

Probing gluon structure with J/ψ photoproduction in isobaric ultra-peripheral collisions at 200 GeV with STAR

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In ultra-peripheral collisions (UPCs), coherent J/ψ photoproduction has been recognized as one of the most sensitive probes of the nuclear gluon distribution. The collision system size in isobaric collisions Ru + Ru and Zr + Zr lies between d + Au and Au + Au collisions. Therefore, the measurement of coherent J/ψ photoproduction in isobaric UPCs offers a unique opportunity to study the system size dependence of gluon structure. In this talk, we present the differential cross sections of photoproduced coherent J/ψ as a function of rapidity (y) in isobaric UPCs at 200 GeV. These data provide crucial constraints on the system size dependence of the gluon structure function within nuclei in the kinematic range x_{parton} , the momentum fraction carried by the gluon, $\sim 0.015\text{--}0.03$. The results are compared with STARlight and previous STAR measurements. Physics implications are also discussed.

Presenter: LI, Zengzhi