

## **LBNE COLLABORATION ORGANIZATION DOCUMENT** **Fermilab Long-Baseline Neutrino Experiment**

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### **1. Spokespeople**

Co-Spokespersons:

Milind Diwan (2009-2013)

Bob Wilson (2013-2014)

Deputy Spokesperson: Maury Goodman (2009-2013)

### **2. The LBNE Project**

The LBNE Project Organization is described in detail in the Project Management Plan found in docdb-2543.

The top level responsibilities are:

Project Director	Jim Strait
Project Manager	Elaine McCluskey
Level 2-Beam	Vaia Papadimitriou
Level 2-Near Detector	Chris Mauger
Level 2-Far Detector	Jim Stewart
Level 2-Civil Construction	Tracy Lundin

### **3. LBNE Institutional Board**

Alabama:	Ion Stancu
Argonne:	Maury Goodman
Boston:	Edward Kearns
Brookhaven:	Milind Diwan
Cambridge:	Mark Thomson
Catania:	Vincenzo Bellini
Chicago:	Edward Blucher
Colorado:	Alysia Marino
Colorado State:	Robert Wilson
Columbia:	Mike Shaevitz
Dakota State:	Barbara Szczerbinska
Davis:	Robert Svoboda
Drexel:	Charles Lane
Duke:	Kate Scholberg
Fermilab:	Regina Rameika
Hawai'i:	John Learned
Houston:	Lisa Whitehead
India:	Brajesh Chandra Choudhary
Indiana:	John Urheim
Iowa State:	Mayly Sanchez
Irvine:	Henry Sobel
Kansas State:	Glenn Horton-Smith
Kavli (Tokyo):	Mark Vagins
Lawrence Berkeley:	Richard Kadel
Lawrence Livermore:	Adam Bernstein
London:	Jenny Thomas
Los Alamos:	Christopher Mauger
Louisiana:	Thomas Kutter
Maryland:	Erik Blaufuss
Michigan State:	Carl Bromberg
Minnesota:	Marvin Marshak (Chair: 2010-2013)
Minnesota-Duluth:	Richard Gran
MIT:	Janet Conrad
NGA:	Stephen Malys
Northwestern:	Heidi Schellman
Notre Dame:	John Losecco
Oxford:	Alfons Weber
Pennsylvania:	Kenneth Lande
Pittsburgh:	Donna Naples
Princeton:	Kirk McDonald
Rensselaer:	Jim Napolitano
Rochester:	Kevin McFarland
Sheffield:	Neil Spooner
SLAC	Mark Convery
South Carolina:	Roberto Petti
SDSTA	Mike Headley
SDSMT:	Xinhua Bai
South Dakota:	Dongming Mei
South Dakota State:	Robert McTaggart
Southern Methodist:	Thomas Coan
Sussex:	Jeff Hartnell
Syracuse:	Mitch Soderberg

Tennessee: William Bugg  
Texas: Karol Lang  
Texas-Arlington Jae Yu  
Tufts: Hugh Gallagher  
UCLA: Hanguo Wang  
Virginia Tech: Jonathan Link  
Washington: Nikolai Tolich  
Wisconsin: Karsten Heeger  
William and Mary: Robert McKeown  
Yale: Bonnie Fleming

Young LBNE observer: Georgia Karagiorgi

#### **4. LBNE Executive Committee, 2013**

[ *Ex-officio members from the collaboration* ]

Marvin Marshak (IB Chairperson for 2013)  
Robert Wilson (cospokesperson)  
Milind Diwan (cospokesperson)  
Maury Goodman (deputy spokesperson)  
Jon Urheim (Physics Working Group Convener)  
Tom Junk (Physics Tools Working Group Convener)

[ *Ex-officio members from the project* ]

Jim Strait (Project Director)

[ *Elected 1 Jan 2012 – 31 Dec 2013* ]

Jim Stewart BNL  
Ed Kearns Boston  
Bill Louis LANL  
Hank Sobel Irvine  
Kate Scholberg Duke  
Sam Zeller FNAL

[ *Young LBNE Observer* ]

Andrej Szelc Yale

# 5. Collaboration appointments

This section describes the responsibilities of the LBNE science working group conveners, the Speakers Board chair, and the technical and software coordinators. Their roles and responsibilities and relationships to each other and the project management are briefly described.

These positions are appointed by the LBNE co-spokespersons in consultation with the executive committee.

The appointment term for each collaboration appointed position is 1 year renewable from the date of the appointment unless otherwise stated in the charge.

## a. Physics Analysis Working Groups

Convener Jon Urheim

Charge of the PAGC: *The Physics Analysis Group Convener (PAGC) is responsible for the production of all scientific results from the collaboration. The PAGC is responsible for establishing physics analysis subgroups and appointing (co-)conveners of the subgroups in consultation with the co-spokespersons and the Physics Tools Group Coordinator. He/she may establish procedures to review the results (scientific papers, plots, tables, statistical sensitivity, measurements, and limits on scientific parameters, etc.) before they can be released in public.*

Long-Baseline Neutrinos

Mary Bishai

Sam Zeller

Atmospheric Neutrinos

Hugh Gallagher

Proton Decay

Ed Kearns

Galactic SN Burst

Kate Scholberg

Diffuse Supernova

Mark Vagins

Other (including Solar, Reactor and Geo-neutrinos)

Michael Smy

Short-Baseline/Near Detector Physics

Mishra/Chris Mauger

**Charge of the Near Detector Physics Convener:** *The Near Detector Physics Group (NDPG) is a subgroup of the LBNE physics analysis group. The NDPG convener(s) will be appointed by the Physics Analysis Group Convener in consultation with the co-spokespersons. This working group is responsible for all aspects of the near detector physics: those directly related to the long-baseline physics and the precision neutrino interaction physics. It needs to function in a coordinated manner with the Long-Baseline Physics Working subgroup as well as the Near Detector and the Beam subprojects.*

## b. Physics Tools Working Groups

Convener

Thomas Junk

**Charge for the Convener:** *The Physics Tools Group Coordinator (PTGC) is responsible for the production and verification of all analysis tools for the collaboration. The PTGC is responsible for establishing tools*

*subgroups and appointing (co-)conveners of the subgroups in consultation with the co-spokespersons and the Physics Analysis Group Convener and the Software Coordinator. These tools include, but are not limited to, detector and beam simulation and analysis methods, reconstruction methods, methods for track and vertex recognition, kinematic resolution, particle identification techniques, methods for extrapolation of measurements from the near detector, statistical methods. The PAGC may appoint ad hoc internal sub-committees to review the proposed techniques before they are approved for final physics analysis.*

Electron and Photon Production and Transport-	Matthew Szydagis
	Brian Rebel
Far Detector Simulation	Eric Church
Event Reconstruction (Near and Far)-	Stan Seibert
	Mike Kirby
Cross Sections and Nuclear Models-	Dan Cherdack
	Martin Tzanov
Cosmic Rays and Cosmogenics-	Vitaly Kudryavtsev
	Dongming Mei
Near Detector Simulation	Kevin Yarritu
Beam Systematics	Kevin Yarritu/Laura Fields
Radiological and Cleanliness Models-	Xinhua Bai
	Vic Gehman

### **c. Speakers Committee**

**Charge of the Speaker's Committee:** The Speakers Committee is responsible to:

- 1. Select speakers for LBNE talks for all conferences, workshops and seminars/colloquium at major laboratories unless the speaker is an employee of that laboratory.*
- 2. The Speakers Committee members assist the co-spokespersons in contacting conference organizers to secure invitations for LBNE talks.*
- 3. Set up and organize practice talks within the LBNE collaboration, where needed.*
- 4. Maintain a database containing all the LBNE talks presented at conferences and workshops and lists all future and upcoming conferences where LBNE could be presented.*
- 5. Maintain a database, accessible by all LBNE members, containing the names of all LBNE collaborators listing all LBNE talks given, including a link to the talk stored in the database.*
- 6. Speakers Committee progress reports will be presented at institutional board meetings.*
- 7. The Speakers Committee will have, as necessary, meetings to discuss possible conference talks for LBNE members and to prepare ordered lists of candidate LBNE speakers for each conference.*

*The Speakers Committee will seek recommendations from institutional board members and relevant conveners. The Speakers Committee will be appointed by the co-Spokespersons in consultation with the Executive Committee. The chair of the Speakers Committee will have overall responsibility for carrying out the responsibilities of the Committee.*

Chair – Jim Napolitano  
Members – Jack Schneps, Andy Blake

#### **d. Technical Coordinators**

**Collaboration Technical Coordinator (R&D Group) - Milind Diwan (interim)  
(March 25, 2013)**

**Civil Facilities - Robert Svoboda (March 25, 2013)**

**Beam - Alberto Marchionni (March 25, 2013)**

**35ton R&D prototype - Mark Convery (co-convener) and Michelle Stancari (co-convener) (March 25, 2013)**

#### **i. Collaboration Technical Coordinator**

The spokespersons may choose to appoint a Collaboration Technical Coordinator (CTC) who shall lead a collaboration technical coordination team to serve as liaisons between the science collaboration and the construction project. The appointments for the CTC and the coordination team shall be made in consultation with the collaboration executive board and the Project Director.

**Charge of the Collaboration Technical Coordinator (CTC):** *The CTC shall maintain a master schedule of off-project as well as non-costed (but project related) scientific tasks. This list will be coordinated with the Physics Analysis Group convener, the Technical Coordinators, the Software Coordinator, and the L2 managers.*

*The Collaboration Technical Coordination Team are responsible to the co-spokespersons. They may have specific duties towards a subproject or across the entire project; these will be defined in specific charges to the coordinators. The general responsibilities of the TC's are defined here:*

- A) The Collaboration Technical Coordinators are responsible for communicating and verifying the scientific requirements to the project/subproject team.*
- B) The CTC shall serve on the sub-project technical board as a representative of the co-spokespersons. The CTC shall address the scientific impacts of the change control requests that are reviewed in the technical boards.*
- C) The CTC shall be responsible for identifying collaboration resources that could be of benefit to the project/subproject. These resources include scientific personnel, engineers, technical personnel, as well as facilities that might be useful for R&D, testing, management, construction, or quality assurance.*
- D) In addition, the CTC shall be responsible for identifying those tasks or scope that are needed to accomplish the scientific requirements but are not in the current work plan.*
- E) The CTC shall work with the Project Manager, subsystem managers, and institutional representatives to maximize the use of technical resources available. The CTC will coordinate allocation of collaboration resources (both personnel and facilities) needed to execute technical tasks for all phases of the project. Resources required for project activities will be documented in the project's resource-loaded schedule. Commitments for resources will be documented in individual institutional SOWs or MOUs as appropriate.*

#### *ii. Collaboration Civil Facilities Technical Coordinator*

**Charge of the Civil Facilities Technical Coordinator:** *The Civil Facilities (CF) subproject remains the largest single expense within LBNE. The Collaboration Civil Facilities Technical Coordinator shall serve on the CF technical board. He/she is responsible for creation and maintenance of a requirements document (which could be part of the overall requirements document) that clearly identifies the requirements that drive the design and cost of the CF subproject. The CF CTC shall communicate with the CF Level-3 project manager and shall address the clarification, review, or change control requests that pertain to the scientific requirements of the experiment.*

iii. *Collaboration Beam Technical Coordinator*

**Charge of the Collaboration Beam Technical Coordinator:** *The Collaboration Beam Technical Coordinator is responsible for coordinating the beam simulation tasks with the beam project management. He/she is responsible for maintaining a schedule of beam simulation activities and priorities. These priorities shall be updated on a regular basis and communicated to the Physics Analysis Group convener and the Physics Tools Group Convener. The Collaboration Beam Technical Coordinator is charged with identifying tasks and collaboration personnel for those tasks on behalf of the spokespersons.*

iv. *The 35 ton R&D Collaboration Technical Coordinator*

**Charge of the 35 ton R&D Collaboration Technical Coordinator:** *The 35 ton R&D CTC is responsible for the following:*

- A. *Prioritize and maintain a schedule of collaboration activities regarding simulations, physics analysis.*
- B. *Prioritize and maintain a schedule of other collaboration service activities on the 35 ton R&D. These activities may include collaboration participation in assembly, commissioning, calibration, debugging, data-taking, shifts, etc.*
- C. *The responsibility of the 35 ton R&D CTC shall including maintaining a database of contributions from the collaboration to the 35 ton prototyping.*
- D. *The 35 ton R&D CTC shall recruit collaboration personnel and resources by communicating with the institutional board members.*
- E. *The 35 ton R&D CTC shall coordinate with the 35 ton R&D Level-3 manager as well as the liquid argon detector L-2 project manager. The 35 ton R&D CTC shall serve on the 35 ton technical board.*

**e. Software and computing Coordinator**

**Convener: Tom Junk, Deputy: Maxim Potekhin (2013)**

**Charge of the Software Coordinator:** *The Software coordinator shall be appointed by and report to the Co-spokespeople, and interface and collaborate with the Project. The software coordinator shall be responsible for the Software Infrastructure Working Group (SIWG). The Software Coordinator is responsible for implementation of policies and processes in the following categories:*

- a. *Documentation*
- b. *Software Release Management and Infrastructure*
- c. *Coding Standards and Compatibility with the Distributed Computing Model*
- d. *Workflow Management*
- e. *Data Management*
- f. *Databases*

### *g. Data Integration*

*This will require coordinating and facilitating the effort of a diverse set of individuals involved in software activities in the LBNE Science Collaboration and on the LBNE Project. The software coordinator shall collaborate closely with the LBNE Computing Coordinator on matters of computing resources at Fermilab as well as access to those resources for the collaboration.*

*The Software Coordinator is specifically charged to:*

- a. Select appropriate programming language platforms and technologies for various software components*
- b. Establish procedures for efficient Workflow Management*
- c. Ensure the development of software infrastructure improvements*
- d. Participate in and, when directed specifically by the Co-spokespeople, direct the development, testing or maintenance of software components and manage personnel assigned to such specific tasks*
- e. Oversee and manage the establishment of a software release and validation process, including establishing validation criteria*
- f. Oversee the application of and ensure compliance with LBNE coding practices and standards (including documentation) in the development of LBNE software components*
- g. Ensure interoperability between heterogeneous systems used in LBNE, by establishing and insuring the use of mandatory common data formats, data schemas and protocols*
- h. Supervise personnel assigned to the software release validation process, and to other specific tasks as decided by the Co-spokespeople*
- i. Initiate and conduct internal and external reviews of the software systems for LBNE in consultation with the Spokespeople and the Project Director.*
- j. Interface with software efforts on the LBNE Project as specified by the Project Director.*

### **f. NSF Working Group**

The mission of the NSF Working Group is to explore how NSF can participate in LBNE construction in a substantial manner.

The (June 2013) membership is:

Bob Paulos (Wisconsin and ICecube)  
Greg Sullivan (Maryland)  
Josh Klein (UPenn)  
Carl Bromberg (Michigan State)  
Jim Stewart (BNL manager for LAr detector)  
Bob Svoboda (UC/Davis)  
Edward Blucher (Chicago)  
Mike Shaevitz (Columbia)  
Karsten Heeger (Yale)  
Bob Wilson (Colorado State, LBNE spokesperson)  
Jim Strait (FNAL LBNE project director)  
Bonnie Fleming (Yale)  
Hugh Gallagher (Tufts)  
Maury Goodman (Argonne, LBNE deputy spokes)  
Milind Diwan (BNL LBNE spokesperson)

### **g. Other Responsibilities**

1. FNAL computing/DOCDB      Eileen Berman
2. Webmaster                      Anne Heavey



- |                                     |   |
|-------------------------------------|---|
| 3. Young LBNE                       | Andre Szec (2013)                           |
| 4. Collaboration by-laws            | IB Chair-Marshak (see docdb-137)            |
| 5. Collaboration author/email lists | Deputy Spokesperson-Goodman (see docdb-270) |
| 6. LarSoft                          | Rick Snyder (2013)                          |
| 7. 35 ton prototype                 | Alan Hahn                                   |
| 8. DAQ                              | Jon Urheim                                  |

## 6. Specific Charges

### a. *Software Planning Document (due September 2013)*

*The software and computing coordinators are requested to edit a software and computing plan for LBNE. The date for completion is September 15, 2013. This document may be reviewed as part of the DOE review of LBNE in Oct, 2013. The document should address the following components:*

1. *Define the software system scope.*
2. *Organizational structure of the software and computing group*
3. *High level requirements for software and computing. This should include issues of platforms, lifetime, interoperability, distribution, quality assurance etc.*
4. *Interfaces with project systems. How they will be managed.*
5. *Scientific goals.*
6. *Current status*
7. *Future plans for software infrastructure*
8. *Plans for scientific software.*
9. *Expected schedule and manpower needs.*

*An outline with preliminary plans for the document is requested by June 15, 2013.*

### b. *LBNE R&D Needs Evaluation Committee (RDNEC) (May 13, 2013)*

*The LBNE lead collaboration technical coordinator is requested to convene the LBNE RDNEC group. It is expected that this role is filled by one of the LBNE spokespersons or by a designated deputy.*

*Goals for the LBNE RDNEC group:*

1. *Identify and communicate the R&D needs of LBNE to ongoing or proposed R&D efforts outside the LBNE collaboration.*
2. *Obtain updates from the R&D efforts and ascertain if the R&D needs of LBNE are being met.*

*Membership of the group:*

*From LBNE: the Physics Analysis Working Group convener, the Physics Tools Working Group Convener, the software and computing coordinator, the 35 ton R&D prototype technical coordinator, and the 35 ton R&D prototype manager, collaboration spokespersons, LBNE project director, LBNE far detector manager. Beam technical coordinator.*

*From FNAL: the head of PPD or designated representative.*

*A single representative from each of the following efforts.*

Coordinating Panel for Advanced Detectors (CPAD) – Craig Thorn  
Materials Test Stand – Stephen Pordes  
LAPD – Brian Rebel  
Photon Detection – Stuart Mufson  
LArIAT – Jen Raaf  
Long Bo – Michelle Stancari  
CAPTAIN - Christopher Mauger  
*MicroBoone – Regina Rameika*  
*NA61/Muon counters/Near Neutrino Detector – Jeff Mills*

*The LBNE collaboration technical coordinator, at the request of the LBNE spokespersons, shall modify the composition of this group at regular intervals if needed.*

*The LBNE collaboration technical coordinator shall convene this group and make a monthly report to the LBNE spokespersons. The report should contain the list of LBNE R&D needs and updates, and specific actions recommended to meet those needs.*

*The R&D group report shall form the basis of any communication with the DOE regarding LBNE R&D support.*

# LBNE Collaboration Organization Chart (May 2013)

