

A visualization of particle tracks, likely from a detector, showing multiple paths in various colors (red, yellow, green, blue) against a light blue background. The tracks are complex and intersecting, suggesting a high-energy collision event.

Collaboration Update

Mark Thomson & André Rubbia

This Talk

- ★ **Collaboration Meeting:**
 - Brief update
- ★ **Collaboration Organization:**
 - Recent Progress
- ★ **CDR Documentation:**
 - Plans and status
 - Task forces

Collaboration Meeting

★ Registration

- 173 people have registered !
- Deadline is Monday – need to finalize organization
<https://indico.fnal.gov/conferenceDisplay.py?confId=9740>

★ Focus of Meeting: CDR preparations

- 16th/17th Parallel sessions
- 18th Plenary Sessions
 - Will be joined by “LBNC”

★ Social Events:

- 16th April: “Young DUNE reception”
- 17th April: “Collaboration Dinner @ Riverview Banquet Hall”

DUNE Organization

★ Evolving rapidly

- Now have draft collaboration rules (to be discussed at IB meeting)

★ DUNE Executive Committee roles being filled

- Spokespeople: AR & MT
- Technical Coordinator: Eric James
- Resource Coordinator: Chang Kee Jung
- IB Chair (Elect): Maury Goodman
- **Will be expanded to include elected/nominated members**

Web Pages

★ LBNF

- <http://lbnf.fnal.gov/index.html>
- Includes LBNF/DUNE at work

★ DUNE

- Being set up (thanks to Anne Heavey and others)
- Will appear at dunescience.org
- Should be active **very** soon...

CD-1 Task Forces

★ Task Forces – all up and running

<https://web.fnal.gov/project/LBNF/SitePages/Home.aspx>

- Physics
 - LBL Neutrino Oscillations
 - Nucleon Decay
 - Atmospheric Neutrinos
 - Super-Nova Physics
- Far Detector
- Near Detector
- Systematics
- Beam Requirements
- DAQ/Online
- Reconstruction
- Computing/Software Infrastructure
- CERN Prototypes [with existing conveners]

CD-1 Task Forces

★ Main focus of the Task forces is **CDR document preparation** (time is short)

- TF Meetings have started
- Meetings are open to all who are interested
 - All meetings will be posted in indico
 - <https://indico.fnal.gov/categoryDisplay.py?categId=443>

★ Task forces ⇒ Working groups

- Once CDR documentation is complete, we will set up formal working groups
 - Aim for a “rich” structure (encourage broad involvement)

CD-1-R Internal Milestones

- ★ 18 March DUNE Technical Coordinator Named ✓
- ★ 24 March Task Force Conveners Named ✓
- ★ 31 March CD-1 Document Scope Defined ✓
- ★ 15 April **Zereth-order Draft of CD-1-R Documents**
- ★ 16-18 April First DUNE Collaboration Meeting
- ★ 19 April First full LBNC Meeting
- ★ 5 May First CD-1-R draft for review by project office
- ★ 19 May CD-1-R documents posted for Director's Review
- ★ 2-3 June Director's Review
- ★ 22-23 June Fermilab PAC
- ★ 6-8 July DOE CD-1 Review

Proposed CDR Structure

- ★ **Relatively high-level documents** making a clear scientific and technical case, **referencing detailed documents as Annexes**
- ★ **Proposed Structure**
 - Vol. 1 – “Introduction and Executive Summary” ~30 pages
 - Vol. 2 – “LBNF/DUNE Physics” ~50 pages
 - Vol. 3 – “LBNF” ~100 pages
 - Vol. 4 – “DUNE” (FD, ND + Prototypes) ~100 pages
 - **Have defined initial outline skeletons for various documents**
- ★ **Annexes will include:**
 - Far Detector (single phase), LBNO Design Study, LBNE Science Opportunities, Near Detector, Beamline, ...

Vol 2: DUNE Physics

- Section 1 – “Introduction and Scientific goals” ~5 pages
- Section 2 – “LBL Neutrino Oscillations” ~25 pages
 - 2.1 – Context
 - 2.2 – MH
 - 2.3 – CPV
 - 2.4 – Testing the 3-flavor paradigm
 - 2.5 – Beam requirements
 - 2.6 – Far Detector Requirements
 - 2.7 – Systematics and Near Detector Requirements
- Section 3 – “Nucleon Decay and Atmospheric” ~10 pages
 - 3.1 – Nucleon Decay
 - 3.2 – Atmospheric Neutrinos
 - 3.3 – Detector Requirements
- Section 4 – “SNB and LE Neutrinos” ~10 pages
 - 4.1 – SNB Neutrino Physics
 - 4.2 – SNB Astrophysics
 - 4.3 – Detector Requirements
- Section 5 – “Physics at the Near Site” ~ 1 page
- Section 6 – “Beam/Detector Requirements” ~ 3 pages

Vol 4: DUNE Detectors

- Section 1 – “Introduction and Implementation Strategy” ~5 pages
- Section 2 – “Project Management” ~ 5 pages
- Section 3 – “Far Detector Reference Design” ~25 pages
 - 3.1 – Overview
 - 3.2 – Single-Phase TPC
 - 3.3 – DAQ & Monitoring
 - 3.4 – Cold Electronics
 - 3.5 – Photon Detection System
 - 3.6 – Installation and Commissioning
- Section 4 – “Far Detector Alternative Design” ~25 pages
 - 4.1 – Overview
 - 4.2 – Dual-Phase Charge Readout
 - 4.3 – Field cage and HV
 - 4.4 – Electronics, chimneys & DAQ
 - 4.5 – DCS, DSS
 - 4.6 – Light Readout System
 - 4.7 – Installation and Commissioning
- Section 5 – “Synergies between FD Designs” ~5 pages

Vol 4: DUNE Detectors cont.

- Section 6 – “FD Software and Computing” ~10 pages
 - 6.1 – Computing Infrastructure
 - 6.2 – Event Reconstruction
- Section 7 – “Near Detector Reference Design” ~25 pages
 - 7.1 – Overview
 - 7.2 – Fine-grained Tracker
 - 7.3 – Near Detector Physics with the Fine-grained Tracker
 - 7.4 – Muon Detectors
 - 7.5 – DAQ/Computing
 - 7.6 – Alternatives
- Section 8 – “Prototyping Strategy” ~20 pages
 - 8.1 – 35-ton prototype
 - 8.2 – Single-Phase Prototype at the CERN Neutrino Platform
 - 8.3 – WA105
 - 8.4 – Connections to the SBN Program
- Section 9 – “Summary” ~2 pages

Questions?