

Nuclear Experiment

Evolution of the differential transverse momentum correlation function with centrality in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV

STAR Collaboration

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We present first measurements of the evolution of the differential transverse momentum correlation function, C , with collision centrality in Au+Au interactions at $\sqrt{s_{NN}} = 200$ GeV. C exhibits a strong dependence on collision centrality that is qualitatively similar to that of number correlations previously reported. We use the observed longitudinal broadening of the near-side peak of C with increasing centrality to estimate the ratio of the shear viscosity to entropy density, η/s , of the matter formed in central Au+Au interactions. We obtain an upper limit estimate of η/s that suggests that the produced medium has a small viscosity per unit entropy.

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