

Abstract Submitted
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Forward RPC Trigger Design and Integration at PHENIX

AUSTIN BASYE, Abilene Christian University — PHENIX is a general purpose particle physics experiment at the Relativistic Heavy Ion Collider (RHIC) studying polarized proton and heavy ion collisions. One of PHENIX's goals is to define the sea quark contribution to proton spin by using W boson asymmetries arising from quark-antiquark interactions in polarized proton collisions. This analysis is dependent on the reconstruction of single, high transverse momentum (pT) muons. The Forward Resistive Plate Chamber (RPC) Upgrade will allow PHENIX's muon arms to trigger on probable W boson events despite a significant low pT muon background. To that end, the RPC design team was tasked with designing and installing four stations of detectors (each $\sim 80 \text{ m}^2$ in surface area) into the existing PHENIX architecture. This poster will discuss our approach to balance cost, practicality and complexity on the one hand with efficiency, resolution and acceptance on the other hand using RPC detector technology.

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