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sPHENIX measurement of high- p_T neutral meson production in p+p collisions

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- p_T photon trigger. This dataset represents a nearly-tenfold increase of the luminosity times acceptance compared to previous EMCal-based datasets for this collision energy at RHIC. This talk presents measurements of neutral pion and η meson production cross-sections in p+p collisions over a significantly extended kinematic range compared to previous measurements. Decay photons from the η meson remain well-separated in the granular EMCal out to very high p_T . These measurements provide an important pQCD baseline for future measurements of single hadron suppression, particularly their dependence at very high p_T , in future sPHENIX Au+Au data-taking at RHIC.

Category

Experiment

Collaboration (if applicable)

sPHENIX Collaboration

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