Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Design of Drift Chamber 5 for the COMPASS II polarized Drell-Yan experiment[1] JAMES MALLON, Abilene Christian Univ, COMPASS DC5 TEAM — The COMPASS project is a fixed-target nuclear physics experiment at CERN which explores the internal structure of the proton, and COMPASS ll's polarized Drell-Yan experiments will be exploring the quark angular momentum contribution to the spin of the proton through Semi-Inclusive Deep Inelastic Scattering. As a part of this process, Drift Chamber 5 (DC5), based on DC4 built by CEA-Saclay, must be constructed to replace a faulty straw chamber. The 23 total frames of DC5 have an outside measurement of 2.94m by 2.54m, with the 8 anode frames having a total of 4616 >2m-long wires, giving a detection region of 4.19mˆ2 with a resolution of 200 microns. These wire planes are orientated with the x- and x'-frames in the vertical x-direction, the y- & y'-frames in the horizontal y-direction, the u- & u'- frames offset +10deg from the vertical x-direction, and the v- &v'-frames offset -10deg from the vertical x-direction, and are strung with Ø100 micron field wires and Ø20 micron sense wires. In order to solve left-right ambiguity, x', y', u', and v' are shifted by 4mm, or one drift cell. The x- and y-frames have 513 wires strung across them, with the field wires at 400g of tension, the sense wires at 55g on the x-frames, and 70g on the y-frames. The u- and v-frames will have 641 wires, with the field wires at 400g, and the sense wires at 55g. DC5 will also have an updated front end electronics setup, using a new pre-amplifier-discriminator chip, in order to allow the recording of more events per second.

[1]This research was supported in part by the DOE under grant number DE-FG03-94ER40860.

James Mallon
Abilene Christian Univ

Date submitted: 25 Jul 2014 Electronic form version 1.4