

Abstract Submitted  
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**Measurement of direct photons with a new  $\pi^0$  tagging method in  $\sqrt{s} = 200\text{GeV}$  AuAu Collision at PHENIX** HAIJIANG GONG, State Univ. of New York at Stony Brook, PHENIX COLLABORATION — Direct photons provide a tool to study the different stages of a heavy ion collision, especially the formation of a quark-gluon plasma, without being influenced by the strong interaction and hadronization processes. The yield of direct photons can be determined based on the double-ratio  $(\gamma_{inclusive}/\gamma(\pi^0))_{measured}/(\gamma_{decay}/\gamma(\pi^0))_{calculated}$  technique. A new method to determine the double-ratio is presented, which should lead to smaller systematic errors at low  $p_T$ . It uses strict photon identification in the EMCAL and a charged particle veto to extract a clean photon signal. The clean photons are then tagged with EMCAL photon candidates, which can be reconstructed with high efficiency, to determine the fraction of photons originating from  $\pi^0$  decays. Many systematic uncertainties and detector effects cancel in this method. The status of this analysis and comparison with previous published results will be discussed.

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