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Collectivity in Heavy-Ion Collisions at High Baryon Density from STAR BES-II

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Directed and elliptic flow (v_1 and v_2), are sensitive to the dynamics during the early stages of the system evolution and equation of state of the medium.
The v_1 slope (dv_1/dy) at mid-rapidity of net-baryons is expected to be sensitive to the first-order phase transition, while the Number of Constituent Quark (NCQ) scaling of elliptic flow is regarded as a signal of formation of Quark-Gluon Plasma (QGP).
From the measurements based on the first phase of RHIC beam energy scan (BES-I), the dv_1/dy of net-proton exhibits non-monotonous dependence on collision energy, with a minimum between 11.5 and 19.6 GeV.
The elliptic flow of identified particles at 3 GeV is negative and NCQ scaling is absent unlike at top RHIC energies.
Measurements at more energies within these regions would provide crucial insight into the stages of the medium evolution.

In this talk, the measurements of v_1 and v_2 for light and (multi-)strange particles at $\sqrt{s_{\rm NN}}$ = 3 - 19.6 GeV from the second phase of the RHIC beam energy scan (BES-II) program will be presented.
The rapidity and transverse momentum (p_T) dependence of v_1 and v_2 will be shown. Also,
the centrality and energy dependence of v_1 slope, NCQ scaling, and p_T-integrated v_2 will be discussed.
The experimental results will be compared with model calculations.
Implications of these measurements on understanding of QCD phase structure will be discussed.

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