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Electron Microscope and Spectral Analysis of Sense Wires used in COMPASS Drift Chambers VIVEK BRITTO, University of Illinois at Urbana-Champaign, COMPASS COLLABORATION — COMPASS is a fixed-target nuclear physics experiment at CERN which explores the internal structure of the proton. One specific area of research is the measurement of single transverse spin asymmetries in pion beam induced Drell-Yan production of muon pairs from polarized proton targets that may be indicative of contributions from quark orbital angular momentum to the spin of the proton. The University of Illinois (UIUC) is designing and building two new drift chambers to replace older, aging detectors in the COMPASS spectrometer. As a preliminary study, prototype drift chambers were constructed at UIUC. From a similar chamber constructed by CEA Saclay and operated in COMPASS it was previously found that the gold-plated tungsten sense wires had accumulated significant carbon deposits on their surfaces. If this were to occur for a sustained period of time, it would force an increase in the operating voltage of the chamber and might severely limit its efficiency. As a result, it was decided to remove sense wires from the UIUC prototype after an extended period of operation, in order to perform detailed microscopic and spectral analysis in a search for possible deposits on the sense wires. The presentation will cover the methods of testing employed and their results.

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