

*Excerpt from Physics Advisory Committee Comments and Recommendations, October 2012*

In June, 2012, members of the SeaQuest Collaboration presented a proposal (P-1027) to the PAC for a Polarized Drell-Yan Experiment at Fermilab. P-1027 proposes to measure the “Sivers function” in polarized Drell-Yan by exposing the existing E-906 detector to a transversely-polarized proton beam. By testing that the Sivers function measured in Polarized Drell-Yan is of equal magnitude, but with opposite sign, to the analogous function measured by COMPASS and HERMES in deep inelastic scattering, this experiment would probe a prediction of perturbative QCD. This measurement is important to the nuclear physics community, and is of interest to the high-energy physics community as well.

At the time of the previous PAC meeting, the Committee was concerned that the new experiment could negatively impact the core programs at the Laboratory, and asked the proponents to provide additional information before considering a recommendation on the request for Stage I approval. During the summer, the collaboration addressed the questions raised by the PAC, and at this meeting presented a simplified beam design that requires only one Siberian Snake in the Main Injector. This solution significantly reduces the impact on the Fermilab neutrino program while preserving the levels of polarization needed by the experiment. This modification also results in substantial cost savings. The PAC commends the Collaboration for the excellent progress.

However, even with the simplified polarization scheme, the anticipated impact on NOvA is not negligible. Moreover, the support needed to provide enough beam intensity and polarization to P-1027 would increase demands on the accelerator division, which would need to acquire the expert personnel to support the polarization program. Finally, the proposed funding model for the experiment (50% from Nuclear Physics and 50% from High Energy Physics) would require the laboratory to make a substantial investment. Therefore, the PAC recommends Stage I approval, contingent on ensuring that full funding for the experiment be made available through nuclear physics, including support for expert accelerator personnel, and the understanding that the NOvA program has priority for protons should the intensity fall short of current projections.