



Managed by Fermi Research Alliance, LLC for the U.S. Department of Energy Office of Science

Energy Frontier Working Group

John Campbell, Anadi Canepa, Dmitri Denisov, Bogdan Dobrescu,
Sergo Jindariani, Vladimir Shiltsev

April 24, 2017

Working Group Goals

- The goal of our working group is to present at the May 4th scientists retreat options for the future Fermilab energy frontier activities
 - US plan has to be developed together with the rest of HEP community and funding agencies
- Time periods we consider
 - 2017-2021 – period before next Snowmass
 - 2021-2026 – period of developments of large projects beyond current P5 plan, based on 2021 Snowmass/P5 recommendations
 - 2026 and beyond – large scale construction funding for beyond current P5 activities is expected to become available
- Our goal is to discuss all scientifically interesting and technically achievable options
 - Keeping feasibility of construction in mind

Activities at the Energy Frontier: 2017-2021

- Highest priority is LHC – excellent chance to make fundamental discoveries which will guide the field
 - Phase I upgrade, HL-LHC detectors design and LARP, data analysis
- Participate in activities in Europe and Asia: FCC, ILC, CepC
 - To be ready for active involvement, if any project to proceed
- Continue developments of critical accelerator technologies
 - SRF and high field magnets are important for all future projects
 - Muon Collider? Plasma and other new types of accelerators?
- Start discussions about potential energy frontier facility in US
 - In preparations for the next Snowmass
 - Together with the rest of the community
- Monitor closely new results/developments in the field
 - They could help to define what is the most appropriate next energy frontier facility

Activities at the Energy Frontier: 2021-2026

- Participate in HL-LHC detectors upgrades and LARP construction/installation and the LHC data analysis
 - This is part of the current P5 plan
- Participate in the projects under construction/design in Europe and/or Asia
 - There is a good chance next project will be in active pre-construction/construction phase at that time
- Based on Snowmass/P5 outcome develop proposals of US energy frontier project(s)
 - New ideas in accelerator science and technology are critical

Activities at the Energy Frontier: 2026 and beyond

- Participate in HL-LHC data collection and analysis
 - Current plan is to run HL-LHC till ~2035 to accumulate ~3 ab^{-1}
- Participation in the energy frontier programs in other regions
 - Actual construction/operation of the next energy frontier facility(s) is expected
- Design/construction of the next energy frontier facility in US
 - The detailed plan to be developed between 2021 and 2026
 - Funding, after completion of HL-LHC and LBNF/DUNE, is expected to become available during this period

Your Feedback is Very Important

Contact any of the working group conveners before May 4th meeting with your ideas, proposals, comments