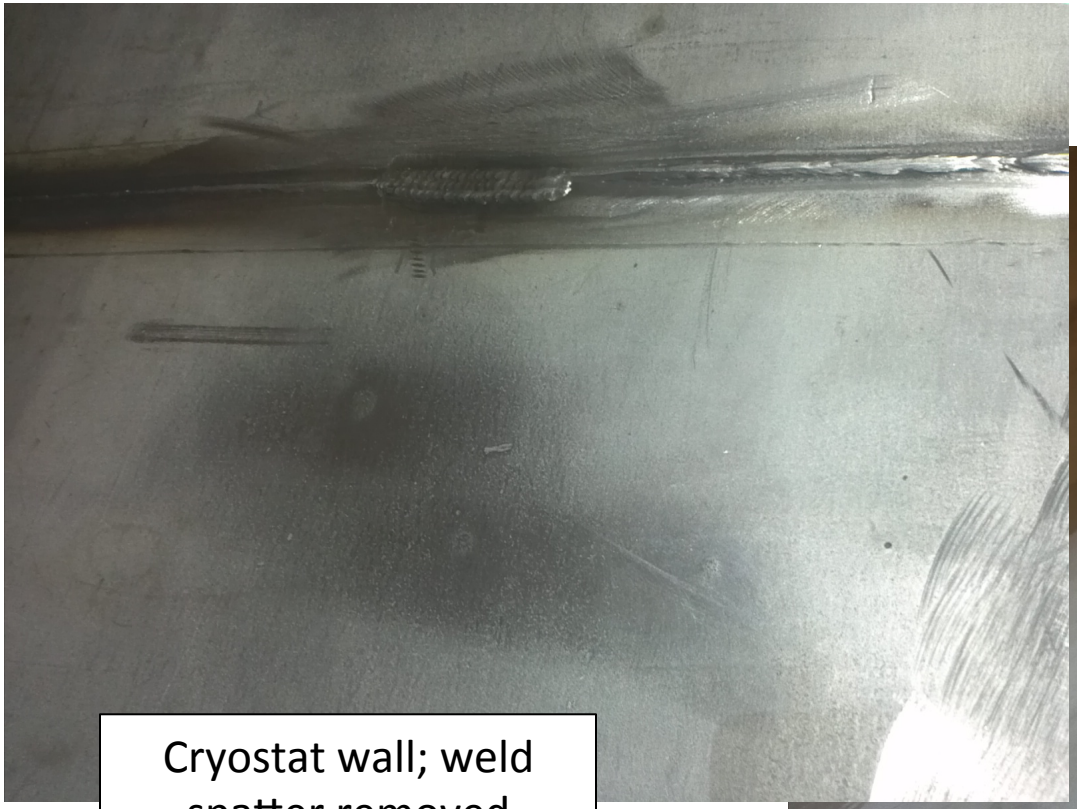
Outline

- Activities at DAB (Detector subsystems)
  - Cryostat readiness
  - PMT
  - UV Laser
  - TPC
- Activities at LArTF
  - DAQ/Readout racks
  - Cryogenic system

Cryostat "Ready for Detectors"

- Sanded/smoothed remaining rough surfaces inside cryostat on HV (cathode) side
  - Mostly weld spatter from manufacturer, easily sanded off
  - Rounded sharp edges
- Final (re-)cleaning of cryostat interior
  - White glove test (for cleanliness and smoothness)
- Official sign-off by project management
  - "Ready to install detectors"
  - Entry to cryostat restricted
    - No entry without good reason
    - Clean room attire required

Smoothed cryostat wall



Cryostat wall; weld spatter removed

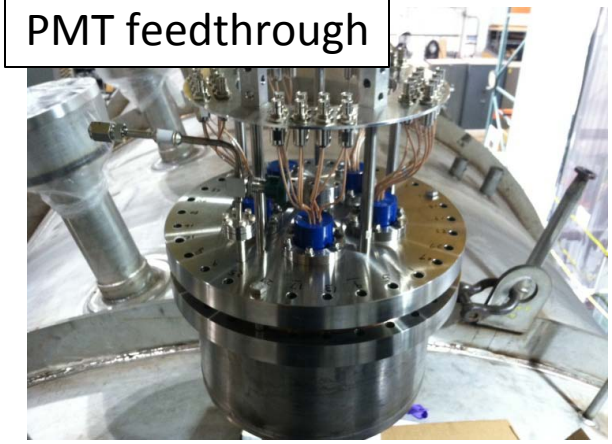
Rail for TPC installation; sharp edges rounded

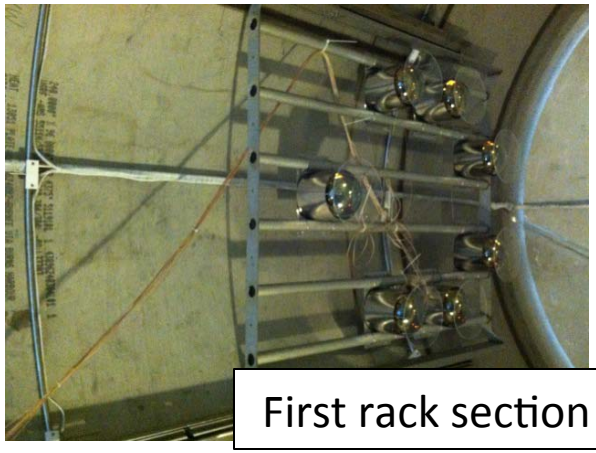
Thanks to John Voirin's group for this work

PMT subsystem

- First subsystem to be installed in cryostat!
- All 5 PMT racks installed in cryostat week of Aug. 26
  - 32 PMTs total
  - Details of system shown at last AEM
- Now routing cables and optical fibers

PMT feedthrough





First rack section

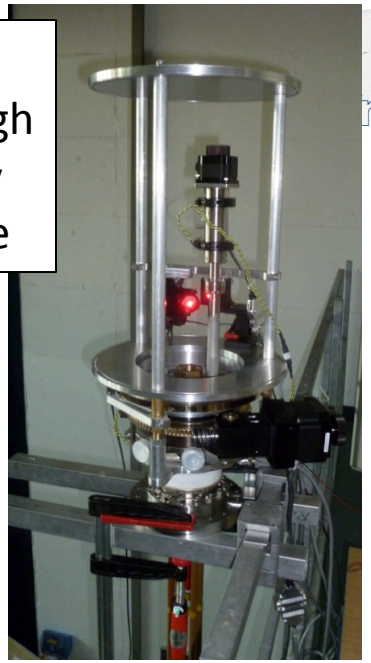
All rack sections & PMTs

Thanks to Paula Lippert for careful soldering of PMT cables to bases

UV Laser subsystem

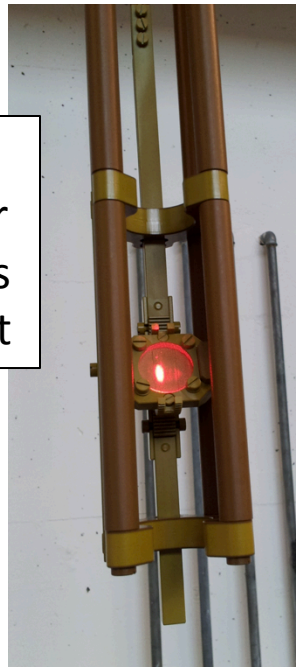
- Laser assembly
  - Rotation and linear manipulator for cold mirror
  - Test fit in cryostat successfully completed
- Details to be presented in future AEM

Laser feedthrough assembly prototype



Laser assembly test fit (when cryostat was rotated 90° clockwise)

Cold mirror manipulator that extends into cryostat



TPC subsystem

- Structure complete, test fit in cryostat
- All 8256 readout wires installed and tensioned
  - Subset of wire tensions measured (~13%)
    - Great help from summer students and interns!
    - All wires within tolerance
  - Time in schedule allows for measuring *all* wire tensions
    - Improved tension measurement device being built at UW Madison PSL
      - Developed for LBNE Anode Plane Assemblies (APAs)
    - Renewed effort for tension measurement will begin as soon as device is delivered (expected ~end of September)
    - Warm fuzzy… but this will not be allowed to delay schedule
- Cold motherboards are installed
- Cable tray and cold cables to be installed starting next week

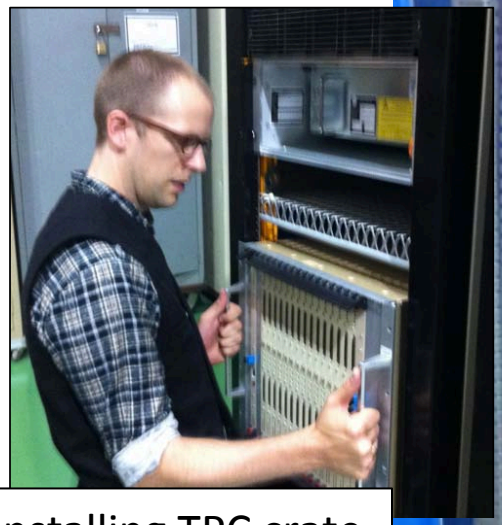
TPC test fit w/mock wires

DAQ & Readout subsystems

- Computer room at LArTF
  - DAQ server racks in place
  - Cat6/Fiber ethernet connections in progress

Thanks to CD/networking group

- Readout racks
  - To be installed on platform above cryostat
    - 5 TPC racks partially populated
      - Rack protection system, fans, support hardware installed during summer (many students helped during summer!)
      - 9 TPC crates go in these racks
    - 1 PMT rack
      - 1 PMT readout crate ready/installed
    - 2 Laser racks
      - 1 partially populated, other to be done soon



Installing TPC crate

Wired TPC backplanes

Activity at LArTF

- Vent pipe (surprisingly difficult to install)
- Lots of activity here in small space
  - Welding, cryo filter skids, pumps, etc.
- Network cables to cryo controls
  - Installed & connected
  - Now working on wiring between controls cabinets and sensors/valves located various places in pit
- Gas Analyzer Rack
  - Here, with accompanying gas manifold panel
  - Inline purity monitor & rack installation soon
- Cosmic Ray test rack
  - Measure CR rate at site for validation or update of simulations

Thanks to John Voirin's group

Summary

- Lots of parallel progress on detector subsystems
- Preparing for final systems install in cryostat
- Move cryostat w/detectors in winter

- DOE Status Review Sept. 19-20 (next week)
  - External panel reviewing cost/schedule/risks to get to CD-4
    - CD-4 = “Ready to fill with LAr”