

Latest UPC Results from STAR

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Relativistic heavy ion collisions generate intense electromagnetic fields, enabling the study of photon-induced interactions. These phenomena are typically examined in ultra-peripheral collisions (UPCs) of relativistic heavy ions. UPCs facilitate the production of di-lepton and di-hadron pairs through $\gamma + \gamma$ interactions, as well as vector mesons via $\gamma + A$ interactions. The resulting photon produced vector mesons and lepton/hadron pairs inherently carry the characteristics of the originating electromagnetic fields. Moreover, photon-produced vector mesons serve as probes for the gluon distribution within the target nucleus. This distinction can be seen in coherent production, which involves the entire nucleus, and incoherent production, which involves individual nucleons.

In this presentation, we will delve into recent results from the STAR experiment, focusing on vector mesons, di-lepton pairs, and di-hadron photoproduction. These measurements will be compared to theoretical model predictions to elucidate their implications and enhance our understanding of photon induced interactions in heavy ion collisions.