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Two-particle correlations at the Beam Energy Scan program at STAR

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Geometry and dynamics of the particle-emitting source in heavy-ion collisions can be inferred via the femtoscopy method. Two-particle correlations at small relative momentum exploit Quantum Statistics (QS) and the Final State Interactions (FSI), which allow one to study the space-time characteristics of the source of the order of 10^{−15} m and 10^{−23} s. The RHIC Beam Energy Scan (BES) program covers a significant part of the QCD Phase Diagram using Au nuclei collisions for several beam energies from 3 to 200 GeV, where the baryon-rich region is studied via femtoscopy. Two-particle correlations can provide additional information regarding critical behavior (first-order phase transition). Together with meson ones, baryon measurements provide complementary information about sources created in the final stages of interactions. The results of non-identical particles enable studies of space-time asymmetries in the emission process. Besides, femtoscopy enables the investigation of FSI between hadrons. In this talk, the femtoscopic measurements of various particle combinations for different collision energies and centralities will be shown.

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