Recent Results on Baryon Correlations at RHIC-STAR

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In high-energy nuclear collisions, the measurements of two-particle femtoscopy is a powerful and unique method for extracting information about the femtoscopic spatio-temporal properties of the source and characterising the final state interactions (FSI). However, measurements of baryon correlations are scarce. Understanding the strong interactions between baryons, especially nucleon-nucleon (N-N), hyperon-nucleon (Y-N) and hyperon-hyperon (Y-Y) interactions, are crucial for comprehending the equation-of-state (EoS) of the nuclear matter and inner structure of neutron star. Furthermore, baryon correlations involving light nuclei, which are loosely bound objects, are critical for understanding many-body interactions and the production mechanisms of light nuclei.

In this talk, we will present recent results on baryon correlations measured with RHIC-STAR experiment, including p-p, p-d, d-d, p-Λ, p-Ξ^-, and d-Λ. Extracted source size parameters, driven by collision dynamics, and FSI parameterization, determined by the nature of the particle pairs under study, will be discussed within the framework of lattice calculations (interaction potentials) and hadronic transport model calculations.