

Abstract Submitted  
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**DESY Test-Beam Measurement with COMPASS Drift Chamber Prototypes** IHNJEA CHOI, University of Illinois at Urbana-Champaign — Two COMPASS drift chamber prototypes were tested at the DESY (Germany) test-beam facility in May 2013 to prepare a drift-chamber upgrade for COMPASS-II. A first small drift chamber prototype was designed and constructed at the University of Illinois at Urbana-Champaign. Its dimensions are 70cm x 30cm and it hosts one layer of eight sense wires. A second large drift chamber prototype was designed and constructed at CEA-Saclay, France. Its dimensions are 140cm x 35cm and it consists of two layers of each 16 sense wires. During a seven-day beam time, data from the two drift-chamber prototypes were collected in coincidence with six layers of a silicon beam telescope by impinging an electron beam with energies between 4 and 5 GeV onto the detector ensemble. The software framework EUTelescope was used to perform stand-alone track reconstruction from hits in the silicon layers. The drift chambers are read out with a pre-amplifier discriminator CMAD chip in combination with an FPGA-based TDC. They could be operated at excellent (satisfactory) noise level for the small (large) prototype with a charge threshold of 4fC (8fC). By synchronizing the two data streams from the drift chambers and the silicon detectors, the “R-T-relation” (distance information from the silicon data versus timing information from the drift chamber data) and the position resolution could be extracted. The preliminary analysis demonstrated that with the CMAD chip used, a drift-chamber position resolution of about 200um can be reached. The refined final results will be presented.

IhnJea Choi  
University of Illinois at Urbana-Champaign

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