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Feasibility study of the two-photon intensity interferometry in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV from PHENIX at RHIC
XIAOYANG GONG, ROY LACEY, JIANGYONG JIA, RUI WEI, Chemistry Dept. of Stony Brook University — Two-particle intensity interferometry is an important probe for the dynamical evolution of the quark-gluon plasma produced in heavy ion collisions at RHIC. Recent RHIC measurements have predominantly focused on two-pion intensity interferometry studies. However, two-photon measurements can provide significant additional insights, since photons are emitted throughout the whole dynamical evolution of the fireball and from every point in the system – not only from the freeze-out surface. Moreover, photons interact only weakly with the system after their production and are free from the distorting effects of re-scattering and Coulomb interactions. Two-photon interferometry measurements continue to be a significant challenge due to the large background of decay photons and a relatively small production rate of direct photons at low p_T . In recent experiments, the PHENIX collaboration has embarked on a program aimed at extensive two-photon interferometry measurements in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV. The latest results from these measurements will be presented and their implications for reaction dynamics and the yield of direct photons will be discussed.

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