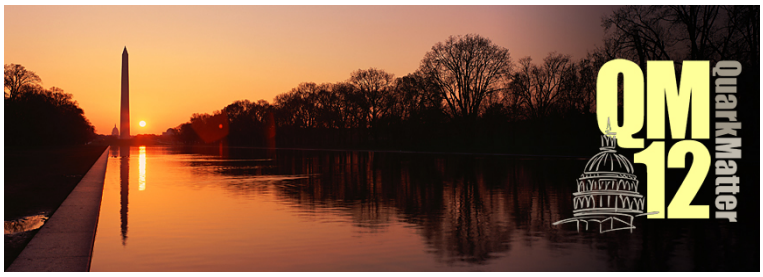

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A Study of High-pT/High-mass Dielectron Production through Trigger Combination in 200 GeV Au+Au Collisions at STAR

Thursday, August 16, 2012 4:00 PM (2 hours)

Dileptons are unique probes of the strongly-coupled Quark Gluon Plasma (QGP) created in relativistic heavy-ion collisions. Compared to hadrons, leptons have little interaction with the QGP medium and can thus travel through the entire system with most of the original information intact. This feature allows us to study the properties of the medium during its space-time evolution. The low mass region (LMR, m < 1.1 GeV/cˆ2) is dominated by the decay of the vector mesons, in which chiral symmetry restoration in the medium can be studied. In the intermediate mass region (IMR, 1.1 < m < 3.0 GeV/cˆ2), the dominant dilepton sources are expected to be the thermal radiation of the QGP and the semileptonic decays of charmed mesons. Systematic measurements in both mass regions and at all pT are crucial in revealing the medium's properties. Finally, high-pT dileptons in particular allow measurements of direct photons and of spectrum enhancements in the LMR.

To observe the dilepton production at high pT, it is necessary to utilize the data from the high-pT triggers in conjunction with the minimum-bias trigger. These dielectron measurements are made using data from the STAR time projection chamber, time of flight, and the barrel electromagnetic calorimeter (BEMC) at midrapidity. In this poster, we present a study on the dielectron production in 200 GeV Au+Au collisions recorded by the STAR detector in 2010 using a novel combination of the minimum-bias trigger and three high-pT triggers with different energy thresholds in the BEMC. Because the mass spectrum from each high-pT trigger is biased, we apply an effective weight to each dielectron pair based on the trigger threshold and scale factor. Finally, we combine the weighted results from all four triggers. The analysis details and associated mass spectra will be discussed.

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