

## PAC Charge January 2019

The laboratory continues to align its program with the recommendations in the Particle Physics Project Prioritization Panel (P5) report: “*Building for Discovery: Strategic Plan for U.S. Particle Physics in the Global Context.*” In this meeting the PAC is asked to comment on current issues that are important to the success of the ongoing program and for planning for the future. These include:

1. **Protodune:** We ask the committee to review the status of the experiment, preliminary results from the recent data taking period, plans for the (post-) shutdown program and to comment on remaining technical challenges to be addressed including the feasibility of the 600kV dual phase demonstrator.
2. **Report on the High Level Organization of the SBN Program** We ask the committee to comment on the progress and success of the SBN program in all areas: organization, joint analysis groups efforts (trigger/calibration/software/analysis), installation/commissioning, deliverables and goals, etc.
3. **Report on the SBN Analysis Groups:** We ask the committee to comment on the progress and success of the SBN program in all areas: organization, joint analysis groups efforts (trigger/calibration/software/analysis), installation/commissioning, deliverables and goals, etc.
4. **CMS HL-LHC Upgrades:** We ask the committee to comment on the status of the CMS HL-LHC Upgrade and on the outcome of the PEMP Notable.
5. **Vision and Strategy of Cosmic Program:** We ask the committee to review the vision and strategy of the Cosmic program at Fermilab and to comment on how it integrates into the US program. The committee is asked to comment on the progress on the recommendations provided at the July 2018 PAC meeting and on the summary of the DOE December 2018 Meeting (including the Strategy Document) and the B&R report at HEPAP.
6. **Report on MAGIS-100 Proposal:** We ask the committee to consider the proposal for MAGIS-100 (PROPOSAL: P-1101):
  - a) Is the science in the proposal interesting and/or compelling?
  - b) Is the technique proposed appropriate for, and likely to be capable of, reaching the physics goals of the experiment?
  - c) What is the competition for reaching the physics goals of the proposed experiment? Does the proposed experiment have particular advantages or disadvantages relative to the competition?
  - d) What is needed to make such an experiment successful?
7. **Vision and Strategy of QIS at Fermilab:** We ask the committee to review the vision and strategy for QIS at Fermilab and to comment on how the QIS program supports the laboratory’s HEP mission, leverages on and expands its core capabilities

8. **SRF-based search for Dark Matter:** We ask the committee to comment on the science scope of the SRF based DM search experiment.
9. **Physics program at LDMX:** We ask the committee to comment on physics reach of LDMX and to review the potential role of Fermilab.
10. **Scientific program at IOTA:** We ask committee to comment on the physics program at IOTA.
11. **Report on the accelerator complex:** We ask the committee to review the status of the accelerator complex, current plans for PIP-I+, AIP, Nova, g-2 and to comment on the outcome of the AAC meeting
12. **Report on the FTBF:** We ask the committee to review the status of the facility, to comment on the recent FTBF review's outcome and on the progress of the ITA.
13. **Status of the Test Beam Experiment EMPHATIC:** We ask the committee to comment on the physics case and results from latest data taking campaign
14. **Report from Scientist Advisory Council:** We ask the committee to comment on the SAC's plans and expected outcome for the All Scientists' Retreat.
15. **Report from the Strategic Planning Workshop:** We ask the committee to comment on the outcome of the strategic planning workshop.
16. **Report on the European Strategy Planning Process:** We ask the committee to comment on the status of the ESPP and on the submitted US and FNAL contributions.
17. **Report on DUNE/LBNF by LBNC:** We ask the committee to comment on the status of DUNE/LBNF.