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Prototype Performance of Novel Muon Telescope Detector at STAR DAVID TLUSTY, LIJUAN RUAN, Brookhaven National Laboratory, STAR COLLABORATION — A large area of muon telescope detector is proposed to measure muons of momentum at a few GeV/ c at mid-rapidity, allowing for the detection of di-muon pairs from QGP thermal radiation, quarkonia, light vector mesons, possible correlations of quarks and gluons as resonances in QGP, and Drell-Yan production as well as the measurement of heavy flavor hadrons through their semi-leptonic decays into single muons. The R&D research has been carried out for this large area Muon Telescope Detector (MTD). The multi-gap resistive plate chamber technology with large module, long strips and two-end readout (Long-MRPC) was used for this research. The results from cosmic ray and beam test will be presented to address intrinsic timing and spatial resolution for Long-MRPC. Besides, a single prototype of MTD was installed in STAR during the 200 GeV Au+Au run in spring 2007. The detector consists of a long-MRPC layer between two layers of scintillator planes. They are placed outside of the magnet yoke that serves as hadron absorber. We will present results from this prototype run. Muon identification capability, timing and spatial resolution will be reported. We also discuss the implication of these tests on the physics performance and capabilities of full scale detector.

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