Contribution ID: **92** Type: **Talk**

Overview of the STAR forward spin physics

Tuesday 3 September 2024 16:00 (20 minutes)

The unique capabilities of the Relativistic Heavy Ion Collider (RHIC) offer ideal opportunities to explore a wide range of topics in spin physics through polarized proton collisions. The STAR detectors in the forward region (approximately $2.5 < \eta < 4$) enable investigations in forward spin physics, providing deeper insights into fundamental Quantum Chromodynamics (QCD).

This overview talk will first encompass recent highlights in the forward region with the transversely polarized proton beam from the STAR experiment. It will begin with the multi-dimensional studies for transverse single-spin asymmetry (A_N) for inclusive π^0 and electromagnetic jet at forward rapidity, offering insights into the origin of the sizeable A_N observed in polarized $p + p$ collisions. Additionally, the investigation of isolated π^0 will be discussed, providing indication that the large A_N might originate from diffractive processes. Consequently, this talk will also cover diffractive A_N and discuss its contribution to the inclusive A_N.

This talk will then delve into the unpolarized physics, focusing on the two-particle azimuthal correlation which has been proposed to be one of the efficient channels to access the underlying gluon dynamics. We will present the recent results of forward di-hadron correlation studies in $p + p$ and $p + A$ collisions.

The STAR Forward Upgrade, completed in 2022, enhances the tracking and calorimeter systems in the forward rapidity region. These upgrades have been successfully utilized for data taking with $p + p$ and Au + Au collisions, providing unique kinematic coverage for various physics measurements. This talk will discuss the STAR Forward Upgrade and its new physics opportunities.

Internet talk

No

Is this an abstract from experimental collaboration?

Yes

Name of experiment and experimental site

STAR Collaboration, BNL, US

Is the speaker for that presentation defined?

Yes

Details

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