

Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

Design, Construction and Test of Resistive Plate Counters for the PHENIX Muon Trigger YONGSUN KIM, University of Illinois at Urbana-Champaign, PHENIX COLLABORATION — Polarized proton-proton collisions used in the PHENIX experiment at Brookhaven National Laboratory's Relativistic Heavy Ion Collider will accurately determine the spin contribution of quarks and anti-quarks to the proton spin. Sensitivity to quark and anti-quark polarizations arises in W -production which experimentally is characterized by the detection of high momentum muons. The effective cross section (including PHENIX acceptance) for W -production is about 1 nb and collision rates of 10 MHz are required to accumulate sizable W -boson samples. The high collision rate requires an upgrade of the PHENIX muon trigger system. It was decided to use RPC's as dedicated first level trigger detectors. RPC's are fast detectors, simple in structure and cheap in construction. The PHENIX RPC design is based on the CMS muon trigger RPC's. Before constructing large scale RPC's at PHENIX, prototype RPC's of several designs will be tested using test beam and cosmic ray muons. We present our work to improve the position resolution of the CMS- designed RPC's and our results on RPC efficiency, timing resolution and rate capabilities.

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Date submitted: 01 Jul 2005

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