Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Systematic Study of Azimuthal Angle Reconstruction in SpinQuest[1] ABINASH PUN, New Mexico State Univ, SPINQUEST COLLABORATION — SpinQuest at Fermilab is a fixed-target Drell-Yan experiment intended to measure the light sea quark ($\bar{u}$ and $\bar{d}$) Sivers functions. An unpolarized 120 GeV proton beam from the Fermilab Main Injector and a transversely polarized NH_3 or ND_3 target will be used in the experiment. A non-zero value of the light sea quark Sivers functions will provide evidence of non-zero angular momentum of sea quarks, which can help us to better understand the spin structure in the nucleon. Since, the Sivers function arises from the transverse momentum of quarks inside a transversely polarized nucleon, our ability to correctly reconstruct the transverse properties of the dimuons produced from the Drell-Yan process is of primary importance. We need to reconstruct the direction (the azimuthal angle) of the transverse momentum from the observed muon tracks, and so we will study the resolution of that angle in reconstruction using simulation.We present the study of the migration matrix with simulation in the SpinQuest framework. The migration matrix is a quantitative way to describe the effect of the event reconstruction process on desired observables (azimuthal angle, transverse momentum, etc.), and can also be used to rebuild the truth distribution.

[1]This work is supported by the US Department of Energy, Office of Science, Medium Energy Nuclear Physics Program.

Abinash Pun
New Mexico State Univ

Date submitted: 29 Jun 2020 Electronic form version 1.4