Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

Simulation of Properties of COMPASS Drift-Chamber Prototypes RAN BI, University of Illinois at Urbana-Champaign, COMPASS COLLABORATION — For a future detector upgrade at COMPASS, two drift chamber prototypes A and B have been developed and built at the University of Illinois at Urbana-Champaign. The prototypes constitute small versions of the actual size drift chamber and host either one (prototype A) or two (prototype B) layers of each 8 (A) or 16 (B) sense wires, alternating with field wires and with a potential difference of about 2kV between sense and field wires.The wires are embedded into a gas volume of a mix of 5% CF4, 50% C2H6 and 45% Argonne. With the CERN GARFIELD computer program, the key properties of the drift chambers have been simulated: drift velocity, arrival time distributions and induced signal on the sense wires, and position resolutions. The results of the simulations are compared to measurements employing cosmic muons and to the DESY 5-GeV-electron test beam measurement of 2013.

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Date submitted: 01 Jul 2013 Electronic form version 1.4