

## Measurements of two-pion femtoscopy in Au+Au Collisions at $\sqrt{s_{NN}} = 3.0, 3.2, 3.5, \text{ and } 3.9 \text{ GeV}$ from RHIC-STAR

Femtoscopic measurements are sensitive to the spatial and temporal characteristics of the particle emitting-source, allowing us to probe the properties of the matter created in heavy-ion collisions. In case of a first-order phase transition, the duration of pion emission is expected to increase. Therefore, measuring the energy dependence of the pion femtoscopy will help us to understand the nuclear matter phase structure.

In this talk, we present the results on two-pion femtoscopy measurements in Au+Au collisions at  $\sqrt{s_{NN}} = 3.0, 3.2, 3.5, \text{ and } 3.9 \text{ GeV}$  from the STAR experiment. The extracted correlation strength ( $\lambda$ ) and HBT radii ( $R_{out}, R_{side}, R_{long}, R_{out-long}^2$ ) from the 3D correlation functions will be presented as a function of collision energy, centrality, rapidity, and pair transverse momentum. We will compare the measurements with the results from transport model calculations. Finally, the implications for the properties of QCD matter at high baryon density will be discussed.

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