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Tension Tests of Tungsten Based Sense Wires and Copper Based Field Wires for the COMPASS Drift Chamber 5 ABISHEK REDDY WDARU, University of Illinois, Urbana-Champaign — COMPASS is a nuclear physics experiment at CERN which explores the spin structure of the nucleon. A new drift chamber, DC5, is being constructed for the COMPASS spectrometer at the University of Illinois. DC5 will detect charged muon pairs from negative pions scattering off a transversely polarized proton target in order to study the spin-dependence of the Drell-Yan process for the first time. The spin dependence of the Drell-Yan process may signal contributions from quark orbital angular momentum to the spin of the proton. In DC5, particle detection is performed using 20 μm diameter gold plated tungsten sense wires and 100 μm diameter gold plated copper field wires. The wires are strung under tension across the length of the chamber. Mechanical stability under the influence of electric forces requires high wire tensions. In order to determine how much the wires can be stretched, a series of tension tests was performed to identify their regions of elasticity and their breaking points. The results from these tests were used to determine the tension used in stringing the wires and soldering them onto the printed circuit boards supporting the sense and field wires in DC5.

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