

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Flow and transverse momentum correlations in Pb+Pb and Xe+Xe collisions with ATLAS¹ ARABINDA BEHERA², Stony Brook University, ATLAS COLLABORATION³ — Correlation of mean transverse momentum ($[p_T]$) of particles with the n-th order anisotropic flow harmonics (v_n) in heavy ion collisions is sensitive to the initial-state conditions. Measurement of a modified Pearsons Correlation Coefficient between v_n and $[p_T]$ with the ATLAS detector are presented using $22 \mu\text{b}^{-1}$ of $\sqrt{s_{\text{NN}}} = 5.02$ TeV Pb+Pb collisions for harmonics $n=2, 3$ and 4 . The results are shown as a function of event centrality quantified as the number of charged particles (N_{ch}) or the number of nucleon participants. The correlation coefficient depends strongly on centrality and also on the choice of transverse momentum range of the particles for all harmonics. Similar ATLAS analysis is in process for $3 \mu\text{b}^{-1}$ of $\sqrt{s_{\text{NN}}} = 5.44$ Xe+Xe collisions. Comparison between Pb+Pb and Xe+Xe collisions can shed light on the system-size dependence of this correlation and the impact of deformation. The measurement will provide inputs for better understanding of the dynamics of heavy ion collisions and can help constrain theoretical models.

¹ATLAS Collaboration

²Graduate student at Stony Brook University

³ATLAS Collaboration at CERN

Arabinda Behera
Stony Brook University

Date submitted: 22 Jun 2020

Electronic form version 1.4