

Physics Advisory Committee
November 16-17, 2017

CHARGE

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.

Specifically:

1. NOvA (near-term and PIP-1+):

Given the present expectations for beam delivery and the NOvA Collaborations science strategy, we ask the committee to comment on the expected timeliness of NOvA results with respect to the competition.

2. MicroBooNE:

The committee is asked to comment on progress towards understanding the ultimate sensitivity of the experiment including (i) the plans for staging physics results, (ii) progress on calibrations, (iii) the impact of the realized detector performance on the ability of the experiment to measure the low-energy excess seen by MiniBooNE.

3. Neutrino Physics Theory:

We ask the PAC to comment on progress and plans towards improving the understanding and modeling on nuclear physics effects, particularly those effects that are of relevance to the future neutrino oscillation program.

4. MINERvA:

In the June 2016 meeting the PAC reiterated its “... support for an anti-neutrino exposure of at least $6E20$ POT in the medium energy configuration.” By the end of FY18 we anticipate

that the experiment will have received an anti-neutrino exposure of about $8E20$ POT in this configuration. The MINERvA Collaboration is requesting further running in FY19. We ask the PAC to comment on this request.

5. Testbeam:

Historically, in the period before SeaQuest running, the testbeam program was allocated 5% of the accelerator timeline. During SeaQuest running, the SY120 program was allocated 10% of the timeline. SeaQuest is not running this FY. The testbeam coordinator is requesting a continued allocation of 10% of the timeline. We ask the PAC to comment on this request.

6. LBNF and DUNE:

The LBNC reviews progress and gives advice on LBNF and DUNE. We ask the PAC to comment on recent progress.

7. CMS:

This is a critical time for developing the roles, plans, and commitments associated with the participation of the Fermilab group in the CMS upgrade. We ask the PAC to comment on these things including (i) the role of Fermilab leadership in the upgrade organization, (ii) the foreseen evolution of the Fermilab group, and (iii) the various budget pressures and their impact. In addition we ask the committee to comment on the engagement of the Fermilab group in important CMS physics topics.

8. Big Data and Computation R&D

We ask the PAC to comment on the plans of the new Machine Learning Group within the Scientific Computing Division.

9. Data Scrutiny Group:

We ask the committee to comment on the status of, and plans for, the new "Data Scrutiny Group."

10. EOIs (REDTOP and Dark Photon):

For the two Expressions of Interest, we ask the PAC to comment on whether the science

goals are compelling given the likely scopes of the experiments.

11. Other

The Director would welcome any comments the PAC has on any of the topics presented, or comments on aspects of the program beyond the presented topics.