

Abstract Submitted  
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**Integration constraints on a future high Pt muon trigger for PHENIX at RHIC** DANIEL JUMPER, Abilene Christian University, PHENIX COLLABORATION — The PHENIX experiment is a large-scale, complex detector system stationed at the RHIC accelerator ring. One of PHENIX's goals is to understand the long obscured contributing factors of the protons' spin structure. This is accomplished by studying the muon decay of W bosons produced by quark-anti quark interaction in polarized proton-proton collisions. A trigger upgrade of Resistive Plate Chambers (RPCs), currently funded for PHENIX, will significantly enhance the ability to trigger on muons at high Pt, where they are more prevalent than other signal sources. By triggering in this manner, the rejection factor of undesired sources is greatly increased, bringing the previously unmanageable rate of data acquisition within practical ranges. The RPCs, however, fall under serious design limitations due to integration constraints of experiment complexity leaving extremely limited space for the chambers, their support systems, and installation. Although these restrictions are far from trivial, careful designs and integration plans have been implemented that overcome them and will bring this spin study to a practical reality.

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