

Abstract Submitted
for the DNP08 Meeting of
The American Physical Society

Observation of a dramatic transition in the same-side (η, ϕ) correlation data from STAR LANNY RAY, University of Texas at Austin, STAR COLLABORATION — Two-dimensional angular correlations on relative pseudorapidity η and azimuth ϕ are presented for charged particles from Au-Au collisions at $\sqrt{s_{NN}} = 62$ and 200 GeV, with transverse momentum $p_t \geq 0.15$ GeV/ c and $|\eta| \leq 1$. Significant correlations are observed, including a peaked structure for same-side pairs (relative $\phi < \pi/2$) and a closely related away-side ridge. The same-side peak, associated with semihard parton scattering and fragmentation (minijets) in peripheral Au-Au and p-p collisions, follows binary-collision scaling in Au-Au collisions until mid-centralty where an abrupt transition to a qualitatively different centrality trend is observed. The transition (especially the large increase in η width) leads to a manifestation at lower p_t of the ridge phenomenon observed in trigger-associated particle correlations at higher p_t . Above the transition the number of same-side correlated particles increases rapidly relative to binary-collision scaling. The transition point at both energies occurs at a common transverse density of ~ 2.5 particles/unit- η /fm². Our results contradict heavy ion collision scenarios which invoke rapid formation of an opaque, locally thermalized medium.

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Date submitted: 01 Jul 2008

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