

Abstract Submitted
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RPC Performance Studies for PHENIX at RHIC DANIEL JUMPER, University of Illinois - Urbana, PHENIX COLLABORATION — A series of Resistive Plate Chamber detectors will serve as a new fast muon trigger for the PHENIX experiment at the Relativistic Heavy Ion Collider. This trigger will provide greatly increased event selectivity and ultimately allow us to study proton spin structure through W -production. However, to properly use the RPC's and to accurately interpret their data we must understand aspects of their performance such as rate capability and detection efficiency around areas where the gas gap is occupied by a plastic structural support spacer. This presentation will describe work done on these measurements using RPC prototypes in a cosmic test stand at the University of Illinois. It will include discussion on a novel method developed for measuring rate capability using an Fe55 source. The source creates a field of background radiation with spatially dependent strength. When a detector is placed in this field, it is possible to measure efficiency of the detector at a wide range of background rates simultaneously. Using this method, rate capabilities can be easily and quickly determined for various detector voltage settings.

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