

QPT 2021

Guiyang, China

Contribution ID: 59

Type: not specified

Low- p_T $\mu^+\mu^-$ pair production in Au + Au collisions at $\sqrt{s_{NN}} = 200$ 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.

Primary author: ZHOU, Jian (University of Science and Technology of China)

Presenter: ZHOU, Jian (University of Science and Technology of China)