The **L**ong-**B**aseline **N**eutrino **E**xperiment Project

LBNE Collaboration Workshop on the Near Neutrino Detector

Purpose and Charge for the Workshop

Jim Strait
Fermilab

LBNE NND Workshop in the LBNF Context: Generalizing the Workshop Charge

Current Charge:

Objectives: To stimulate the evaluation by the full Collaboration of the capability of the LBNE Near Neutrino Detector (NND), the reference design for which is the fine-grained tracker documented in the LBNE-India Detailed Project Report[LBNE-doc-6704], to achieve the scientific objectives of LBNE. To increase involvement by the LBNE Collaboration in the development of the LBNE NND and its physics program.

Proposed Update:

Objectives: To stimulate discussion of the capability of the LBNE Near Neutrino Detector (NND), the reference design for which is the fine-grained tracker documented in the LBNE-India Detailed Project Report[1], to achieve the scientific objectives of a U.S.-hosted Long-Baseline Neutrino Facility (LBNF). To increase involvement by the global neutrino community in the development of the NND for LBNF and in its physics program.

Current Charge:

1) Requirements:
   a) Are the requirements for the LBNE NND[LBNE-doc-8806] well defined, and do they address the scientific objectives of all stakeholders?
   b) Are the detector requirements well justified, based on the physics requirements? Are they necessary and sufficient to achieve the LBNE Physics Research Goals[LBNE-doc-3056] and Global Science Requirements[LBNE-doc-4772]?

2) Does the NND reference design meet the physics requirements laid out in the LBNE requirements document[LBNE-doc-8806]?

Proposed Update:

1) Requirements:
   a) Are the requirements for the LBNE NND[2] well defined, and do they address the scientific objectives of all stakeholders?
   b) Are the detector requirements well justified, based on the physics requirements? Are they necessary and sufficient to achieve the goals of a world-leading long-baseline oscillation program?

2) Does the NND reference design meet the physics requirements laid out in the LBNE requirements document[2]?

Current Charge:

3) How will it be it verified / validated that the design meets the requirements?

4) What improvements to the design should be considered and how should they be evaluated relative to the reference design? For example, is it necessary, desirable or unnecessary to include a LArTPC or high pressure GArTPC as part of the NND system?

5) Are there features in the current reference design that go beyond what is necessary to meet the requirements as currently understood? If so, what is the reason for this and what is the benefit to LBNE?

Proposed Update:

3) How will it be it verified / validated that the design meets the requirements?

4) What improvements to the design should be considered and how should they be evaluated relative to the reference design? For example, is it necessary, desirable or unnecessary to include a LArTPC or high pressure GArTPC as part of the NND system?

5) Are there features in the current reference design that go beyond what is necessary to meet the requirements as currently understood? If so, what is the reason for this and what is the benefit to the long-baseline program?

Current Charge:

At the end of the workshop, a report will be written summarizing the conclusions of the workshop and recommending the next steps in this process, which could include subsequent workshops.

This workshop charge is developed jointly by LBNE Leadership and the Near Detector Working Group (NDWG), including especially the Indian members of LBNE who have proposed the construction of the reference design to their funding agencies. The organizing committee for the workshop will consist of the Collaboration Co-Spokespeople, Project Director, Project Manager, Co-Conveners of the NDWG, and Co-Leaders of the LBNE Indian group.

Proposed Update:

At the end of the workshop, a report will be written summarizing the conclusions of the workshop and recommending the next steps in this process, which could include subsequent workshops.

This workshop is hosted by the LBNE Collaboration. The charge is developed jointly by LBNE Leadership and the Near Detector Working Group (NDWG), including especially the Indian members of LBNE who have proposed the construction of the reference design to their funding agencies. The organizing committee for the workshop will consist of the Collaboration Co-Spokespeople, Project Director, Project Manager, Co-Conveners of the NDWG, and Co-Leaders of the LBNE Indian group.

Current Charge:

All members of the LBNE Collaboration are encouraged to participate. Additional people not in the collaboration may be invited by the workshop organizers.

Proposed Update:

All members of the LBNE Collaboration are encouraged to participate, and members of the world-wide neutrino community who are interested in contributing to the design, development and physics program of the NND for LBNF are also invited to participate.

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[1] http://lbne2-docdb.fnal.gov/cgi-bin/ShowDocument?docid=6704.

[2] http://lbne2-docdb.fnal.gov:8080/cgi-bin/ShowDocument?docid=8806 (password available on request).

08:30	Introduction: Purpose and Charge for the Workshop	Bob Wilson James Strait Milind Diwan	Near Detector Systems	None	00:30	Edit
09:00	LBNE Oscillation Physics	Bob Wilson Milind Diwan	Neutrino Oscillations Physics Near Detector Systems	None	00:15	Edit
09:15	Systematics for Long-Baseline Physics	Patrick Huber	Neutrino Oscillations Physics Near Detector Systems	None	00:45	Edit
10:00	Coffee		None	None	00:30	Edit
10:30	T2K Oscillation Analysis	Clark McGrew	Neutrino Oscillations Physics	None	00:45	Edit
11:15	MINOS Numubar Disappearance	Gina Rameika	Neutrino Oscillations Physics Near Detector Systems	None	00:30	Edit
11:45	MINOS Nue Appearance	Gina Rameika	Neutrino Oscillations Physics Near Detector Systems	None	00:30	Edit
12:15	Lunch		None	None	01:30	Edit
13:45	LBNE Systematics	Elizabeth Worcester	Neutrino Oscillations Physics Near Detector Systems	None	00:40	Edit
14:25	ND Measurements - Oscillation Physics	Sanjib Mishra	Neutrino Oscillations Physics FGT Near Detector Systems	None	00:35	Edit
15:00	ND Measurements - Non-oscillation Physics	Raj Gandhi	Proton Decay Near Detector Physics Cross Sections and Nuclear Models Atmospheric Neutrinos Physics FGT Near Detector Systems	None	00:30	Edit
15:30	Coffee		None	None	00:30	Edit
16:00	Neutrino nuclear interactions	Roberto Petti	Near Detector Physics Cross Sections and Nuclear Models Physics FGT Near Detector Systems	None	00:30	Edit
16:30	LBNE NND Reference Design	Brajesh Chandra Choudhary Vipin Bhatnagar	FGT Near Detector Systems	None	00:30	Edit
17:00	Salient Sensitivity Studies	Xinchun Tian	Neutrino Oscillations Near Detector Physics Physics FGT Near Detector Systems	None	00:30	Edit
17:30	Discussion	Bob Wilson Milind Diwan	Physics Near Detector Systems	None	02:00	Edit

08:30	Nova Nue Appearance	Gina Rameika	Neutrino Oscillations Physics Near Detector Systems	None	00:30	Edit
09:00	Detector Systematics - Importance of Identical Detectors	Nuno Barros	Neutrino Oscillations Near Detector Physics Physics Near Detector Systems	None	00:30	Edit
09:30	Gas Argon TPCs in the context of LBL physics	Georgios Christodoulou	Neutrino Oscillations Physics Near Detector Systems	None	00:45	Edit
10:15	Coffee		None	None	00:30	Edit
10:45	Impact of large dm2 oscillations on LBNE	William Louis	Neutrino Oscillations Near Detector Physics Physics FGT Near Detector Systems	None	00:15	Edit
11:00	Discussion	None	None	None	01:15	Edit
12:15	Lunch		None	None	01:30	Edit
13:45	Drafting of preliminary workshop report by small committee	None	None	None	01:15	Edit
15:00	Coffee		None	None	00:30	Edit
15:30	Continued drafting of report	None	None	None	01:15	Edit
16:45	Presentation and discussion of draft workshop report	None	None	None	01:00	Edit
17:45	Workshop End	None	None	None	00:00	Edit