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Jet Substructure from Calorimeter Towers for Early sPHENIX Measurements

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The new sPHENIX detector at Brookhaven's National Laboratory's Relativistic Heavy Ion Collider (RHIC) was designed to significantly further the study of the nature of hot nuclear matter. The use of jets as a probe in p+A and A+A collisions allows access to the interaction of the hard-scattered partons with the nuclear environment and is sensitive to a wide range of scales. sPHENIX will use energy deposits in the electromagnetic calorimeter and in the hadronic calorimeter, the first of its kind used for mid-rapidity measurements at RHIC, to reconstruct jets. Measurements of the sub-structure of these jets can be used to study the properties of the Quark Gluon Plasma (QGP) produced during heavy ion collisions. This poster will outline the method used to construct purely calorimetric jets from underlying-event-subtracted calorimeter towers, by first clustering calorimeter towers into anti- k_T $R = 0.2$ "sub-jets" and then clustering the sub-jets into larger R jets. We will show the status towards jet substructure measurements using this technique in the first year of Au+Au data-taking with sPHENIX.

Category

Experiment

Collaboration (if applicable)

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