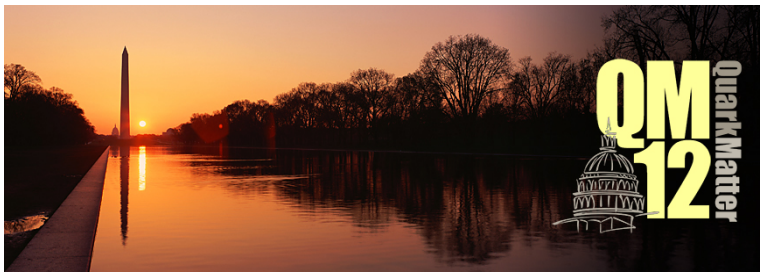

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Di-electron Measurements in $p + p$ collisions by PHENIX using the Hadron Blind Detector

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

Di-electrons are among the most promising probes for studying the early, hot and dense stages created in relativistic heavy-ion collisions. They are color neutral and so interact only electromagnetically, thus carrying to the detectors information about the conditions and properties of the medium at the time of their creation. The di-electrons are emitted over the the entire space-time evolution of the collision and their spectrum thus carries a wealth of information.

PHENIX has measured a large, unexpected enhancement in $Au + Au$ collisions in the low mass region (0.2 - 0.8 GeV/c^2), with respect to the baseline cocktail scaled from $p + p$ collisions. However, this result suffers from a large systematic uncertainty due to the huge combinatorial background of uncorrelated pairs from partially reconstructed π^0 Dalitz decays and γ conversions.

To combat this challenge, PHENIX installed a hadron blind detector (HBD) for the 2009 and 2010 RHIC runs. Its purpose is to tag and reject the combinatorial background coming from these decays. A reliable analysis of the 2010 $Au + Au$ data hinges on a complete understanding of the HBD and its unique characteristics. The 2009 $p + p$ run serves as a crucial testing ground for understanding the systematics associated with this novel detector. The proof-of-principle obtained in the $p + p$ HBD analysis will be presented in this poster.

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