

Correlation measurements of charged particles and jets at mid-rapidity with event activity at backward-rapidity in $\sqrt{s_{\text{NN}}} = 200 \text{ GeV}$ p+Au collisions at STAR

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Recent measurements of small system collisions, p+p and p+A, show signals which, in A+A collisions, had been attributed to the formation of a strongly interacting medium. These notably include flow-like correlations. However, so far no clear demonstration of jet energy losses in small system collisions have been observed.

In this talk, we will present correlations of mid-rapidity charged particles to backward-rapidity (Au-going direction) event activity (EA) in 200 GeV p+Au collisions at STAR. They demonstrate an expected positive correlation between high EA at backward-rapidity and the probability of finding a high energy particle at mid-rapidity. Intriguingly, this correlation softens for increasingly energetic triggers. We will also present semi-inclusive jet spectra at mid-rapidity which, due to self normalization, avoid the difficulties of applying the Glauber model in small systems. The measured high-EA spectrum is distinctly suppressed relative to the low-EA spectrum. We will present comparison of these results to those in d+Au and p+Pb collisions at RHIC and the LHC, respectively. EA-dependent modification of the jet spectrum has been observed at the LHC but only for jets at forward-rapidities and appears to scale with Bjorken- x . The presented mid-rapidity jet spectra span a similar Bjorken- x range, allowing the Bjorken- x scaling to be tested.