Contribution ID: **100** Type: **Oral presentation**

Measurements of photon-induced J/ψ azimuthal anisotropy in isobar collisions at STAR

Wednesday 25 September 2024 09:00 (20 minutes)

Ultra-strong electromagnetic field in relativistic heavy-ion collisions could be quantized as a large flux of linearly polarized quasi-real photons. These photons can interact with nuclei or nucleons, leading to vector meson production ($\gamma + A \rightarrow V + A$). Notably, azimuthal asymmetries between the pair momentum and the daughter momentum could arise from the linear polarization of incident photons correlated with spin interference effect. On the other hand, the decay daughters of these vector mesons inherit polarization information of the photons, which is related to the initial collision geometry. Thus, the measurement of azimuthal anisotropy of these decay daughters offers a novel and direct probe into both the initial collision geometry and the polarization characteristics of the photons.

In this presentation, we will report the angular modulation measurements of the photon-induced J/ψ pair production in Ru+Ru and Zr+Zr ultra peripheral collisions at $\sqrt{s_{NN}}$ = 200 GeV. Additionally, we will also present the measurements of the azimuthal anisotropy with respect to the event plane (v_2) of electrons decayed from photon-induced J/ψ in non-central collisions from the same collision systems.
Our results offer novel insights into both the collision geometry and spin interference effect.

Category

Experiment

Collaboration

STAR

Author: WANG, Kaiyang (University of Science and Technology of China)

Presenter: WANG, Kaiyang (University of Science and Technology of China)

Session Classification: Parallel 27: UPC

Track Classification: 5. Nuclear PDFs, saturation, and early time dynamics