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PHENIX results on azimuthal correlations in small collision systems from the RHIC geometry and energy scan

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Collective behavior in small collision systems has been explored in detail by the PHENIX experiment using the unique RHIC capability to collide different species at a variety of center-of-mass energies. Measurement of azimuthal anisotropies, v2(pt), and long-range two-particle correlations are studies in p+Al, p+Au, d+Au, and 3He+Au at 200 GeV with inclusive charged particles and identified pions and protons at mid-rapidity. The triangular anisotropy, v3(pt), is also measured in central d+Au, and 3He+Au collisions. The 2016 be am energy scan of d+Au collisions at 19.6, 39.0, 62.4, and 200 GeV provided a high-statistics data set that enabled multiparticle cumulant analyses of v2{2}, v2{4}, v2{6} as a function of event multiplicity, as well as the study of v2 of inclusive hadrons as a function of pseudorapidity over 6 units of eta. These measurements taken together provide a wealth of information sensitive to initial vs final state effects, nonflow and flow correlations, longitudinal and transverse partonic and hadronic dynamics. Detailed model comparisons with all observables will be discussed.

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