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Reconstructed Jet Measurements in p+p, p+Au and Cu+Au collision using PHENIX

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In addition to the previously reported inclusive jet spectra and nuclear modification factors in $d+Au$, and $Cu+Au$ collisions at $\sqrt{s_{NN}} = 200$ GeV at mid-rapidity, measurements of jets in p+A and jet substructure in p+p and $Cu+Au$ have also been performed in PHENIX. Jets are reconstructed from charged particle tracks and electromagnetic calorimeter clusters with the anti-kT algorithm. The measurements are unfolded for detector response. While the nuclear modification factor for centrality integrated data in $d+Au$ collisions is found to be consistent with unity, the centrality-selected modification factor shows substantial deviations from unity. New measurements in p+Au collisions will provide crucial information for understanding the anomalous relationship between hard and soft processes in $p/d+A$ systems. Meanwhile the $Cu+Au$ collision system offers an intermediate testing ground for heavy ion jet reconstruction between small systems and those with the largest heavy ions. The underlying event in $Cu+Au$ events is smaller when compared to that in the largest heavy ion systems, simplifying the extraction of the jet signals, but still achieving the large energy densities needed to drive substantial in-medium energy loss. To further explore the modification of the jets in $Cu+Au$ collisions, jet fragmentation functions and jet grooming studies accessing the jet substructure have been performed. This talk will present the latest results from the reconstruction jet studies in PHENIX and their implications for energy loss in the quark gluon plasma.

Collaboration (if applicable)

PHENIX

Track

Jets and High Momentum Hadrons

Contribution type

Contributed Talk

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