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## Low- $p_T \mu^+ \mu^-$ pair production in Au + Au collisions at $\sqrt{s_{_{\rm NN}}}$ = 200 GeV at STAR

Recently, significant enhancements of  $e^+e^-$  pairs at very low transverse momentum  $(p_T)$  were observed by the STAR collaboration in peripheral Au+Au collisions. The excess can be explained by photon-photon interactions induced by the extremely strong electromagnetic field produced by the fast-moving heavy ions. While such photon-photon interactions were traditionally studied in ultra-peripheral collisions without any nuclear overlaps, they could provide a novel probe to the Quark Gluon Plasma(QGP) created in peripheral collisions since the very-low- $p_T$  dileptons are produced in the early stage of the collisions. Furthermore, the photon-photon interactions could be used to probe the possible existence of strong magnetic field trapped in a conducting QGP medium. Measurements of  $\mu^+\mu^-$  pairs provide a complementary channel to investigate these phenomena.

In 2014 and 2016, the STAR experiment at RHIC recorded large samples of Au+Au collisions at  $\sqrt{s_{NN}} =$  200 GeV. In this talk, we will present new measurements of invariant mass and yield distributions for  $\mu^+\mu^-$  pair production at  $p_T < 0.1$  GeV/c. The  $p_T^2$  distribution of the excess yields will also be shown. Physics implications will be discussed together with model comparisons.

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