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Modification of semi-inclusive jet spectra in high event activity $p+\text{Au}$ collisions at $\sqrt{s_{\text{NN}}} = 200\text{GeV}$ $p+\text{Au}$ ¹ DAVID STEWART, Yale University, STAR COLLABORATION — Observations of event activity (EA) dependent modification of jet spectra per binary collision in $p/d+A$ collisions at the LHC and RHIC have raised questions about the nature of hard scatterings in “small” (non- $A+A$) system collisions. All jet measurements using inclusive event samples in small system collisions are consistent with pp results; the spectra modification is observed only when binned by EA and for high Bjorken- x jets. Semi-inclusive jet spectra at RHIC energies also show clear spectra dependence on EA at backward-rapidity. This has been shown to not result from dijet kinematics. It also does not appear to result from jet quenching, particularly when taken in conjunction with measurements in these collisions which show no EA-dependence of jet substructure. In this talk we present results by which we argue that the EA dependence of the semi-inclusive jet spectra is a consequence of phase space constraints, not present in $A+A$ collisions, which correlate the scale of the hard scattering with EA at both high rapidity and transverse in azimuth to the hard scattering.

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