Abstract Submitted
for the CUWIP21 Meeting of
The American Physical Society

Two-Particle Correlations of Protons and Light Nuclei in STAR BES Data AMELIA DOETSCH, LAUNA DICARLO, BEKELE ERKO, BRIAN HANLEY, W. J. LLOPE, NANDITA RAHA, Wayne State University — Heavy-ion collisions at the Relativistic Heavy Ion Collider (RHIC) produce a state of nuclear matter called the Quark Gluon Plasma (QGP), which is hot and consists of deconfined quarks and gluons. As the system quickly cools, hadrons are formed, and the Solenoidal Tracker at RHIC (STAR) measures these hadrons. Of particular interest is the measurement of the kinematic correlations between the measured particles, which indicate the importance of different reaction mechanisms. A possible critical point in the phase diagram of nuclear matter might be expected to result in an increased, and beam energy-localized, kinematic clustering of baryons. A powerful analysis tool to search for such clustering is the two-particle correlation function [1]. These correlation functions have been measured for different pairs of directly-identified particles including protons and the four lightest nuclei (p, d, t, and He-3), which are themselves clusters of baryons. These, and their projections, as functions of the beam energy and the collision centralityare compared to theoretical models. The status of this analysis will be presented. [1] STAR, PRC 101, 014916 (2020)

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Date submitted: 04 Jan 2021 Electronic form version 1.4