

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Low- p_T $\mu^+\mu^-$ pair production in Au+Au collisions at $\sqrt{s_{\text{NN}}} = 200$ GeV at STAR JIAN ZHOU, University of Science and Technology of China, STAR COLLABORATION — Recently, significant enhancements of e^+e^- pair 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. The photon interaction was usually studied in ultra-peripheral collisions without any nuclear overlaps. However, the photon interaction in peripheral collisions may provide a novel probe of QGP because the very-low- p_T dileptons are produced in the early stage of the collisions and there could be QGP produced in the nuclear overlapping region in peripheral collisions. In such collisions, the photon-photon interactions could be further used to probe the possible existence of strong magnetic fields trapped in a conducting QGP medium. Measurements with $\mu^+\mu^-$ 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 $\sqrt{s} = 200$ GeV. In this talk, we will present invariant mass and yield distributions for $\mu^+\mu^-$ pair production at $p_T < 0.15$ GeV/ c . The p_T^2 distribution of the excess yields will also be shown.

Jian Zhou
University of Science and Technology of China

Date submitted: 25 Jun 2020

Electronic form version 1.4