

# Cross Frontier Session: Boost Replacement Options

Wednesday July 20, 2022

- Joint session between three topical subgroups
  - AF2 - Accelerators for Neutrinos (conveners: G. Arduini, J. Galambos, R. Zwaska)
  - AF5 - Beams for BSM Physics (conveners: M. Lamont, R. Milner, E. Prebys)
  - NF9 - Artificial Neutrino Sources (conveners: L Fields, A. Marino, P. Ochoa, J. Spitz)

# A Caveat

- This session is devoted to a **limited subject**, at the intersection of these three subgroups.
- This is not a summary of the key opportunities in three groups.
- There are many other sources (ESSnu Superbeam, NuStorm, nuclear reactors, spallation neutron sources, LHC forward physics facility, beam dump sources, natural sources, Isodar, neutrino factories, etc.) that will be covered in the topical subgroup reports.
- But this is a topic that spans several groups and frontiers.
- There are remaining design questions and R&D needs that would benefit from community input.

# Session Overview

- Physics Needs and Opportunities with Fermilab Booster Replacement
  - Searches for new physics
  - Intensity upgrade for the LBNF neutrino beam
- Accelerator Options
  - 8 GeV linac
  - Multiple scenarios for a combination of linac and rapid-cycling synchrotron
- R&D needed for higher intensity neutrino beam
  
- *All talks have 5 min for questions*

# Key White Papers

- "Physics Opportunities for the Fermilab Booster Replacement", arXiv:2203.03925 [hep-ph]
- "DUNE Physics Summary", arXiv:2203.06100 [hep-ex]
- "Design Considerations for Fermilab Multi-MW Proton Facility in the DUNE/LBNF era", arXiv:2203.08276 [physics.acc-ph]
- "An Upgrade Path for the Fermilab Accelerator Complex", arXiv:2106.02133 [physics.acc-ph]
- "A Cost-Effective Upgrade Path for the Fermilab Accelerator Complex", arXiv:2111.06932 [physics.acc-ph]
- "An 8 GeV Linac as the Booster Replacement in the Fermilab Power Upgrade", arXiv:2203.05052 [physics.acc-ph]