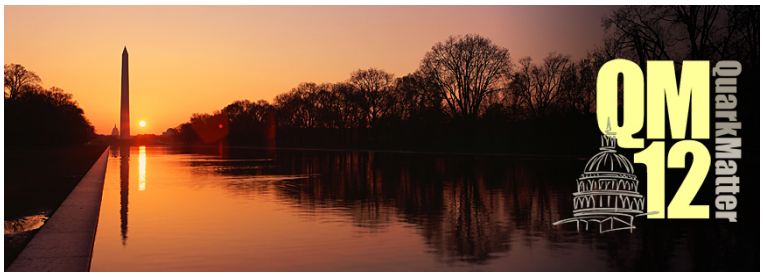

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Femtoscopy of identified particles at STAR.

Tuesday, 14 August 2012 14:35 (20 minutes)

Measurement of correlations of pair of particles with small relative momenta provides insight into geometry and lifetime of particle emitting source in relativistic heavy ion collisions.

Kaon femtoscopy extends the range of pair transverse mass covered and provides a sample less affected by decay resonances as compared to pions. The correlation functions of non-identical particles in the three-dimensional $\vec{k}^*$ space can reveal a space-time offset of one particle species (e.g. kaons) with respect to another (e.g. pions). Measurement of $\Lambda - \Lambda$ correlation is closely related to H_0-dibaryon, a six quark state predicted by Jaffe[1], which could appear as a bump in the $\Lambda - \Lambda$ invariant mass spectra or depletion in pair correlation near the threshold depending on the nature of H_0-dibaryon state.

We present new measurements of pion-kaon, kaon-kaon and hyperon-hyperon correlations measured in Au+Au collisions at the STAR experiment during Run 10 and Run 11. The analysis greatly benefits from the STAR Time of Flight detector to extend particle identification capabilities. Kaon source sizes are extracted by using spherical harmonics decomposition technique. Dependence of the kaon source radii on event centrality and pair transverse momentum for $\sqrt{s_{NN}}$ = 7.7-200 GeV are presented. Centrality dependence of pion-kaon femtoscopy in at Au+Au $\sqrt{s_{NN}}$ = 200 GeV and a similar analysis for p+p collsions at $\sqrt{s_{NN}}$ = 200 GeV will be presented for the first time. Finally, we will present the measurement of $\Lambda - \Lambda$ correlations for $\sqrt{s_{NN}}$ = 39-200 GeV.

[1] R. L. Jaffe,Phys. Rev. Lett. 38(1977) 195.

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