

# The di-lepton physics program at STAR

*Friday, 1 June 2012 09:00 (30 minutes)*

Di-leptons are ideal probes of the strongly interacting hot, dense medium created at RHIC. They are not affected by the strong interaction once produced, therefore they can probe the whole evolution of the collision. In different mass regions, di-leptons can be used to probe vector meson in-medium modifications, Quark Gluon Plasma (QGP) thermal radiations, and color-screening features of QGP. In year 2010, the barrel time-of-flight detector was completed, which enables clean electron identification with full azimuthal coverage at mid-rapidity. In addition, the Muon Telescope Detector and Heavy Flavor Tracker Upgrades, to be completed in year 2014, providing clean muon identification and precise pointing resolution, will enable the precise measurements of correlated charm contribution to di-leptons, therefore, make it possible to measure QGP thermal radiation using di-leptons. In this talk, I will review recent di-electron results at STAR in p+p and Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV and discuss di-muon and e-muon physics capabilities with future detector upgrades.

**Primary author:** RUAN, Lijuan (Brookhaven National Laboratory)

**Presenter:** RUAN, Lijuan (Brookhaven National Laboratory)

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