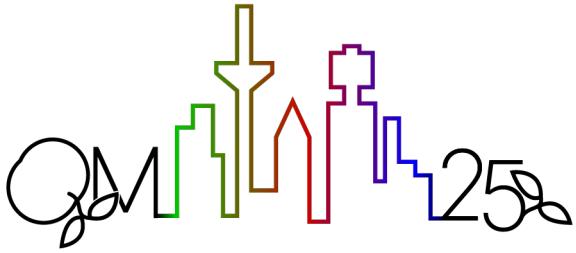

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sPHENIX measurements of high-pT neutral mesons and isolated photons in p+p collisions

Thursday 10 April 2025 09:40 (20 minutes)

The sPHENIX experiment is a next-generation collider detector at RHIC designed for rare jet and heavy flavor probes of the Quark-Gluon Plasma. The experiment includes a large-acceptance, granular electromagnetic calorimeter (EMCal) and very high-rate data acquisition plus trigger system. In RHIC
Run-24, sPHENIX sampled 107/pb of p+p collision data at 200 GeV using an efficient high-pT photon trigger. This dataset represents a nearly-tenfold increase of the luminosity times acceptance compared to previous EMCal-based high-pT neutral meson measurements for this collision energy at RHIC. This talk presents the first sPHENIX EMCal measurements in p+p collisions, including neutral pion and eta meson production over a significantly extended kinematic range, where the eta decay photons remain well-separated in the granular EMCal out to very high pT, and isolated photon production, with an isolation requirement based on the full calorimeter system for the first time at RHIC. These provide important pQCD baselines for future measurements of single hadron suppression at very high pT in Au+Au collisions. Additionally, the transverse single spin asymmetry for neutral mesons serves as a foundational measurement for the sPHENIX Cold QCD physics program.

Category

Experiment

Collaboration (if applicable)

sPHENIX

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