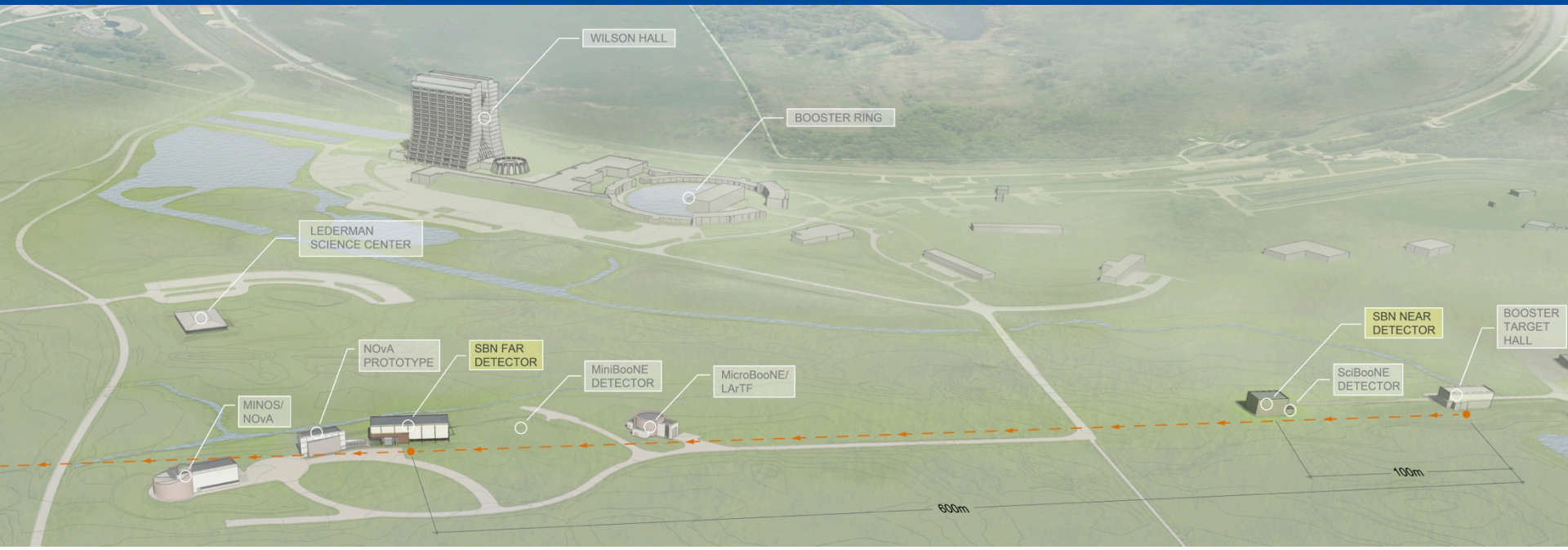

SBN Joint Working Groups

SBN Oversight Board Meeting

FNAL

September 21st 2017

Ornella Palamara

SBN – Joint Efforts across the SBN program

- Joint Efforts across the SBN program are key to the success of the program.
  - Exploiting synergies
  - Sharing of expertise from different groups
  - Reduce the effort of the single Collaborations
  - Minimize systematics that impact the final analysis

- Existing Working Groups:
  - SBN Analysis Group
  - SBN DAQ and Data Pre-Processing
  - SBN Slow Controls
  - SBN Cosmic Ray Tagger *(recently started)*

- To be formed: SBN Cryogenics WG, SBN Data Management WG

SBN – Joint Efforts across the SBN program

- Quick overview
- More detailed presentations from the WG conveners this afternoon at the SBN general meeting

September 2018 SBN Collaboration Meeting; Fermilab

Friday, 21 September 2018 from **08:30** to **21:00** (US/Central)
at **IARC Lecture Hall (http://saturdaymorningphysics.fnal.gov/location-of-iarc/)**

14:55 - 17:00 SBN Working Groups Reports

15:15 **SBN CRTs** *20'*
Speaker: Dr. Umut Kose (CERN and BERN University)

15:35 **SBN DAQ and Data Pre-Processing** *20'*
Speaker: Dr. Wesley Ketchum (Fermi National Accelerator Laboratory)

15:55 **SBN Slow Controls** *20'*
Speaker: Prof. Sowjanya Gollapinni (University of Tennessee, Knoxville)

16:15 **SBN Analysis Group** *20'*
Speaker: Prof. Daniele Gibin (Università di Padova and INFN Sezione di Padova)

SBN DAQ and Data Pre-Processing WG *(conveners: B. Badgett, A. Fava, W. Ketchum, S. Ventura)*

- Scope: Identify areas of common effort on data acquisition and data pre-processing, and coordinate activities in those areas.
- Meet once every three weeks, alternating with ICARUS- and SBND-specific DAQ working group meetings
  - Good attendance from both experiments and technical experts at Fermilab
- Successful in spreading information on efforts in the common areas, and in coordinating with the experiment specific groups to establish milestones and discuss plans for upcoming work.
  - Match the needs of each experiment
  - Need to make more efforts to setup common software platforms to better allow direct and efficient integration of common efforts.
  - This will be a priority of the group in the coming month(s), to ensure we are well positioned for ICARUS and SBND to move from test-stand work to full integrated systems and benefit most from each other's work.
- The group is well-structured, no modifications to the group are necessary.

SBN Slow Controls WG *(conveners: A. Fava, S. Gollapinni)*

- Scope: Develop a system based on hardware and software interfaces as much as possible identical for the two experiments, leading to efficient sharing of resources and effort between both experiments
  - Both experiments converged on using EPICS as the primary controls system resulting in a lot of common software and tools development
- Meet bi-weekly since Oct. 2017.
- The current model established for this common effort has been very successful and productive!

Milestones for common activities

Milestone	Date
Cryogenics status into EPICS	Nov. 2018
DAQ server/status monitoring into EPICS	Feb. 2019
Beam Status into EPICS	Feb. 2019
Cameras for monitoring access to the buildings operational	March 2019
Slow Controls Archiver, Alarm Server ready	March 2019
CSS GUI interface & navigation ready	April 2019
Expert/commissioning-level documentation ready	June 2019
Shifter-level documentation ready	Sept. 2019

SBN CRT WG *(conveners: U. Kose, I. Kreslo, B. Wilson)*

- Review the requirements and expected performances of the CRT system for the different detectors.
- Review the production status and the installation plans.
- Identify similarities and differences in the near and far detectors CRT systems that may impact oscillation analysis.
- Develop a common data model for the CRT detector systems.
- Review the DAQ scheme (adjust if needed). Define a common data output format for the CRTs together with the SBN DAQ working group.
- Develop common CRT monitoring for all CRT systems to follow the performance.
- Together with SBN Analysis groups, identify physics scenarios where CRT detector system will be valuable, such as calibration; rejection of cosmic muon; rejection of electromagnetic activity; beam-based background, "dirt events"; understanding systematics.
- 1st meeting on Sept. 14. Bi-weekly meetings

SBN Analysis Group WG *(conveners: D. Gibin, O. Palamara)*

- Explore how combined SBN physics analysis for sterile neutrino oscillation searches can be most effectively performed.
- Work focuses on implementing a multi-detector simulation, building reconstruction and analysis tools within a common framework, and developing an end-to-end common analysis scheme in preparation for real data exploitation.
- Meet bi-weekly since September 2016, with typically 30+ participants.
- Two SBN analysis workshops
  - Fermilab, Oct. 2017
  - Padua, March 2018

- Status of the SBN analysis efforts presented at the Fermilab Physics Advisory Committee (PAC) meeting in July

SBN Analysis Group WG *(conveners: D. Gibin, O. Palamara)*

- No official report has been made available, but several points were expressed during the meeting and via email. They requested to hear details in the near future on:
  - A plan for presenting oscillation analysis sensitivity updates that use the current LArSoft framework and make use of what has been learned about reconstruction efficiency and backgrounds
  - List of the more critical for DUNE, non-oscillation measurements SBN plan to perform, and their precision
  - Would like to understand better the organization of the analysis effort and who/which groups are doing what
  - Also, the PAC would like to see a more detailed and comprehensive SBN computing/data plan with the physics/calibration/other data requirements mapped into computing requirements

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- Internal organizational structure with subgroups working on specific reconstruction and analysis topics has been recently proposed
- Milestones for presenting oscillation analysis sensitivity to be defined

New SBN Working Groups

- SBN Cryogenics WG
  - Continue exchange of information between different teams in charge of build and support/operate the cryogenics systems
    - SBN cryogenics are a collaborative effort between Fermilab, CERN and INFN.
  - The formation of this group has been discussed/approved at the 1st meeting of the SBN Oversight Board in May
  - It has been difficult getting the group started because of the intense activity at CERN associated with filling and starting protoDUNE.
  - Hope to make progress when protoDUNE is in steady-state operations.

- Data Management WG
  - The Data management topic is currently included in the DAQ and Data Pre-Processing WG, but there seems to be a need for a specific group.

From SBN Organization Document

- ***SBN Joint Working Groups***
  - Purpose: A set of SBN Joint Working Groups are needed to co-develop many key aspects of SBN operations and physics analysis. A list of existing Working Groups will be maintained by the SBN Oversight Board. New SBN Working Groups shall be set up as needed by the SBN-OB.
  - Membership: The Working Groups are open to all participants in the SBN Program. For each Working Group the SBN-OB will identify a set of conveners to lead the activities of the group and report progress to the SBN-OB and the collaborations.