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Systematic Study of Spectrometer-Induced Azimuthal Asymmetries for SpinQuest

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SpinQuest is a transversely polarized Drell-Yan experiment at Fermilab that will measure the Sivers asymmetry for the light antiquarks in the nucleon, using polarized NH3 and ND3 targets and the SeaQuest (E906) spectrometer. Measuring a non-zero Sivers asymmetry would provide strong evidence for non-zero sea-quark orbital angular momentum. Due to the time-dependence of the spectrometer efficiency, and the fluctuations of the beam luminosity, a false azimuthal asymmetry can be introduced that could masquerade as a Sivers asymmetry. In this study, a systematic study of false azimuthal asymmetries using SeaQuest data is presented. This work is supported by the US Department of Energy, Office of Science, Medium Energy Nuclear Physics Program.

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