Identified particle v_1 and v_2 in $\sqrt{s_{NN}} = 3$ GeV Au+Au collisions at STAR

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Directed flow (v_1) and elliptic flow (v_2) are important observables in the relativistic heavy-ion collisions. They are sensitive to dynamics of the early stage of the system evolution, and can allow us to access the collective properties of the expanding QCD medium. In this talk, we will present the results of identified particle ($\pi^{\pm}$, $K^{\pm}$, K^0_S, p, ϕ and Λ) v_1 and v_2 in Au+Au collisions at $\sqrt{s_{NN}} = 3$ GeV with the fixed-target mode at STAR. The centrality, transverse momentum (p_T), and rapidity (y) dependence of identified particle v_1 and v_2 will be presented. At this collision energy, we observe positive slope of directed flow with rapidity (dv_1/dy) for all particles except π^+, and negative elliptic flow at mid-rapidity for all particles. We also observe that the number of constituent quark (NCQ) scaling for v_2, that holds at higher energies at RHIC, is absent at 3 GeV. These results are different from those for energies above 7.7 GeV, and could be consistent with a change in the equation of state (EOS) of the nuclear matter created in such low energy collisions. In addition, these results will be compared with UrQMD model calculations using both cascade and mean-field modes. Our analysis indicates that nucleonic interactions dominate the dynamics of collectivity at the high baryon density region.