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Longitudinal dynamics and collective behavior in the d+Au beam energy scan

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The standard picture of heavy ion collisions is that large systems (collisions of large nuclei like Au+Au and Pb+Pb) create a quark-gluon plasma that exhibits collective behavior indicative of nearly inviscid hydrodynamical evolution. Recently, data from small systems (collisions of a small projectile and a large target like d+Au and p+Pb) have been found to exhibit strikingly similar evidence for collective behavior. Asymmetric systems, by their nature, provide unique insight on the relation between geometry, transverse expansion, and longitudinal dynamics. In 2016, RHIC delivered a beam energy scan of d+Au collisions at 4 different energies: 200, 62.4, 39, and 19.6 GeV. In this talk we present a wide array of results from the Run16 d+Au BES and discuss the implications for collectivity and longitudinal dynamics, and we put these results in context with other measurements over a range of energies in p+p, p/d/3He+A, and A+A collisions.

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