Abstract Submitted
for the APR20 Meeting of
The American Physical Society

Background fluctuations in jet studies in heavy ion collisions CHRISTINE NATTRASS, CHARLES HUGHES, ANTONIO OLIVEIRA DA SILVA, University of Tennessee, Knoxville — Jets produced in high energy heavy ion collisions are quenched by the production of the quark gluon plasma. Measurements of these jets are influenced by the methods used to suppress and subtract the large, fluctuating background and the assumptions inherent in these methods. We compare measurements of the background by the ALICE collaboration to PYTHIA Angantyr simulations of Pb-Pb collisions and to a data-driven random background generator. Angantyr over-estimates the predictions for the standard deviations of the energy in random cones at an approximate level of 15%, indicating that fluctuations due to mini-jets and resonances are not negligible in Angantyr. We are able to describe the standard deviation of the energy in random cones in the background generator as a convolution of number and momentum fluctuations in agreement with the form predicted in the ALICE paper. The description works well for an azimuthally isotropic background but slightly underestimates the width of the correlations for a flow-modulated background. We derive the expected impact of flow on the background and compare to the data-driven background generator.

Christine Nattrass
University of Tennessee, Knoxville

Date submitted: 12 Jan 2020 Electronic form version 1.4