

Abstract Submitted
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Optimizing the Fermilab E-906 Spectrometer Design Using GEANT Simulations¹ BRANDON BOWEN, Abilene Christian University, E-906 COLLABORATION — Experiment 906 at Fermi National Accelerator Laboratory (FNAL) is a fixed target experiment measuring Drell-Yan scattering. The purpose of E-906 is to determine the ratio of anti-down to anti-up quarks in the nucleon sea by measuring the total cross section of the Drell-Yan muon pairs from liquid hydrogen and liquid deuterium targets. E-906 will extend the FNAL E- 866/NuSea measurements to higher Bjorken x , which will help reveal the structure of the proton. These results focus on using GEANT4 Monte Carlo simulations to investigate spectrometer acceptance and background rates at the downstream end of the spectrometer using various amounts and types of absorbers. Muons in the simulations were generated over a momentum range of 15 to 35 GeV for each proposed configuration, since at this location the background will be dominated by electrons knocked out of the shielding blocks by muons. These simulations will determine the downstream shielding that will be used in the experiment.

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