

# **Long Baseline Neutrino Committee**

*December 2019 CERN*

**CLOSEOUT Report**

**December 7**

# Acknowledgements

*The LBNC appreciates the opportunity to see the progress being made by the DUNE Collaboration. In particular, after the appetizer from the Single Phase ProtoDUNE a year ago, we were able to see the progress made with both technologies in the ProtoDUNE environment. The responses to questions and queries were transparent and helpful.*

*The committee thanks Fermilab and CERN, for their support and hospitality.*

## **LBNC Meeting Charge Draft 7/31/2019**

- **The LBNC would like to hear about the general status of LBNF and the principle outcomes of the recent IPR meeting. Time is devoted on the second afternoon to a report on the progress with the beamline in a parallel session. (The time is chosen such that it could be remote.)**
- **The LBNC would like to hear from DUNE its overall status and progress from a high level, providing a within which to consider the details which follow.**
- **The LBNC would like to hear about the progress with ProtoDUNE SP, addressing both the analyses, including results from the photo-detection and progress towards defining the operating parameters, which was seen as a primary goal for 2019. Time has been reserved on the second afternoon for breakout discussions which we suggest could be used for discussion of progress with installation and tests thereof (eg at Ash River)**

## LBNC Meeting Charge Draft 7/31/2019

- The primary goal of this meeting is to understand the progress made with the Dual Phase technology. We have therefore devoted the whole of the first afternoon. Our hope would be to hear in detail of the installation and the operations thus far of ProtoDUNE DP. This should describe both the successes and the difficulties, for example the ion build-up, the bubbling, and the purity. This can be divided among several speakers. The LBNC imagines that each of the issues is likely to require significant future R&D and would like to hear about those plans including their schedules. Of particular interest may be the 600kV Power Supply design issues. Finally, we expect that this discussion leads to an understanding of a path forward towards a Dual Phase detector. The LBNC would like to hear how this path would lead to a future verification program likely including a second phase of ProtoDUNE DP operation, and to a TDR at an appropriate time.

## **LBNC Meeting Charge Draft 7/31/2019**

- **Considerable progress was made in the first half of 2019 with understanding the needs and concepts for the Near Detector. We would like now to hear about progress towards a Conceptual Design and a CDR. In addition to a report on the recent DESY workshop, we could imagine several talks addressing key components. These should address: (ND time allocation 2 hrs)**
- **the current concept overall,**
- **the Argon Cube,**
- **the MPD including magnet designs for the Helmholtz or double dipole coils, and the reuse of ALICE TPC components,**
- **the Beam Monitor, including use of KLOE magnet, simulations, infrastructure and logistics,**
- **any plans for fall back systems and staging including the rationales and the way they support the goals for systematic uncertainties.**

## **LBNC Meeting Charge Draft 7/31/2019**

- **Considerable progress was made in the first half of 2019 with understanding the needs and concepts for the Near Detector. We would like now to hear about progress towards a Conceptual Design and a CDR. In addition to a report on the recent DESY workshop, we could imagine several talks addressing key components. These should address: (ND time allocation 2 hrs)**
- **the current concept overall,**
- **the Argon Cube,**
- **the MPD including magnet designs for the Helmholtz or double dipole coils, and the reuse of ALICE TPC components,**
- **the Beam Monitor, including use of KLOE magnet, simulations, infrastructure and logistics,**
- **any plans for fall back systems and staging including the rationales and the way they support the goals for systematic uncertainties.**

## **LBNC Meeting Charge Draft 7/31/2019**

- **The LBNC is aware of substantial ongoing progress made by the Computing Consortium and would like to hear an update. It would be interested in any progress to co-involve those seeking and organizing the resources and those concentrating thus far, primarily on algorithm development and analysis.**
- 
- **The LBNC will develop a Closeout Report which it will deliver on Saturday morning at 11:00 am. Subsequently this will be refined into a LBNC Meeting report.**

## LBNC Meeting Assignments 12/07/2019

### Agenda Thursday December 5

#### LBNF Status

LBNF Review/writing Team: **Bob Laxdal**, Austin Ball, Angela Fava, Hugh Montgomery, Tom Peterson

#### DUNE Overall Status + Exec Summary

DUNE Review/writing Team: **Dave Charlton**, Austin Ball, Simone Campana, Hugh Montgomery

#### ProtoDUNE SP Status, Analysis and Ops parameters

Single Phase Review/writing Team: **Kevin Pitts**, Angela Fava, Tiehui Liu, John Parsons

#### DP Computing and Analysis Status:

Computing Review/writing Team: **Simone Campana**, Dave Charlton, Hugh Montgomery



## LBNC Meeting Assignments 12/07/2019

**ProtoDUNE DP detailed Progress; Install, Operation Results.**

**Dual Phase R&D Plans**

Dual Phase Review/writing Team: **Jeff Spalding**, Cristiano Galbiati, Eric Kajfasz, , Adam Para, Jim Proudfoot, Darien Wood

**Near Detector Conceptual Design**

Near Detector Review/writing Team: **Scott Oser**, Ties Behnke, Joachim Kopp, Naba Mondal, Niki Saoulidou

**Software & Computing**

Computing Review/writing Team: **Simone Campana**, Dave Charlton, Hugh Montgomery

## LBNC Meeting Assignments 12/07/2019

### Technical Breakouts

**LBNF Beamline** “LBNF Review/writing Team: **Bob Laxdal**, Dave Charlton, Hugh Montgomery, Tom Peterson

**Single Phase Breakout:** Single Phase Review/writing Team: **Kevin Pitts**, Angela Fava, Tiehui Liu, John Parsons.

**Dual Phase Breakout:** Dual Phase Review/writing Team: **Jeff Spalding**, Cristiano Galbiati, Eric Kajfasz, , Adam Para, Jim Proudfoot, Darien Wood

**Executive Summary:** **Hugh Montgomery**, all