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sPHENIX capabilities for jet-based observables

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The sPHENIX detector at BNL's Relativistic Heavy Ion Collider (RHIC) benefits from the extensive detector advances driven by LHC and Electron-Ion Collider (EIC) detector R&D. The combination of electromagnetic calorimetry, hadronic calorimetry, precision tracking, and the ability to record data at a very high rates enables measurements of jets, jet substructure, and jet correlations at RHIC with a kinematic reach that will overlap with similar measurements at the LHC. Jet observables are a particularly useful probe of the Quark Gluon Plasma (QGP) formed in heavy-ion collisions since the hard scattered partons that fragment into final state jets are strongly "quenched", losing energy to the medium as they traverse it. To answer fundamental questions about the physics of this process, we need to characterize the medium induced modification of the jet fragmentation pattern and the correlation of the lost energy with the jet axis. The measurements require removal of the soft, underlying event (UE), and we will show the performance of different UE subtraction techniques for calorimetric jets in sPHENIX. The performance of the detector for photon-jet and jet fragmentation observables will also be shown.

Collaboration (if applicable)

sPHENIX

Track

Jets and High Momentum Hadrons

Contribution type

Contributed Talk

Primary author: ROSATI, Marzia (Iowa State University)

Presenter: PEREPELITSA, Dennis (University of Colorado Boulder)

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