

Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Improving Function of Wire Chambers for E1039¹ ELIZABETH JENNINGS, Abilene Christian University — E1039 at Fermi National laboratory is seeking to better understand the contribution of quark-antiquark pairs to nucleon spin. E1039 will utilize a 120GeV unpolarized proton beam and collide it with an 80% transversely polarized target to probe sea quarks in said target, in contrast to most other experiments which are sensitive to the valence quarks. The tracking of dimuon pairs produced via the Drell-Yan process in this collision will allow for the measurement of left-right spin asymmetries of those produced pairs, which in turn facilitates the isolation of the Sivers function. E1039s wire chambers are essential to this measurement, as they allow for the recording of precise locational data of the relevant charged particles which pass through them. To ensure that these chambers are operating at peak efficiency, the first needed improvement was to reorganize all readout cables to remove a ground loop. Additionally, the environmental monitoring system was repaired to study correlations between noise and leakage currents in the wire chambers. The repair and utilization of the environmental monitoring system for the wire chambers will be presented, as well as analysis of data taken using that system relating environmental conditions and leak current levels in the chambers.

¹Work is supported in part by the U.S. Department of Energy, NP Medium Energy Division under Awards Number DE-FG02-03ER41243

Elizabeth Jennings
Abilene Christian University

Date submitted: 25 Jul 2019

Electronic form version 1.4