Femtoscopic measurements of two-kaons combinations in Au+Au collisions at the STAR experiment

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Relativistic heavy-ion collisions can study properties of nuclear matter in high-energy experiments like the STAR experiment. One of the methods to learn about bulk matter is the femtoscopy technique, which relies on information carried by the particles produced during the collisions. The emission source parameters, like space-time characteristics, are provided using femtoscopic quantities. High statistics data from RHIC can make it possible to study the correlations between strange particles, like charged and neutral kaons. The pair-wise interactions between the identical kaons that form the basis for femtoscopy are quantum statistics and the Coulomb interaction for $K^{\pm}K^{\pm}$, and quantum statistics and the final-state interaction through the $f_0(980)/a_0(980)$ threshold resonances for $K^0_S K^0_S$. The interactions between non-identical kaons pairs of $K^0_S K^{\pm}$ are essential, as the strong FSI is described only by the $a_0(980)$ resonance, which could be a four-quark state.

This talk will present the femtoscopic measurements of strange particles with charged and neutral kaons correlations in Au+Au collisions at the RHIC energy. The experimental results will be compared with the theoretical predictions.