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Initial electromagnetic field dependence of photon-induced production in isobaric collisions at STAR

Monday, 24 April 2023 14:15 (25 minutes)

The Lorentz-boosted electromagnetic field, arising from a colliding nucleus, can be treated as a flux of quasi-real photons. Consequent photonuclear ($\propto Z^2$) and photon-photon ($\propto Z^4$) processes could reasonably explain the observed enhancements of J/ψ and e^+e^- pair production at very low transverse momenta (p_T) in peripheral heavy-ion collisions. The STAR experiment collected datasets of $^{96}_{44}$Ru+$^{96}_{44}$Ru and $^{96}_{40}$Zr+$^{96}_{40}$Zr collisions at 200 GeV in 2018, which provide a unique opportunity to study photon-induced processes.

In this presentation, we will compare measurements of J/ψ and e^+e^- pair production at very low p_T in isobaric and Au+Au collisions to study their electromagnetic field dependence. The angular modulation of dielectron pairs will also be presented. Physics implications of these results will be discussed together with model comparisons.

Theory / experiment

Experiment

Group or collaboration name

STAR Collaboration

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