

Introduction and News

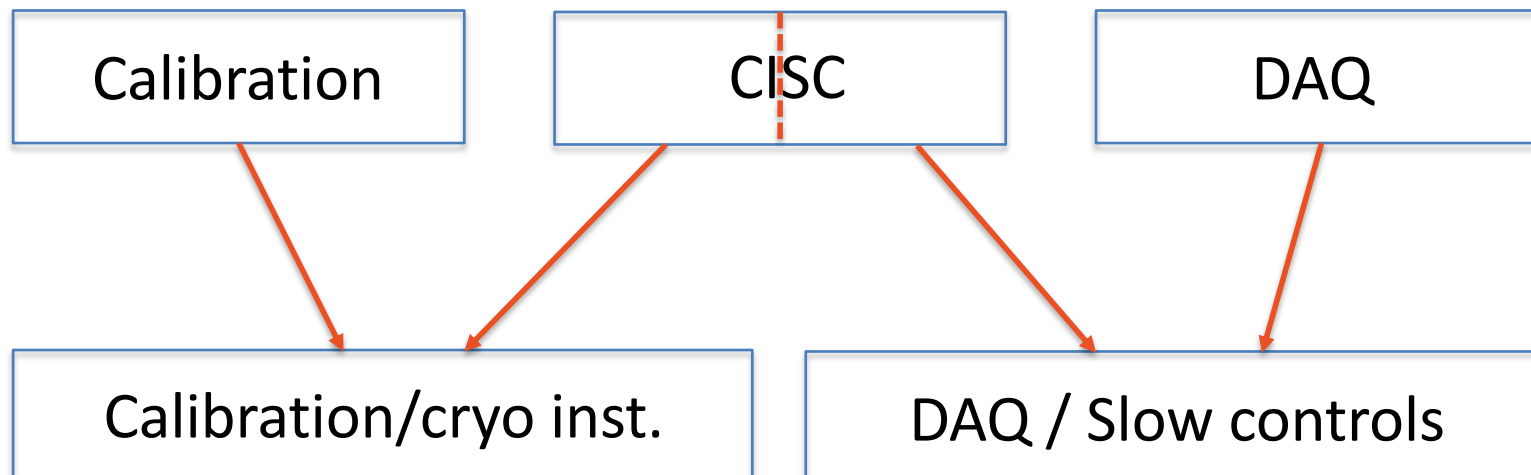
Stefan Söldner-Rembold, Ed Blucher

DUNE Collaboration Call

13 December 2019

Far Detector Consortia update

We have decided to move the two components of the Cryogenic Instrumentation and Slow Controls (CISC) Consortium into the DAQ and Calibration Consortia:



New Leadership Teams

- DAQ/Slow Controls:

Giovanna Lehmann Miotto (Consortium Lead),
Alessandro Thea (Technical Lead)

- Calibration/Cryo Instrumentation:

Jose Maneira (Consortium Lead)
Sowjanya Gollapinni (Technical Lead for Calibration)
Anselmo Cervera (Technical Lead for Cryogenics Instrumentation).

We thank all of the current and past leaders of the DAQ, CISC, and Calibration Consortia (Dave, Georgia, Giovanna, Alessandro, Sowjanya, Anselmo, Jose, Kendall) for getting us to this point.

Far Detector Consortia

Single-Phase

- APA: Christos Touramanis (Liverpool)
- Photon Detection System: Ettore Segreto (Campinas)
- TPC Electronics: Dave Christian (FNAL)



Dual-Phase

- CRP: Dominique Duchesneau (LAPP)
- Photon Detection System: Ines Gil Botella (CIEMAT)
- TPC Electronics: Dario Autiero (IPNL)



Joint SP/DP

- HV System: Francesco Pietropaolo (CERN)
- DAQ/Slow Controls: Giovanna Lehmann Miotto (CERN)
- Computing: Heidi Schellman (Oregon State)
- Calibration/Cryogenic Instrumentation: Jose Maneira (LIP)



Education and Outreach Committee

We have formed an Education and Outreach Committee to work with DUNE management to coordinate DUNE education and outreach activities.

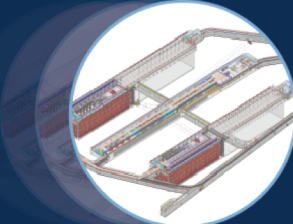
Membership:

- Mateus Carneiro (BNL)
- Linda Cremonesi (UCL)
- Helio da Motta (CBPF)
- Albert de Roeck (CERN)
- Kirsty Duffy (Fermilab)
- Maxine Hronek (Fermilab)
- + spokes (ex-officio)

DUNE Technical Design Report

Deep Underground Neutrino Experiment (DUNE)
Technical Design Report

Volume I
Introduction to DUNE

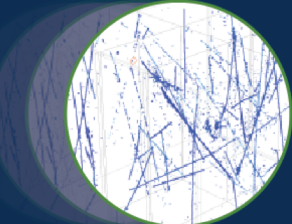


July 2019
The DUNE Collaboration

DUNE
DEEP UNDERGROUND
NEUTRINO EXPERIMENT

Deep Underground Neutrino Experiment (DUNE)
Technical Design Report

Volume II
DUNE Physics

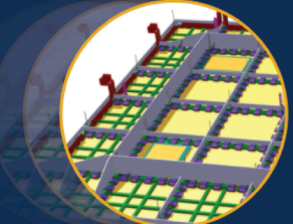


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Volume IV
DUNE Far Detector Dual-phase Technology

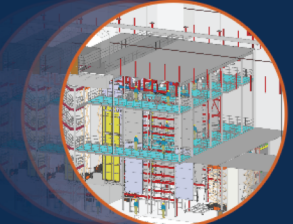


July 2019
The DUNE Collaboration

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NEUTRINO EXPERIMENT

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Technical Design Report

Volume V
DUNE Far Detector Technical Coordination

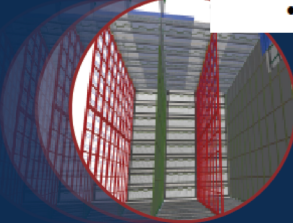


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The DUNE Collaboration

DUNE
DEEP UNDERGROUND
NEUTRINO EXPERIMENT

DUNE Overall Status: Dave Charlton, Austin Ball, Simone Campana, Hugh Montgomery

The LBNC

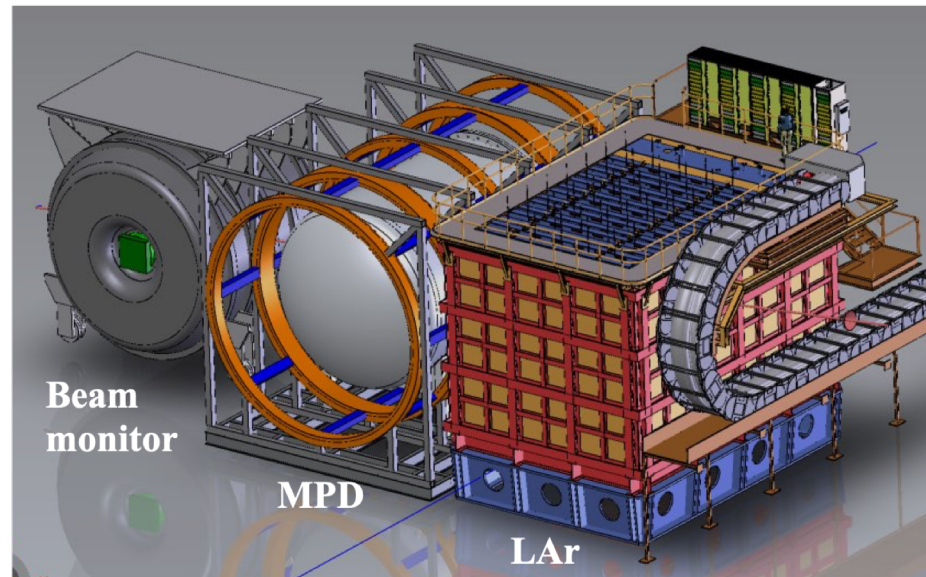
- Congratulates DUNE on the approval of four TDR volumes

Dual Phase Volume on hold waiting for further
ProtoDUNE validation

TDR Publication Plans

- LBNC-approved volumes will be posted on archive following implementation of last corrections from LBNC.
- 3 papers based on physics TDR will be submitted to international physics journal (likely EPJC)
 - Long baseline physics
 - Supernova physics
 - BSM physics
- Introduction, Single Phase, and Technical Coordination volumes will be submitted to international instrumentation journal (likely JINST)

Near Detector Reference Design



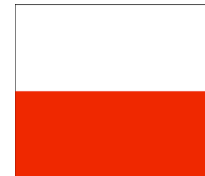
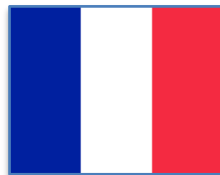
Three sub-systems:

1. Highly segmented liquid-argon TPC (ArgonCube)
2. Multipurpose Detector (MPD)
 - Magnetized High Pressure Gas Argon TPC
 - Electromagnetic calorimeter/Muon Chambers
 - Superconducting magnet
3. On-axis beam monitor (SAND)

DUNE Near Detector

- We are evaluating impact of temporary use of (staging plan)
 - simple muon spectrometer in place of MPD
 - KLOE magnet + calorimeter in place of full SAND detector
- Next steps
 - CDR in early 2020
 - ArgonCube 2x2 demonstrator → ProtoDUNE-ND (at Bern and FNAL)
 - Form ND consortia in January 2020
 - IDR in fall 2020 (prel. design level, as required for NS CD-2 in US)
 - TDR about 1 year after IDR

LBNF Near Site Groundbreaking – Nov. 14, 2019



Collaboration Schedule

- September 19-20, 2019: RRB Meeting
- September 23-27, 2019: DUNE Collaboration Meeting
- October 21-23, 2019: DESY Near Detector Workshop
- October 29-31, 2019: DOE Independent Project Review of LBNF/DUNE
- November 12-13, 2019: Module of Opportunity Workshop, BNL
- November 14, 2019: International Neutrino Council and Near Site Groundbreaking
- November 21, 2019: LBNF and DUNE HEPAP presentations
- Dec 5-7, 2019: LBNC meeting at CERN
- January 27-31, 2020: DUNE Collaboration Meeting at CERN

Feedback from November DOE IPR

Charge question 2: Are the DUNE collaboration's plans and proposed resources needed to sufficiently advance technical design of both far and near detectors by the respective CD-2's reasonable and achievable? **Yes**

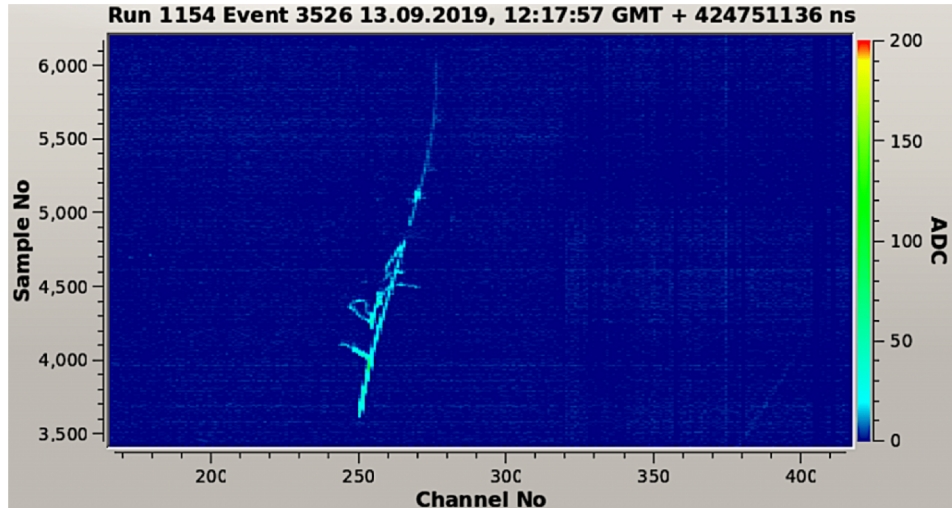
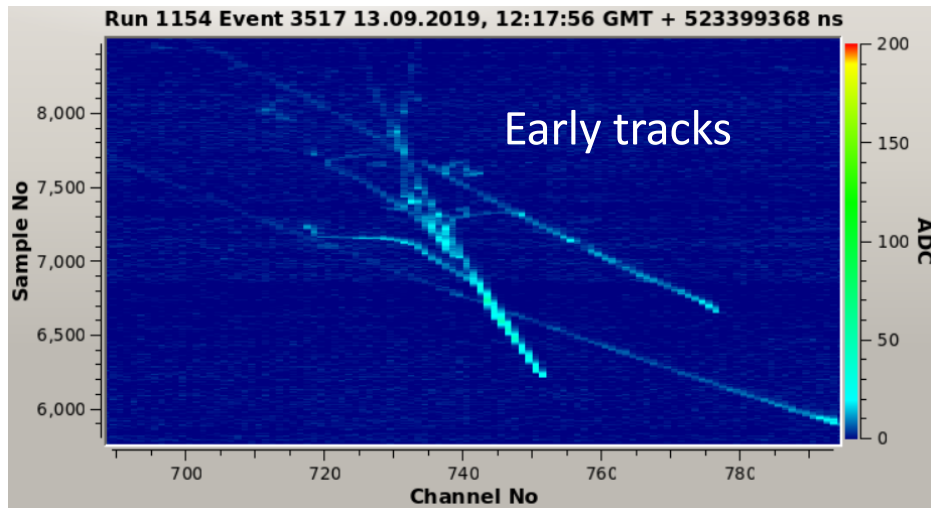
- Successful implementation and operation of proto-DUNE provides important validation of design and collaboration capabilities
- Near detector- Substantial progress in past year including initial requirements needed to assure conventional facilities will meet the ND needs

Dec LBNC Executive Summary

- The LBNC sees DUNE making considerable progress. In the past year it:
 - Has completed four technical design reports which cover an important baseline technology, planned to be used for two of the installed modules
 - Has made great progress on exploring the dual phase technology in ProtoDUNE DP, the primary candidate for another of the planned modules.
 - Has made strides toward the completion of the Near Detector Conceptual Design.
 - Has established the DUNE Computing Consortium as a significant player in the world of HEP computing while provisioning the extant ProtoDUNE (both SP and DP) data handing and analysis program.
 - Is exploring options for a fourth module, perhaps with a new technology, as well as for innovative enhancements to baseline detector configurations. The consideration of such demands a certain level of prudence.

ProtoDUNE-DP (focus of this LBNC)

- Filling with liquid argon completed in first week of August 2019.
- First tracks seen on 30 Aug 2019
- Debugging / data taking underway
- Many issues to understand / study
- Debugging/ commissioning will continue for several months.



Module of Opportunity Workshop at BNL



- Very well attended and exciting workshop at BNL this week.
- Workshop will form basis for Concept Papers.
- Consider advanced liquid-argon (or alternate) technologies.

Module of Opportunity for DUNE

DUNE
DEEP UNDERGROUND
NEUTRINO EXPERIMENT

November 12-13, 2019

Location: Brookhaven National Laboratory
<https://www.bnl.gov/dmo2019/>

The DUNE Collaboration invites the broader community to explore opportunities for novel detector technologies for the fourth DUNE far detector module. Advanced liquid-argon (or alternate technology) detector concepts that can satisfy and expand DUNE physics goals are encouraged. Workshop topics include:

- Tracking
- Photon detection
- Electronics
- High voltage
- Data-acquisition
- New ideas!

The international organizing committee is:

Edward Blucher, Chicago	Christopher Mauger, Penn	Stefan Soldner-Rembold, Manchester
Dominique Duchesneau, LAPP	Kostas Mavrokoridis, Liverpool	Jim Stewart, BNL
Bonnie Fleming, Yale	Marzio Nessi, CERN	Michele Weber, Bern
Roxanne Guenet, Harvard	Francesco Pietropaolo, CERN	Hanyu Wei, BNL
Eric James, FNAL	Stephen Pordes, FNAL	Michael Wilking, Stony Brook
Georgia Karagiorgi, Columbia	Xin Qian, BNL	Elizabeth Worcester, BNL
Steve Kettall, BNL	Filippo Resnati, CERN	Bo Yu, BNL
Ana Machado, Unicamp	Mitch Soderberg, Syracuse	

Organizational inquiries: Deborah Kerr (dkerrv@bnl.gov)

BNL

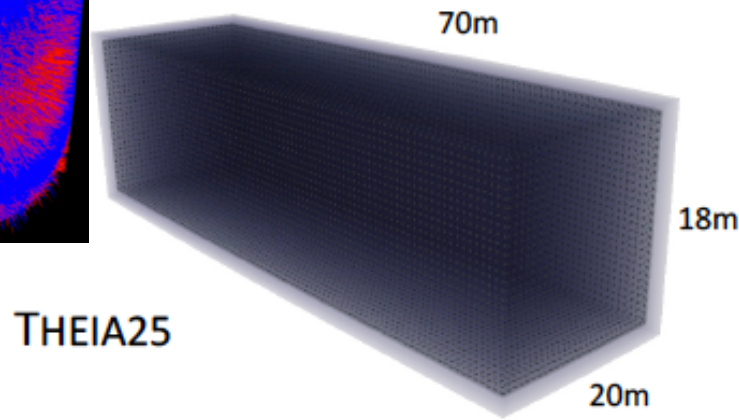
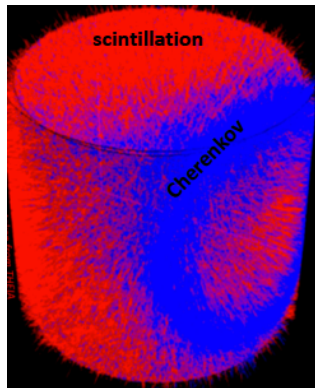
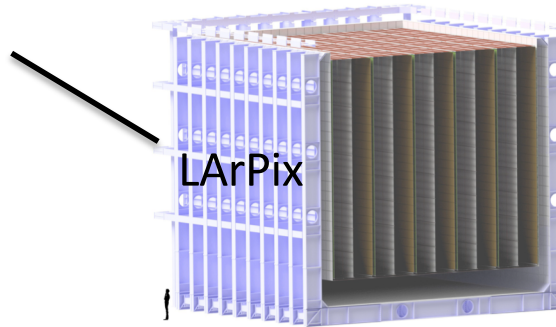
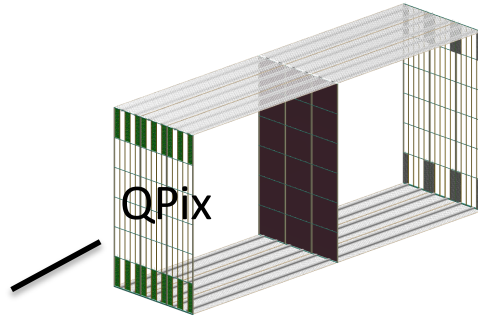
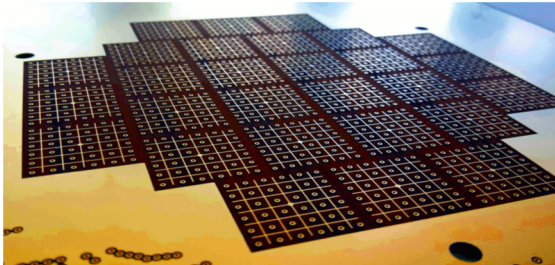
SURF

CERN

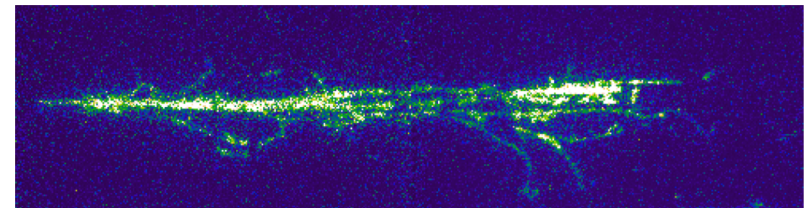
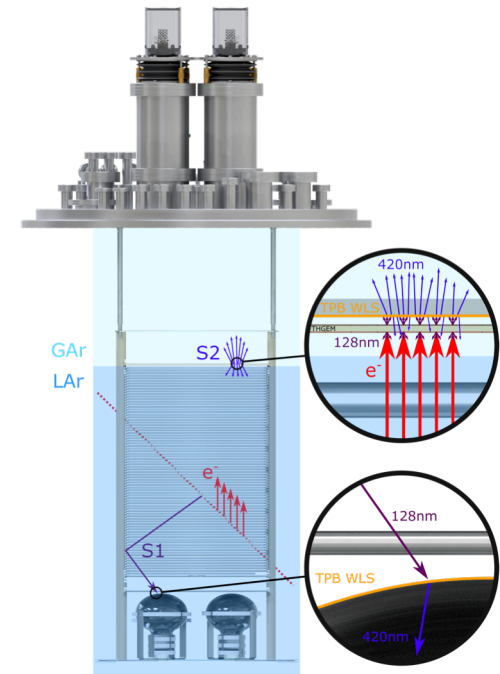
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Wide variety of technology ideas

Pixel readout of SP TPCs

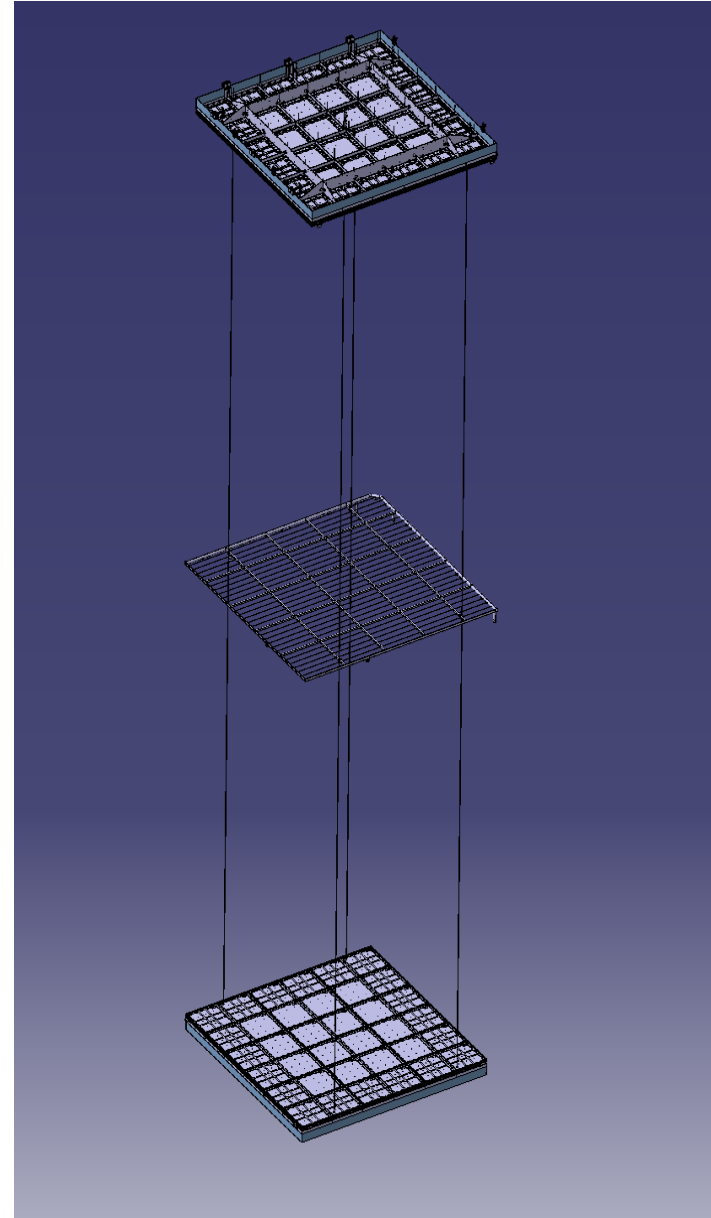
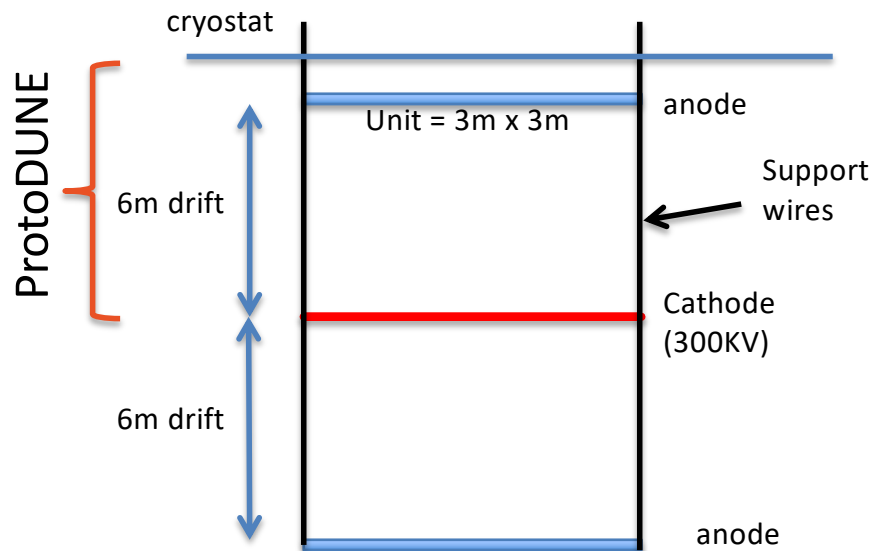


Optical readout of DP TPCs (ARIADNE)

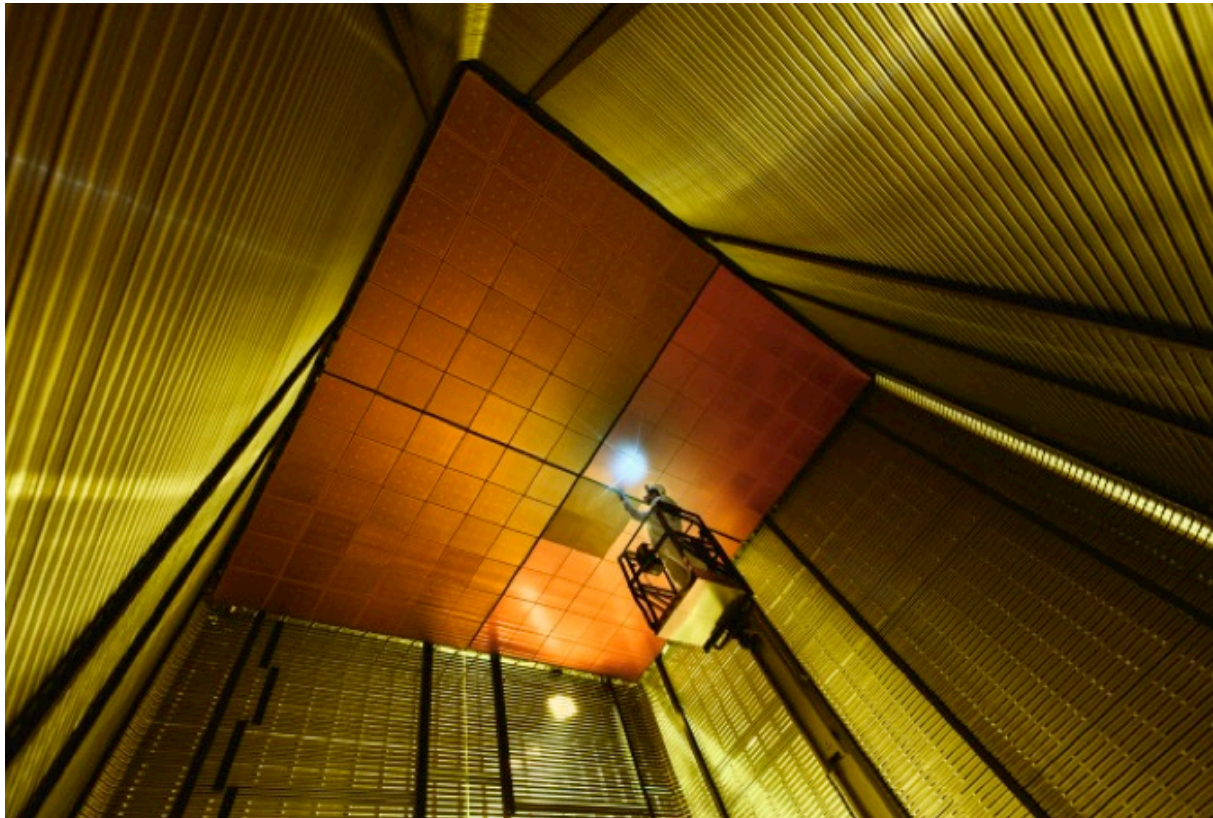


Vertical Drift SP TPC

- Based on DP field cage design
- Would use 3x3 m readout modules; same dimensions as CRPs
- Readout units could be pixels, projective PCBs, etc.
- Drift cell is ~identical to that of ProtoDUNE-DP (6 m drift)



Vertical drift SP TPC



- Modular design of ProtoDUNE-DP readout gives us the opportunity to use NP02 ProtoDUNE-II to test one or two new “module-of-opportunity” readout technologies in parallel with next generation CRPs.
- Readout could be strips or pixels.
- Technical feasibility of joint operation to be studied – just an idea at this point.

Congratulations to Ana & Ettore

#1 Creation:Award for Excellence in Instrumentation R&D



2015 David Nygren and Veliko Radeka



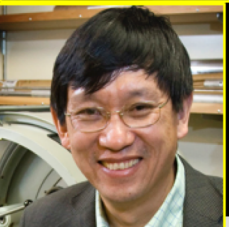
2016 Steve Holland and Gary Varner



2017 Blair Ratcliff & Larry Sulak



**2018 Javier Tiffenberg & Rinaldo Santonico
(JT Early Career Award)**



2019 Hanguo Wang Ettore Segreto & Anna Amelia Machado



The selection committee consists of two CPAD members, two DPF appointed Members and the previous year's prize winners. The chair rotates between CPAD and DPF.

Enhanced
recognition
and prestige

Collaboration Monthly Call

chaired by Stefan Soldner-Rembold (University of Manchester), Ed Blucher (University of Chicago)

Friday, 13 December 2019 from **09:00** to **10:00** (US/Central)

Manage ▾

Description For Zoom information, please see your inbox or send a mail to Maxine

Friday, 13 December 2019

09:00 - 09:10	Introduction News 10'	▾
	Speaker: Prof. Stefan Soldner-Rembold (University of Manchester)	
09:10 - 09:35	Status of TDR Physics Papers 25'	▾
	Speaker: Elizabeth Worcester (BNL)	
09:35 - 09:45	Status of ProtoDUNE-SP Paper 10'	▾
	Speaker: Tingjun Yang (Fermilab)	
09:45 - 10:00	Cosmic Run w/ CRT trigger: data taking and opportunities for fresh real data analysis 15'	▾
	Speaker: Dr. Serhan Tufanli (CERN)	