

Two-photon Production of Dilepton Pairs in UPC

Wangmei Zha for the STAR Collaboration

Relativistic heavy-ion collisions generate an exceptionally intense electromagnetic field, offering an ideal setting for investigating the electromagnetic excitation of the vacuum. The lowest-order QED excitation involves the creation of lepton pairs through two-photon fusion, commonly referred to as the Breit-Wheeler process. In this presentation, we will report a comprehensive study of Breit-Wheeler process in ultra-peripheral heavy-ion collisions conducted at STAR. We will present the total production rate, differential pair mass, and transverse momentum distributions as indicators of the characteristics of the two-photon production of lepton pairs in heavy-ion collisions. Furthermore, the angular modulation of the process will be discussed, providing insights into the behavior of the interacting photons, elucidating their resemblance to real photons with transverse linear polarization.