v_n measurement in Au+Au collisions at $\sqrt{s_{NN}} = 27$ GeV with the Event Plane Detector from STAR

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Abstract

The measurement of pseudorapidity (η) dependence of v_n at lower collision energies can 2 provide unique constraints on the three-dimensional initial conditions, baryon transport, 3 shear viscosity over entropy density as well as its dependence on temperature and baryon 4 chemical potential. The combination of the Event Plane Detector (EPD, $2.1 < |\eta| < 5.1$) 5 installed in the year 2018, STAR time projection chamber (TPC, $|\eta| < 1$) and high statistics 6 Beam Energy Scan phase-II data enables us to perform precise measurements of $v_n(\eta)$. In 7 this presentation, we will show the directed flow $(v_1(\eta))$ and elliptic flow $(v_2(\eta))$ of charged 8 hadrons measured over ten units of pseudorapidity using $\sqrt{s_{NN}} = 27$ GeV Au+Au data 9 taken in 2018 and the comparisons to hydrodynamic model predictions. We observed a 10 sign change of $v_1(\eta)$ at $\eta = Y_{beam}$ and longitudinal scaling of v_1 with $|\eta| - Y_{beam}$ when 11 compared with earlier measurements from the PHOBOS collaboration. We will also present 12 the transverse momentum (p_T) dependence of v_1 at midrapidity. 13

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