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Dependence of semi-inclusive jet and high- p_T charged particle production on event activity at high backward-rapidity in $\sqrt{s_{NN}} = 200$ GeV $p+Au$ collisions at STAR

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Observations of flow-like signals in small-system collisions, pp and $p/d+A$, have led to a resurgence of interest and measurements, the results of which have perhaps permanently challenged the naive picture of initial geometry and subsequent early-time dynamics for these systems. In the wake of this renewed interest, jet and high- p_T particle measurements in small systems are proving similarly fruitful and challenging. While no clear signal of jet quenching has been observed, inclusive measurements at both LHC and RHIC energies of $p/d+A$ collisions show jet spectra enhancement/suppression at high Bjorken- x when binned by event activity (EA) at high backward-rapidity (the A -going direction). In this talk we present the first semi-inclusive small-system jet spectra measurements at RHIC energies. The results show significant suppression of the jet spectra normalized per trigger in high-EA relative to low-EA collisions. PYTHIA 8 simulations verify that the modification of these spectra is not the result of trivial autocorrelations. Surprisingly, these simulations do show a qualitatively similar modification and studies to understand the cause will be presented. Finally, we present charged particle correlations with EA at high backward-rapidity, which hint at energy conservation or fluctuating proton effects.

Collaboration (if applicable)

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Primary author: STAR COLLABORATION

Presenter: STEWART, David (Yale University)

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