

Physics Advisory Committee

March 5-7, 2009

Draft Charge

The focus of this meeting of the Physics Advisory Committee (PAC) will be on the Intensity and Cosmic Frontiers at Fermilab. We would like to receive written comments and recommendations on the proposed continued running of MiniBooNE, on planning for the long-baseline neutrino program, on progress on the Mu2e experiment, and on planning for the astroparticle physics program strategy. Similarly, we would like PAC comments and recommendations on development of Fermilab's detector R&D program. In addition, the Laboratory has received a Letter of Intent for a Medium-Energy Antiproton Physics program (P-986) in the Antiproton Accumulator, an updated Letter of Intent for the Antimatter Gravity Experiment (P-981), and a Proposal for a (g-2) Experiment at Fermilab (P-989). The Laboratory would welcome comments on these Letters of Intent and Proposal, as well as on the updates that the PAC will hear on the ongoing and near-term future Tevatron Collider, neutrino, and astrophysics programs.

1. Overall Strategic Planning

The PAC will hear about Fermilab's strategic planning, including human resource needs, timelines, and preparations for upcoming reviews. The PAC is asked to comment on this planning, its process, and the directions being taken.

2. MiniBooNE (E-944)

The Laboratory has received a proposal for running MiniBooNE after the upcoming long shutdown. The PAC has this proposal and also will hear a presentation on this opportunity. The PAC is asked to comment on this proposal, in particular

Are the potential contributions to physics commensurate with the modest effort required for the continued running?

3. Long-Baseline Neutrino Program Planning

The PAC will hear a presentation on continued efforts directed toward longer-term long-baseline neutrino physics, both at Fermilab and in the community.

The PAC is asked to comment on the progress being made on defining the program, developing the physics sensitivity evolution plan, and building the necessary community to ensure reaping the benefits of building the beamline and detectors anticipated to make the neutrino program a reality. Is Fermilab appropriately contributing to the necessary R&D and integrated into the broader efforts? Are the R&D plans appropriate at this stage of progress? Is the community's progress towards the DOE's CD-1 and NSF's S-4 processes appropriate?

4. Muon-to-Electron Conversion Experiment (E-973)

Following the last PAC meeting and its subsequent recommendation, the Director granted Stage I approval to Mu2e, a muon-to-electron conversion experiment at Fermilab and submitted DOE CD-0 request. The PAC is asked to comment on the progress being made. Is the plan for R&D clearly defined, complete, and appropriate for the Laboratory? Is the broader progress being made appropriate?

5. Antimatter Gravity Experiment (P-981)

The Laboratory has received an updated Letter of Intent (LOI) from the Antimatter Gravity Experiment (AGE) Collaboration. The new LOI responds to issues raised by the PAC at the time of its previous considerations of AGE (March and June 2008), and aims for a significantly more sensitive result. The PAC is asked to comment on the updated LOI, and on its new physics goals and techniques.

6. Medium-Energy Antiproton Physics Program in the Antiproton Accumulator (P-986)

The Laboratory has received a new Letter of Intent for a Medium-Energy Antiproton Physics program (P-986) in the Antiproton Accumulator. The PAC is asked to comment on the LOI, and on its new physics goals and techniques.

7. Detector R&D

The PAC will hear a report on progress in developing a coordinated R&D program for detectors. The PAC is asked to comment on this program and its progress.

8. Strategic Plan for Particle Astrophysics

The PAC will hear about the ongoing and near-term particle astrophysics programs, in part to set the stage for a presentation on the progress being made in establishing a strategic plan for particle astrophysics at Fermilab. The PAC is asked to comment on the progress being made and the process and direction being taken.

9. New(g-2) Experiment at Fermilab (P-989)

The Laboratory has received a Proposal for a New (g-2) Experiment at Fermilab. The PAC is asked to review the proposal, and determine if it has questions on the proposed physics goals and techniques. A final recommendation by the PAC may need to wait for further information, and the Laboratory will need to understand its future funding before making any decisions on the proposal.

10. Status Reports

Finally, during the meeting the Committee will hear brief status reports on parts of the current experimental programs in the areas of the Energy Frontier, the Intensity Frontier, and the Cosmic Frontier. The PAC is invited to comment on each of these.