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Centrality dependent Lévy analysis of two-pion Bose-Einstein correlation functions at \sqrt{sNN} = 200 GeV at PHENIX.

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We present the recent PHENIX preliminary data on centrality dependence of two-pion Bose-Einstein correlation functions measured in \sqrt{sNN} = 200 GeV Au+Au collisions at the Relativistic Heavy Ion Collider (RHIC). The data are well described by assuming the source to be a L□vy-stable distribution. The Lévy parameters, \lambda, R, \alpha are measured in 23 bins of transverse mass (mT) for 6 centrality intervals. We observe that □(mT) is constant at larger values of mT but decreases as mT decreases. The centrality dependence of this decrease is determined. The L□vy scale parameter R(mT) decreases with mT and exhibits a clear centrality ordering which supports its geometrical interpretation. The L□vy exponent \alpha(mT) is independent of mT in every centrality bin but shows some centrality dependence. At all centralities \alpha is significantly different from that of a Gaussian (\alpha = 2) or Cauchy (\alpha = 1) source distribution. The data are compared to Monte-Carlo simulations of resonance decay chains. In all but the most peripheral centrality class (50-60%) they are found to be inconsistent with the measurements unless a significant reduction of the in-medium mass of the \eta' meson is included. The best value of the in-medium mass is found to be consistent with the Pisarski-Wilczek limit.

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