Low-p_T e^+e^- pair production in Au+Au collisions at $\sqrt{s_{\rm NN}} = 54.4$ GeV and $\sqrt{s_{\rm NN}} = 200$ GeV at STAR

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In high-energy heavy-ion collisions, strong electromagnetic fields arising from the Lorentz-contraction of highly charged nuclei generate a large flux of high-energy quasi-real photons. Dielectrons can be produced via the interaction of these photons through the Breit-Wheeler photon-photon fusion process. Traditionally these photo-processes were expected to take place only in Ultra-Peripheral Collisions (UPC). However, it has been recently realized that even in peripheral collisions, the dielectron production at very low transverse momentum mainly originates from the two photon interactions, which provides a possible tool for futher study of this phenomena. Recent STAR measurements in UPC have demonstrated that the colliding photons are linearly polarized and that the linear polarization leads to azimuthal angle modulations in the final state particle distribution. Measurements in peripheral collisions provide an opportunity to directly test the energy and impact parameter dependence of this newly observed phenomena.

In this presentation, we will present measurements of dielectron production at low transverse momentum in peripheral (80-100%) Au+Au collisions at $\sqrt{s_{\rm NN}} = 54.4$ GeV and $\sqrt{s_{\rm NN}} = 200$ GeV at STAR. These measurements and their implications for the magnetic field produced in heavy-ion collisions will be discussed.