Measurements of v_2 and v_3 in pAu, dAu and ^{3}HeAu collisions at RHIC energy from STAR

Shengli Huang, Stony Brook University

In this presentation, measurements of v_2 and v_3, in the p/d/^{3}He+Au collisions at 200 GeV will be shown as a function of p_T and multiplicity from STAR. The non-flow is studied with several different methods using p+p collision as a reference. It has been found that non-flow subtracted v_n signals are not sensitive to these methods. The v_2 signals are also extracted using four-particle azimuthal correlations for comparison. A system independence of v_3 has been observed for three small systems as a function of p_T. Comparison with hydro-calculations with different assumptions on the initial conditions indicates that the initial geometry in small system may be dominated by sub-nulceon fluctuations. Similar to large systems, at comparable centralities, v_n in p+Au at RHIC has also been found to be similar to those in p+Pb at the LHC. In the context of our measurement we will also discuss the prospects of the proposed O+O run at RHIC. It will facilitate a direct comparison with the results from an anticipated O+O run at the LHC, and further help us to address the underlying physics for the anisotropic behavior and initial geometry in small system.