Measurement of directed flow at forward and backward pseudorapidity with the Event Plane Detector (EPD) from STAR

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Directed flow (v_1) describes the collective sideward motion of produced particles and nuclear fragments in heavy-ion collisions. The pseudorapidity (η) dependence of v_1 can provide unique constraints on the initial conditions and hydrodynamic evolution of the Quark-Gluon Plasma. Directed flow in both spectator and participant regions is sensitive to early non-equilibrium dynamics and may provide insights into the baryon stopping mechanism. Prior to the 2018 RHIC run, the Event Plane Detector (EPD, $2.1 < |\eta| < 5.1$) was installed in STAR and used for the Beam Energy Scan phase-II (BES-II) data taking. The combination of EPD and high statistics BES-II data enables us to extend the v_1 measurement to the forward and backward η regions, allowing us to test the phenomenon of limiting fragmentation. In this poster, we will present the measurement of v_1 over six units of η in Au+Au collisions at $\sqrt{s_{NN}} = 27$ and 19.6 GeV and compare the results with hydrodynamic and transport model calculations.