

Abstract Submitted
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Noise studies on the PHENIX RPC1 prototype EMILY ZARNDT,
University of Illinois Urbana-Champaign — An important goal of the PHENIX collaboration at the Relativistic Heavy Ion Collider is to measure the spin contributions of sea quarks to the overall spin of the proton. The detection of W-bosons resulting from polarized p-p collisions enables us to directly probe and separate by flavor the spin dependent quark and anti-quark distributions in the proton. In order to improve the trigger efficiency for final state muons with high transverse momentum from W-boson decay, the muon spectrometers in PHENIX are being upgraded with fast front-end electronics for the cathode strip tracking chambers and with two stations of Resistive Plate Chambers (RPCs). A prototype of RPC1, the RPC station near the collision point upstream of the muon tracking magnet, was tested in a cosmic ray test stand including detailed studies of the signal noise: we have carried out an optimization of the threshold used in the RPC pre-amplifier, characterized the noise for different high voltage settings and front-end shielding configurations, and measured the average noise rates. These studies have led to the final techniques used for the RPC1 detector assembly and to the choice of operating parameters for the detector.

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