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

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