

Abstract Submitted  
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**A New Large-area Muon Telescope Detector at Mid-rapidity at RHIC** GUOJI LIN, Yale University, ZHANGBU XU, Brookhaven National Laboratory, STAR COLLABORATION —  $\mu$  particle identification at middle and high  $p_T$  range is crucial for many interesting physics in heavy ion collision experiment, like the dimuon continuum, the quarkonia production, and the Drell-Yan process. Due to the electromagnetic nature of interaction,  $\mu$  carries information with direct sensitivity to the early stage of the high-energy nuclear collision before chemical freezeout. More importantly,  $\mu$  is a background free probe compared to electron with no photon conversion background and much less Dalitz decay. A large-area Muon Telescope Detector (MTD) at mid-rapidity at RHIC is proposed and under investigation. In this talk the simulation of  $\mu$  detection and hadron rejection will be shown. The preliminary result of the first test in run 6 p+p collisions will be discussed. A significant enhancement of high  $p_T$  charged particles is achieved in this test run. Finally the plans for future upgrade will be presented.

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