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Recent femtoscopic results in Au+Au and p+p collisions from PHENIX at RHIC

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Recent results for charged kaon and pion femtoscopic analysis in PHENIX will be summarized. Bose-Einstein correlations of charged kaons are used to probe Au+Au collisions at sqrt(s(NN)) = 200 GeV, and compared to charged pion probes which have a larger hadronic scattering cross section. Three dimensional Gaussian source radii were extracted, along with a one-dimensional kaon emission source function. The centrality dependence of the three Gaussian radii are well described by a single linear function of N(part)**(1/3) - with zero intercept. Imaging analysis shows a deviation of the kaon source function from a Gaussian with a heavy tail at r > 10 fm, although the bulk emission of kaons at lower radius is well-described by a Gaussian. The presence of a non-Gaussian tail in the kaon source indicates that the particle emission region in a heavy ion collision is extended, and that similar measurements with pions are not solely due to the decay of long-lived resonances.

Measuring similar correlations in smaller systems with significant correlations due to local energy and momentum conservation, such as p+p collisions is also required to put such measurements into a proper context. PHENIX preliminary measurements of HBT analysis for charged pions from sqrt(s) = 200 GeV p+p collisions will be presented and compared to Au+Au results of pions and kaons. The current status of other PHENIX preliminary femtoscopic correlation measurements will also be discussed.

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