

Abstract Submitted
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Asymmetry in Muon Psuedo-Rapidity and the Search for Single Top Quarks at the Tevatron¹ AMANDA GRAY, University of Washington, THOMAS GADFORT, GORDON WATTS, D0 COLLABORATION — Single top quark production is an infrequent electroweak process whose study can verify and potentially extend the Standard Model. Extracting the single-top signal from the W-boson-plus-jets background requires a better understanding of both signal and background. In proton anti-proton collisions, lepton decay products tend to move in a direction along the beamline correlated with their charge, causing an asymmetry in the lepton pseudo-rapidity. The asymmetry can give insight to the nucleon parton densities which affect typical background and signal events. We analyzed the asymmetry in pseudo-rapidity of muons produced by W-boson decay in Monte Carlo simulations of signal and background events, and in 320 pb⁻¹ data recorded by the D0 RunII experiment. Bin-by-bin counting, skewness, and kurtosis calculations showed that the predicted asymmetry is present in the Monte Carlos and data, and different for the processes considered. However, the statistical errors are significant. This analysis is expected to be useful at the end of RunII, when datasets of 4 fb⁻¹ are collected.

¹On behalf of the D0 Collaboration

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