

Abstract Submitted  
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**Examining the relationships between charged-particle spectra and event centrality in oxygen-oxygen collisions using the STAR detector at RHIC**<sup>1</sup> JORDAN CORY, Stevens Institute of Technology, STAR COLLABORATION COLLABORATION — High energy collisions of heavy ions form a relativistic hydrodynamic fluid called the Quark Gluon Plasma (QGP). Central collisions, collisions that have a small impact parameter, produce larger volumes of QGP than peripheral collisions with a larger impact parameter. One way of studying the QGP is by comparing the momentum spectra of charged particles in central and peripheral collisions. Traditionally at the Solenoidal Tracker at RHIC (STAR) experiment, centrality is determined via charged particles at mid-rapidity within the Time Projection Chamber (TPC). This measure of centrality could suffer from auto-correlation if the charged-particle spectra are measured in the same phase space. To mitigate this effect, centrality can also be estimated using the charged-particle multiplicity measured in the Event Plane Detector (EPD), covering a pseudorapidity range of  $2.1 < \eta < 5.1$ . This poster will compare the charged-particle momentum distribution ratios obtained by using the two different methods of estimating collision centrality in oxygen-oxygen collisions at a center-of-mass collision energy of 200 GeV per nucleon pair. Such a comparison will help us explore the inherent correlations between particle production across different regions of a heavy ion collision.

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