

Far Detector News

Events of interest to the collaboration

- February 22-26 ProtoDUNE workshops at CERN.
 - DAQ workshop
 - Single phase/ dual phase coordination
 - Coordination of European EOI
- March 2-3: DUNE Cold Electronics Integration Planning Meeting at BNL.
 - Testing, test stand, QC needs.
- March 7-11: TPC and integration workshops at BNL.
 - Field cage, cathode plane design assessment
 - QA/QC assessment
 - Cryostat, cryogenics
 - Integration, installation

February 22-26 ProtoDUNE workshops: Schedule

- Currently driven by availability of Cryogenic systems
 - DP ProtoDUNE – 01/18/2018
 - SP ProtoDUNE – 02/18/2018
- The detectors must be installed and the cryostat TCOs closed by these dates (!!!)
- Current SP ProtoDUNE plan is first APA module received at CERN in May 2017 and final APA module received at CERN in November 2017.
- Installation is proposed to proceed sequentially as components arrive.
- Once Cryogenics systems are available, anticipate nine weeks for commissioning, purging, cool-down, and filling of cryostats.

February 22-26 ProtoDUNE workshops: Dual Phase—Single Phase synergies

- Joint SP/DP WG:
 - Online Computing
 - Offline Computing
 - Slow Control/Detector Monitoring
 - DAQ (common tools)
 - Timing System (shared implementation of White Rabbit)
- Development in FD WG:
 - High Voltage Distribution
 - Field Cage
 - Beam Window & Plug Working Group

February 22-26 ProtoDUNE workshops: SP DAQ

- Basic implementation strategy outlined, subject to review by Technical Board
 - Baseline: “RCE-based” system for TPC + “SSP-based” photon detector readout (~ 35 ton prototype DAQ system).
 - Must be usefully ready well before data taking to facilitate QC, installation, and commissioning.
 - Must be completely ready by day 1 of data taking to read out full detector.
 - Includes a new “warm interface board”, to be specified by Electronics WG.
 - Partial, or supplemental demonstrator system using FELIX
 - Goal is to have capability to read out a small number of APA’s during data taking period
- Proposals currently under final development to be presented to Technical Board in a few weeks.

March 2-3: DUNE Cold Electronics Integration Planning at BNL

- TPC noise issues continue to present major challenges to all large LArTPC (35T, MicroBooNE,)
- BNL meeting defined a test program to run from now through summer.
 - Cold and warm tests using 35T components in the cryostat.
 - Warm testing 35T and new components in Fermilab Faraday cage facility.
 - Test stands at Penn, MSU, BNL.
- Integration testing of final ProtoDUNE APAs to be done at CERN.
 - Strong preference for the APA (and electronics) to be situated within a Faraday cage for these tests using the final DAQ system.
 - Cold is considered advantageous but not as important as the ability to block out external noise sources.

TPC Integration Workshop at BNL, March 7-11

- CPA: Updated design based on thin resistive-coated G10 panels supported by solid fiberglass beams was presented.
 - Panel production: CERN/EU
 - Support structure: Chicago/ANL
 - Resistive plane is novel for LArTPC: likely to go to Technical Board.
- Field Cage: Minor modifications to the previous field cage design.
 - SS vs. aluminum still an open question
 - Up to three variations of the basic design are for SP ProtoDUNE Top/Bottom, SP ProtoDUNE End-wall, and DP ProtoDUNE.
 - Proposed production sites, CERN/EU, Stony Brook, Brazil, William and Mary.

TPC Integration Workshop at BNL, March 7-11

- High voltage: current cathode plane design calls for a HV bus running through support rods.
 - New efforts by KSU, Houston, UCLA, Yale.
- Working group reorganization
 - Single phase TPC WG splits to APA group (convenor: M. Soderberg; managers: R. Paulos, B. Yu) and new CPA/FC/HV group (conveners: F. Pietropaolo, B. Yu; manager: V. Guarino).
 - DUNE FD HV groups takes on expanded design, test, and construction roles, possibly merged into CPA/FC/HV group.

TPC Integration Workshop at BNL, March 7-11

- Installation mock-up/test facility for ProtoDUNE/DUNE under development at Ash River (Nova experiment) site, to become operational in fall 2016.
- A large scale HV test may be performed at FNAL this summer. Details depend on status and availability of 35T cryostat/ LAPD.

Expressions of Interest (EOI) process

- All FD WG leaders have now contacted groups indicating interest that aligns with WG.
- It's still not too late to send in EOI.
- See Eric's e-mail later today.

Upcoming Events

- Submission of ProtoDUNE status reports for SPSC on April 4
- Discussion of European Expressions of Interest at CERN (invite-only) on April 7-8
- SPSC Meeting at CERN (invite-only) on April 18-19
- INC Meeting at Fermilab (invite-only) on April 22
- Installation Engineering Workshop at CERN during week of April 25
- Discussion of Latin America Expressions of Interest at Fermilab (invite-only) on April 27-28
- **Photon Detection Workshop at Colorado State on May 16-18**
- RRB Meeting at SURF (invite-only) on May 18 DUNE
- **Collaboration Meeting in Rapid City on May 19-22 LBNF/DUNE.**
- DOE Progress Review at Fermilab on August 11-12
- Warm Electronics Board Workshop, TBD
- Design reviews for ProtoDUNE systems begin in in June (for APAs).

Photon Detection Workshop at Colorado State on May 17-18

- May 17:
 - Current work, plans, and R&D efforts on the photon system
- May 18:
 - Tour the photon detector test facilities at CSU, and discuss details of requirements to become involved in photon detector hardware work for ProtoDUNE.
- Pre-workshop homework: what are the requirements for a DUNE photon detector system (NPE/MeV, Δx , Δt)?
- Logistics:
 - May 16: Fly to Denver (more flights, probably cheaper than Rapid City), drive to CSU in Ft. Collins (~2 hours)
 - May 18, afternoon: Drive to Rapid City (~4 hours) or to Denver and then fly to Rapid City.
 - May 19-22: DUNE Collaboration Meeting in Rapid City.