

# Residual 3rd-body Coulomb Effect on Identical Charged Pion Correlations in Au+Au Collisions at STAR

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1        Measurements of identical pion femtoscopy offer insights into collision dynamics, such  
2        as collective expansion, geometry of the collision zone at freeze-out, etc. In addition to  
3        the quantum interference among the pion pairs, Coulomb interactions between the pair  
4        and the net positive charge in the emitting source affect the final measurements as well.  
5        Furthermore, due to the imbalance of protons and neutrons inside the colliding nuclei,  
6        initial isospin, which also affects the correlation functions, plays an important role in  
7        determining the EOS of the medium in collisions at high baryon density.

8        To extract the effect of the isospin, a systematic analysis of the identical charged pion  
9        correlations from  $\sqrt{s_{NN}} = 3.0, 3.2, 3.5, 3.9, 4.5, 5.2, 7.7$  GeV Au+Au collisions collected  
10       by the STAR experiment has been carried out. A new procedure has been developed to  
11       remove the residual effect from the 3rd-body Coulomb force and to extract the contribu-  
12       tion from isospin. In this talk, we will report collision energy dependence of the source  
13       size parameters extracted from the positive and negative charged pion correlation func-  
14       tions after removing the 3rd-body Coulomb effect. Transport model UrQMD calculations  
15       with realistic experimental cuts will be used to aid the discussions.