

Abstract Submitted
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Low Momentum Direct Photons in $Au + Au$ collisions at $\sqrt{s} = 39$ GeV and 62.4 GeV measured by the PHENIX Experiment at RHIC
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— Direct photons, which are produced during all stages of a heavy-ion collision, directly probe the conditions of their production environment. The large yield and large anisotropy of low momentum direct photons observed in 200 GeV $Au + Au$ collisions pose a significant challenge to theoretical models. Measurements at lower collision energy may provide new insight on the origin of the low momentum direct photons. Direct photons are difficult to measure with electromagnetic calorimeters, in particular at low momentum, because of neutral hadron and minimal-ionizing particle contamination, large decay photon backgrounds, and worsening calorimeter resolution. Therefore PHENIX has measured the direct photons at $\sqrt{s} = 200$ GeV via their external conversion to di-electron pairs. This method virtually eliminates the hadron contamination due to a very clean photon identification based on di-electron pair. The same method is also used in our current analysis of the direct photons at two lower energies. We will present the current status on the measurements of the low momentum direct photons at $\sqrt{s} = 39$ GeV and 62.4 GeV.

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