

Physics Advisory Committee

December 8-10, 2011

Draft Charge

V1.0 – (November 21, 2011)

The focus of this meeting of the Physics Advisory Committee (PAC) will be on three proposals received by Fermilab. The three proposals are not entirely new to the PAC, as each has been considered in some way before. The proposals are:

BooNE (P-990, W. Louis/G. Mills)

ORKA (P-1021, D. Bryman/ R. Tshirhart)

TAPAS: Medium-Energy Antiproton Experiment (P-1022, D. Kaplan)

Given the uncertainty of funding, we ask the PAC to comment and make its recommendations separately under assumptions of (1) no budgetary issues and (2) if the Fermilab budget is severely constrained over the next four years.

For each of the proposals received, we ask the PAC make comments and recommendations under the two scenarios described previously, and to comment specifically on the following issues:

1. Is the science in the proposal interesting and/or compelling?
2. Is the technique proposed appropriate for, and likely to be capable of reaching the physics goals of the experiment? In the case of the BooNE proposal, please consider the physics reach of the experiment as proposed and compare to that of just moving the existing detector to the proposed location. In addition, consider any relevance of the physics reach of the MicroBooNE experiment.
3. 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?
4. What is needed to make such an experiment successful?

Given its importance to Fermilab's future program, the Long Baseline Neutrino Experiment (LBNE) deserves special attention.. An Intensity Frontier Workshop organized by the Office of High Energy Physics has just been held, and significant work continues on plans for LBNE. We ask the PAC to comment on the current situation and on the progress being made with respect to LBNE.

The Mu2e experiment is modifying its design as it moves through the CD process, and is also continuing to refine its understanding of the physics reach of the experiment. Please review the current thinking on the experiment design (both beam and detector) and comment on the potential effects of the evolving design on the experiment's physics reach, as well as progress on simulations.

Detector R&D is essential for the success of future particle physics experiments, and Fermilab contributes in multiple ways to the requisite efforts in this area. Please comment on the range of these efforts at Fermilab and the effectiveness of those efforts.

Given the number of new proposals, LBNE- and mu2e-related presentations on the agenda, we have limited the time for status reports on much of the current program to allow significant time for discussion of the former items. Nevertheless, we would welcome any comments the PAC may have on other topics presented.