

Flow analysis using Event Plane Detector at $\sqrt{s_{NN}} = 27\text{GeV}$ Au + Au collision at RHIC-STAR

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2 Measurements of the azimuthal anisotropy parameter, v_n , which represents the
3 strength of the flow, is a good probe for experimentally studying hydrodynamic
4 properties of the quark-gluon plasma because it is sensitive to the fluctuation of the
5 shape of the initial stage of the collision as well as the dynamics of the expanding
6 system. The azimuthal anisotropic flow is defined by $dN/d(\phi-\Psi) \propto 1 + 2v_n \cos[n(\phi-\Psi)]$
7 which is Fourier-expanding the distribution of the azimuthal angle, ϕ , of the emitted
8 particles with respect to the reaction plane angle, Ψ . A newly installed forward detector,
9 Event Plane Detector (EPD) with $2.1 < |\eta| < 5.1$, was used to determine the Ψ for
10 each collision event and the v_n , which is the coefficient of the equation. In this study,
11 the transverse momentum and η dependence of v_n of the charged particles has been
12 measured by reaction plane method, using new data acquired in 2018.