



Contribution ID: 555

Type: Poster

## Dimuon Invariant Mass Spectra with the Muon Telescope Detector at STAR in p+p collisions at 200 GeV

Tuesday, 15 May 2018 19:35 (5 minutes)

Dileptons ( $l^+l^-$ ) are produced throughout all stages of heavy-ion collisions (HIC) through various production mechanisms. Since leptons have a small interaction cross section with the strongly interacting medium, they carry information about the medium from the early stages to the final state of the system. For this reason, dileptons provide an essential tool for studying the properties of the strongly interacting medium produced in HICs. Dileptons produced within the intermediate mass region (IMR,  $M_\phi < M_{ll} < M_{J/\psi}$ ) result predominantly from the decay of correlated charm but also arise from thermal radiation of the hot and dense medium. The inverse slope parameter of the thermally produced dileptons in the IMR provides a measurement of the medium's temperature at early times which is free from radial flow effects [1]. The installation of the Muon Telescope Detector (MTD) at STAR allows a measurement of the dimuon ( $\mu^+\mu^-$ ) production over a large invariant mass range for the first time. Data has been collected with the full MTD from Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV and from p+p collisions at  $\sqrt{s} = 200$  GeV. These two datasets allow for new opportunities to measure the dimuon invariant mass spectra at STAR.

As a first step towards measuring the thermal dimuon invariant mass spectra in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV, this talk will present the baseline dimuon measurement in p+p collisions at  $\sqrt{s} = 200$  GeV. The dimuon invariant mass spectra in p+p collisions at  $\sqrt{s} = 200$  GeV will be presented and the viability of measurements in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV will be discussed.

Reference

[1] R. Rapp and H. van Hees, Phys. Lett. B753, 586 (2016).

### Content type

Experiment

### Collaboration

STAR

### Centralised submission by Collaboration

Presenter name already specified

**Primary author:** YE, Zhenyu (University of Illinois at Chicago)

**Presenter:** BRANDENBURG, James (Rice University)

**Session Classification:** Poster Session

**Track Classification:** Electromagnetic and weak probes