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Observation of identical "near-side" jet-like correlations in d+Au and Au+Au collisions at low trigger p_T by STAR

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Particle production mechanisms vary with p_T . At low p_T soft processes dominate whereas hard processes dominate at higher p_T . Experimental data has shown drastic change from d+Au to Au+Au collision in p_T spectra, collective phenomena, and baryon/meson ratio at intermediate p_T . This indicates that the relative mixture of particles produced by hard and soft processes differ between Au+Au and d+Au at a given, relatively low p_T ($< 2.0\text{GeV}$). It is therefore expected that the dihadron correlations will differ between d+Au and Au+Au with relatively low trigger particle p_T . In this talk we present the near-side jet-like correlations in d+Au and Au+Au collisions at 200 GeV by STAR. The jet-like results are obtained by the difference of small and large $\Delta\eta$ correlations. We report the findings as a function of trigger and associated particle p_T , collision centrality, and Event Plane trigger orientation. We find the $1/\sqrt{s_{NN}} = 200\text{GeV}$ d+Au and Au+Au near-side correlations to be identical even at trigger p_T as low as 1.5 GeV/c. The AMPT and HIJING models do not describe the data. Our results seem to challenge the current understanding of particle production mechanisms in relativistic heavy-ion collisions.

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