

Goals of the workshop

Sowjanya, Kendall

DUNE FD SP/DP Workshop

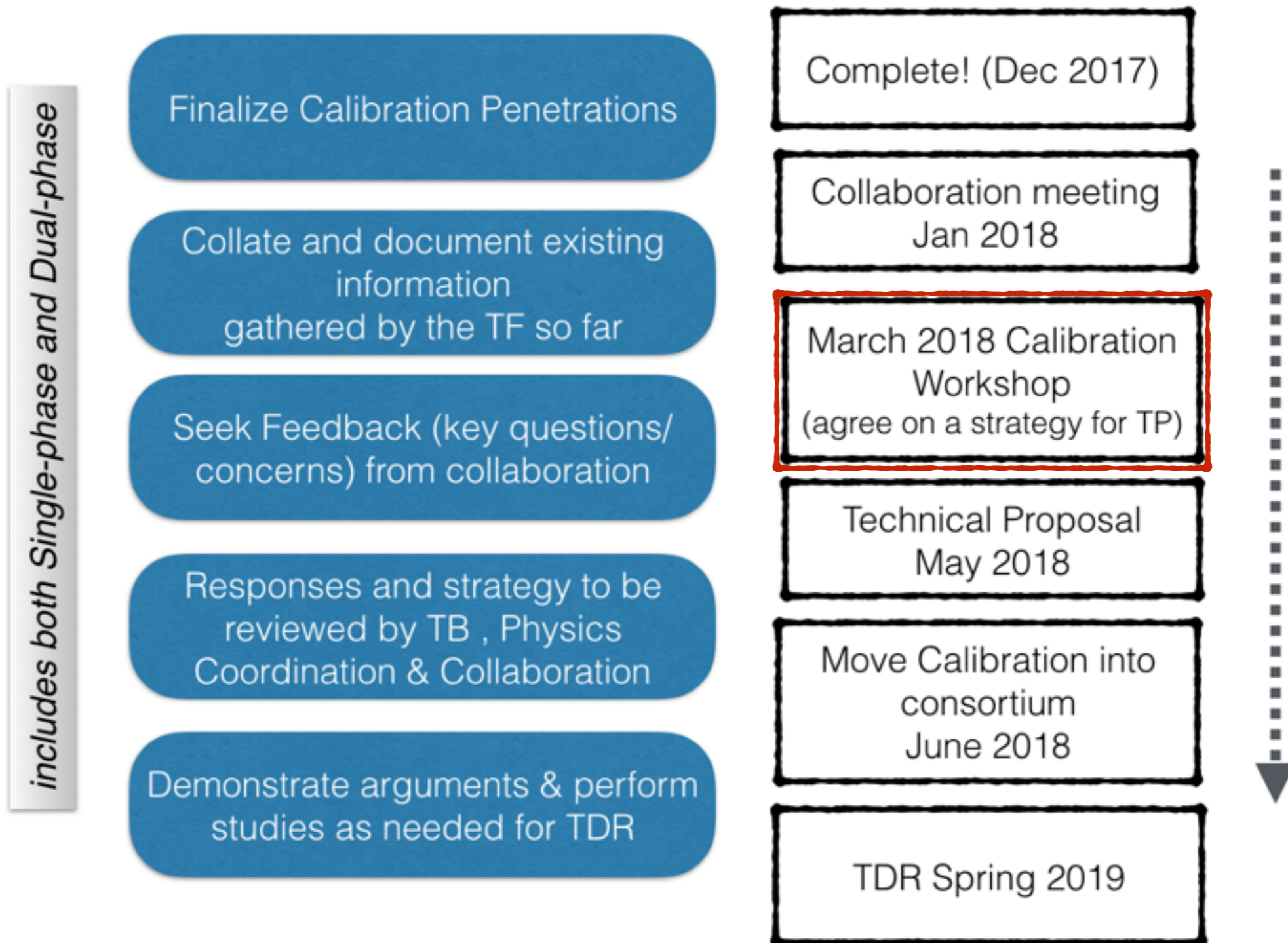
March 14, 2018

Fermilab

Welcome!

- If you haven't done so already, please pay the registration fees
- *Please wear your name tag for the duration of the workshop*

Calibration Strategy: Collaboration Process Timeline



Workshop Goals

Note: This workshop is both Single Phase (SP) and Dual Phase (DP)

- Summary of current status
- Existing calibration sources
- External Systems: Motivation, physics benefits etc.
- Discuss Key Questions/Concerns received so far
 - <https://docs.dunescience.org/cgi-bin/private/ShowDocument?docid=7449>
 - Note down possible studies for TDR
- Dedicated session on DP considerations
- Agree on external systems and what goes into TP

Workshop focus: External calibration systems & Physics benefits

Workshop Format

- 2.5 day workshop; 8 sessions total
 - each session has generous discussion time
 - *Guidelines for discussion (next slide)*
- 30-minute Coffee breaks: more discussion time!
(Wednesday coffee break as part of Director's coffee break)
- Note that we are in different rooms each day
 - *Wednesday*: CURIA II
 - *Thursday*: Hornet's Nest (morning); 1 West (afternoon)
 - *Friday*: Race Track (all day)

Guidelines for Discussion

By design, the workshops sessions are discussion-oriented, and to do this **fairly and effectively**, please keep these guidelines in mind:

- Kendall/Sowjanya will moderate the sessions
- Please *raise your hand* if you have a question/comment.
- The goal is to hear from as many of you as possible
- *Share the air*: If you have been dominating the discussion or participating disproportionately, let others participate. Alternatively, if you haven't said much, you are encouraged to participate more.
- Use *inclusive* language
- We understand that the time allotted may not be enough to discuss all we want to, so please feel free to contact Kendall/Sowjanya if you have additional input.

13:30 - 15:00

Calibration Overview, Status & Strategy

Zoom link: <https://fnal.zoom.us/j/965470841>
Meeting ID: 965 470 841

Conveners: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville), Prof. Kendall Mahn (Michigan State University)

Location: Curia II, WH2W

13:30 **Goals of the workshop 15'**

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

13:45 **Calibration status overview & Strategy 40'**

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

14:25 **Calibration Key questions/concerns 20'**

Speaker: Prof. Kendall Mahn (Michigan State University)

14:45 **Dual Phase Considerations 15'**

15:00 - 15:30

Break 30'

(as part of Director's coffee break)

15:30 - 17:35

Existing Sources

Zoom link: <https://fnal.zoom.us/j/965470841>
Meeting ID: 965 470 841

Conveners: Prof. Kendall Mahn (Michigan State University), Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

Location: Curia II, WH2W

15:30 **Existing sources: Overview 15'**

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

15:45 **Calibration with Ar39 30'**

Speaker: Prof. Michael Mooney (Colorado State University)

16:15 **Calibration with Cosmics 30'**

Speaker: Dr. Thomas Junk (Fermilab)

16:45 **Other Sources 25'**

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

17:10 **Discussion 20'**

09:00 - 10:20

External Calibration Systems I

Zoom link: <https://fnal.zoom.us/j/965470841>

Meeting ID: 965 470 841

Conveners: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville), Prof. Kendall Mahn (Michigan State University)

Location: Hornet's Nest WH-8XO

09:00 **Overview: Systems under consideration 10'**

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

09:10 **Laser System: Physics Benefits & Key Questions 30'**

Speaker: Prof. Kendall Mahn (Michigan State University)

09:40 **Discussion: Laser System 40'**

10:20 - 10:50

Break 30'

10:50 - 12:30

External Calibration Systems II

Zoom link: <https://fnal.zoom.us/j/965470841>

Meeting ID: 965 470 841

Conveners: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville), Prof. Kendall Mahn (Michigan State University)

Location: Hornet's Nest WH8-XO

10:50 **Radioactive Sources: Key Questions 10'**

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

11:00 **Physics Benefits: Radioactive Sources 20'**

Speaker: Juergen Reichenbacher (South Dakota School of Mines and Technology)

11:20 **Radioactive Source Studies 20'**

Speaker: Jason Stock (South Dakota School of Mines and Technology)

11:40 **Physics Benefits: Neutron generator 20'**

Speaker: Robert Svoboda (UC Davis)

12:00 **Discussion: Low energy physics needs & Calibration 30'**

13:30 - 15:15

External Calibration Systems III & DAQ needs

Zoom link: <https://fnal.zoom.us/j/965470841>

Meeting ID: 965 470 841

Conveners: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville), Prof. Kendall Mahn (Michigan State University)

Location: One West

13:30 Cosmic Ray Tagger System: Key Questions 5'

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

13:35 Physics Benefits: Cosmic Ray Tagger System 25'

Speaker: Josh Klein (University of Pennsylvania)

14:00 Discussion: Motivation for CRT? 20'

14:20 DAQ System: Overview, limitations & Key Questions 15'

14:35 DAQ needs for calibration: overview 20'

Speaker: Josh Klein (University of Pennsylvania)

14:55 Discussion: DAQ needs 20'

15:15 - 15:45

Break 30'

15:45 - 17:05

External Systems IV

Zoom link: <https://fnal.zoom.us/j/965470841>

Meeting ID: 965 470 841

Conveners: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville), Prof. Kendall Mahn (Michigan State University)

Location: One West

15:45 Photon System Calibration: Key questions 5'

Speaker: Prof. Kendall Mahn (Michigan State University)

15:50 Physics Benefits: Photon Calibration System 25'

Speaker: Dr. Zelimir Djurcic (Argonne National Laboratory)

16:15 Discussion: Photon Calibration System 20'

16:35 Other Systems to consider 30'

Friday, March 16, 2018

10:25 - 11:30

Dual Phase Considerations

Zoom link: <https://fnal.zoom.us/j/965470841>
Meeting ID: 965 470 841

Conveners: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville), Prof. Kendall Mahn (Michigan State University)

Location: Race Track WH7-XO

10:30 **DP Photo detector calibration 20'**

Speaker: Clara Cuesta (CIEMAT)

10:50 **Summary: Dual Phase considerations 20'**

11:10 **Discussion: DP vs SP considerations 20'**

11:30 - 12:00

Discussion - Any remaining or tabled discussion 30'

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Meeting ID: 965 470 841

12:00 - 13:00

Lunch 1h0'

13:00 - 15:00

Summary & Next Steps

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Meeting ID: 965 470 841

Conveners: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville), Prof. Kendall Mahn (Michigan State University)

Location: Race Track WH7-XO

13:00 **Workshop Summary 45'**

Speaker: Prof. Kendall Mahn (Michigan State University)

13:45 **Discussion: Agreement on Strategy & outstanding concerns 45'**

14:30 **Next steps & Future plan 30'**

Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

Post Workshop: Immediate Goals

- A document summarizing current status is in works
- The immediate goal after the workshop is to incorporate workshop discussions/responses/considerations into the summary document
- This document will form basis for the calibration section in Technical Proposal
- Technical Proposal text due in April — *we don't have a lot of time*