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Wire Tension Measurements and Analysis for the New COMPASS Drift Chamber¹ VICENTE ROJAS AGUIRRE, Abilene Christian University, COMPASS DC5 TEAM — In 2010, the COMPASS experiment, located at the CERN Super Proton Synchrotron, approved the further investigation of the nucleon spin structure. The incorporation of the new drift chamber DC5 into the COMPASS spectrometer will facilitate the measurements of the spin-dependent Drell-Yan process using a 190 GeV π^- beam on a transversely polarized proton target. Upon assembling the anode planes of DC5 at Old Dominion University (Norfolk, VA), gravitational and electrostatic sag simulations performed by Garfield indicated that 20 μm diameter sense wires should have a tension of 0.67 N and 100 μm diameter field wires a tension of 3.92 N. When a voltage of 1750 V is applied to the field wires, they will be displaced by 135 μm and the sense wires by 85 μm . To avoid further wire displacements that could cause ambiguity in the detected paths, each wire has to be strung at these ideal tensions. Data have been collected from more than 3600 wire tension tests. The analysis of these data yielded an improved understanding on the wire tension tendencies. 15% of the wires had to be re-strung given that tension was lost due to friction between the wire and the alignment board. The tension measurement methods, analysis, and results will be presented.

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Vicente Rojas Aguirre
Abilene Christian University

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