

Report on ND CDR Workshop

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ND general meeting
August 19, 2020

Apologies in advance for text-heavy slides



ND CDR

- 9 chapters, 268 pages
 - 1. Introduction
 - 2. ND-LAr
 - 3. ND-GAr
 - 4. DUNE-PRISM
 - 5. SAND
 - 6. Flux and cross sections
 - 7. Beyond SM opportunities with the ND
 - 8. ND cavern and facilities
 - 9. Computing and DAQ for the ND

ND CDR, near time frame

- Submitted for first pass with LBNC on July 14
- Comments received August 8
- Meeting set with LBNC on Aug 31 to discuss plans for responding to the major comments
- Partial response and further plans for response to be discussed in ND talk to mid-sept LBNC meeting

Comment and response form

https://indico.fnal.gov/event/44947/attachments/133003/163797/Comments_from_the_LBNC_on_the_DUNE_Near_Detector_CDR.docx

- **Preface – extracted comments LBNC thinks most serious**
- **General comments on the CDR as a whole**
- **For each chapter: major and minor comments**

- **Range from major to quite trivial, needing expert study/text to simple edit**
- **Many penetrating comments that show great insight**
- **Some comments show a lack of understanding, often indicating we failed to explain something well**
- **Must respond in writing and through CDR expansion/improvements/edits**
 - **Simple edits**
 - **Push back as in silly ask or not doable**
 - **Agree to do, and do**
 - **Agree on plan to do/study and try to include in CDR**
 - **Defer to TDR**

Ongoing ND CDR workshop

- <https://indico.fnal.gov/event/44947/>
 - Sessions Aug. 18, 20, 21, 24, 26, 27, 28
 - Sessions on 18-24 for xSAND, 26, 27 for SAND, 28 for all
 - All urged to join/participate as much as you can in all sessions
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- One primary goal: go through 8 major comments in preface and craft a reply, or plan to reply, to share with LBNC on Aug. 31
 - Other primary goal is to get wg/c/experts organized to plan full set of responses

The plan

- CDR editors responsible for compiling/editing overall reply to LBNC.
- CDR editors responsible for overseeing/editing changes to CDR
- Experts will supply new text/plots/studies/opinions for replies and for CDR edits
- The ongoing workshop and follow-on work is primary opportunity to have input into that process
- Proposed LBNC reply and new CDR draft will have opportunity for collaboration review
- This will take work and time, reply to LBNC might get done in stages.

The preface comments

- The CDR should lay out organizational/management structure and lines of responsibility.
 - Will do. In transition, so some of this still to be set up. Maybe this is a good opportunity.
- The CDR should describe the R&D plan(s) and decision points leading to the TDR
 - Yes. Working groups/consortia on hook to help craft this.
- The CDR should say more about readout electronics and DAQ
 - Will include DAQ in chap 9 this time. DAQ group and detector experts to propose text
- The CDR should say more about the computing model and how it might relate to that for the FD
 - Asking for help from computing group to address this. We can do better, but may ask to defer on some of this.
- The CDR should state more clearly the prioritization of oscillation physics, BSM, and non-argon xsec physics. Show what drives design and cost and what is parasitic.
 - Priorities are clear. CDR editors should try to fix. Should not be confusion on this.

The preface comments

- The specifications should be justified and made more cohesive across the document.
 - Some lack of cohesion expected given process of creating the document. Hiro plus CDR editors should be able to improve. Ties in with another comment wanting more of a connection to the FD/physics TDR and the overall DUNE goals.
- Advocacy for neutrino cross section measurements and DUNE-PRISM seem to be in tension in the document.
 - Bad. Need both. DUNE-PRISM group thinking about places where DUNE-PRISM should take care of things and places where model needed to correct. Also some editing also needed to help make this case.
- Purpose of SAND muddled. Beam monitoring or MINERvA 2.0? Strong message that we should emphasize beam monitoring and DUNE-PRISM and deemphasize non-argon cross sections.
 - Comment does not seek to design inside of SAND. However, comment very much pushes to set the scientific tone/emphasis of the SAND chapter in the CDR. Marketing advice. Comes from religious conviction that non-argon xsecs not useful enough to compromise other parts of program. Complex issue. Much discussion to be had next week in SAND sessions! Must come out of this with one voice.

The preface comments

- How will SAND beam monitoring data be used in DUNE-PRISM?
 - Big change, go back on axis. Well modeled change in beam can be included in DUNE-PRISM analysis.
- Request for more information on detector parameters and performance.
 - WG/c/experts will help here. Some may be deferred.