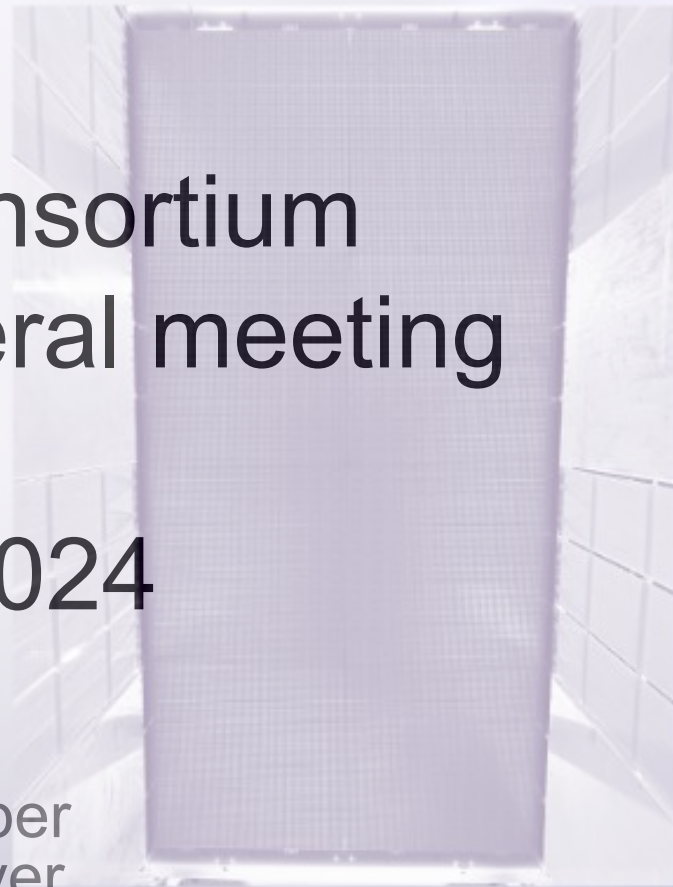


ND-LAr consortium Biweekly general meeting

9/26/2024

M. Weber
D. Dwyer



Agenda

ND-LAr Consortium Bi-weekly meeting



📅 Thursday Sep 26, 2024, 5:00 PM → 6:00 PM Europe/Rome

5:00 PM → 5:20 PM **News**

Speaker: Michele Weber (University of Bern / LHEP)

🕒 20m

5:20 PM → 5:25 PM **2x2 Status**

Speaker: Louise Suter (FNAL)

🕒 5m

5:25 PM → 5:45 PM **FSD Assembly Progress**

Speakers: Roberto Acciarri (FNAL), Saba Parsa (University of Bern), Serhan Tufanli (CERN)

🕒 20m

News

- Module-0 paper made the cover of Instruments
- Positive PAC recommendation:

“We recommend that a minimum of 1.5E20 POT of NuMI beam early in FY25 is provided for the 2x2 to perform critical work for development of DUNE. Option 1 is therefore precluded by this requirement...”

Option 1 is w/o beam, excluded. Overall they recommend Option 3 = 24 weeks.
- NuMI beam updates (slides)
- LBNC meeting October, focus on beam monitoring
- No ND breakouts
-

Module-0 paper



Article

Performance of a modular ton-scale pixel-readout liquid argon Time Projection Chamber

DUNE Collaboration

† In memory of our colleague, Dr. Davide Salvatore Pozzi, who is no longer with us.

Abstract: The Module-0 Demonstrator is a single-phase 600 kg liquid argon time projection chamber operated as a prototype for the DUNE liquid argon near detector. Based on the ArgonCube design concept, Module-0 features a novel 80k-channel pixelated charge readout and advanced high-coverage photon detection system. In this paper, we present an analysis of a eight-day data set consisting of 25 million cosmic ray events collected in spring 2021. We use this sample to demonstrate the imaging performance of the charge and light readout systems, as well as the signal correlations between the two. We also report argon purity and detector uniformity measurements, and provide comparisons to detector simulations.

Will be sent to DUNE APB, then DUNE review

Slide at biweekly
June 2022

5

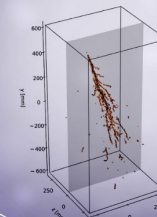


CiteScore 2.6

ISSN 2410-390X

Performance of a Modular Ton-Scale Pixel-Readout LArTPC

Volume 8 · Issue 3 September 2024



Cover, Instruments
<https://www.mdpi.com/2410-390X/8/3>

3

Lots of data to analyze...

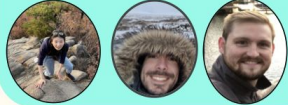
Alternating weekly between general and analysis meeting on Thu

Contact Pedro and/or Zoya to get involved or any of the conveners to present at Subgroup meetings or for questions


- **Mailing List:** dune-physics-nd-proto-analysis@fnal.gov
- **Slack:** [#nd_prototype_analysis](#)
- **Meetings:** **Bi-weekly Thursday at 11:30 am CT** (+ multiple sub-group meeting)
 - Keep track of meetings with [this Google Calendar link](#).

ND Prototypes Analysis WG


LAr Simulation and Calibration
Yifan Chen, Alex Diaz, Kevin Wood




Reconstruction (Pandora)
Steve Dennis




Reconstruction (ML reco)
Francois Drielsma




Analysis Tools
*Andrew Cudd
Sindhu Kumaran*




Production
*Matt Kramer
Noe Roy*



MINERvA
*Alysia Marino
Tammy Walton*



Analysis: Selections & Systematics
*Saba Parsa
Brooke Russell*



ND-LAr Plan

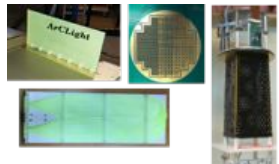
Published
July 2021

CDR

2016-2019

ArgonCube R&D

Demonstrations of component technologies

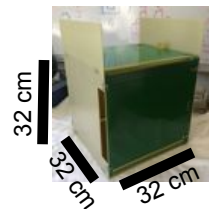


TRL-4
- Ready
for CD-1

2020

SingleCube

Integrated TPC test at small-scale



TRL-5

2021

ArgonCube

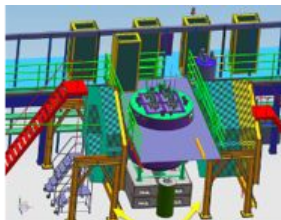
Module 0
functionality prototype



2022-2025

"2x2" Physics Demonstrator

Four mid-scale
TPC modules in
neutrino beam



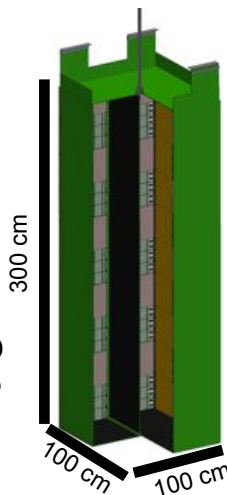
TRL-7 (physics)

PDR 2022

2023-2025

Full-scale ND Demonstrato r

1 Full-scale
ND-LAr TPC
module

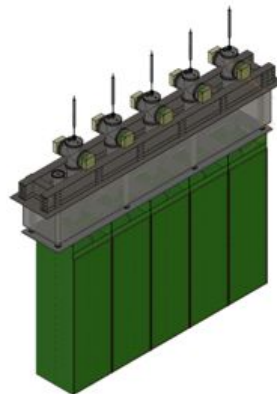


FDR
Final design review

TRL-7
(engineering)

2025-2026

Five-Module Row Pre-production & Cryostat Lid Integration Test



PRR

Production readiness review

2026-2028

Production

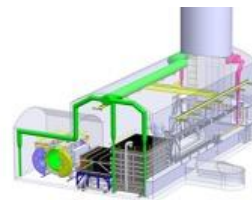
35 (+5) production
modules, each
fully tested



2028-2030

Installation

Support of TPC module
installation in Near Site
Activity driven by Near
Site Integration (NSI)



2x2 and NuMI beam FY25

- Created a task-force for 2x2 shutdown work (chair L. Suter)
 - First report beginning of August
 - Decided to drain the 2x2 to perform critical cryo work (6 cm rise in GAr pickup, LAr filer, Condenser)
 - Determined that there is no time to remove modules in order to restart in October
 - Agreement that adding epoxy to the top to limit leaks is best course of action, procedure being prepared
- NuMI beam impacted by
 - Transformer fire
 - Recovery plan established with site reconfig
 - Two transformer per substation
 - Accelerator complex startup November 1st, 2024
 - Heat exchanger
 - Corrosion found on heat exchangers during routine maintenance
 - Comprehensive examinations going on this week
 - BNB needs two exchanger (one marginally acceptable)
 - NuMI needs 11, requires repairs or replacements

