

The Study of Two Anti-proton Interaction via Correlation Measurement at STAR

Monday, 5 October 2015 10:06 (16 minutes)

The two-particle correlation at small relative momenta is influenced by the nuclear force between two particles, which has been intensively studied for nucleons or nuclei but not much for anti-nucleons or anti-nuclei. In this talk, we present the (anti)proton-(anti)proton correlation function in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV based on data taken by the STAR experiment at RHIC. We show the attractive nuclear force between two anti-protons, and present the measurement of the two key parameters that characterize the corresponding strong interaction, namely, the scattering length and the effective range. Our measurement serves as a useful verification of CPT symmetry. Of equal importance as a direct knowledge of the interaction among two anti-protons, the simplest system of antinucleons(nuclei), our result provides a fundamental ingredient towards understanding the structure of more sophisticated anti-nuclei and their properties.

Primary author: Mr ZHANG, ZHENGQIAO (BNL)

Presenter: Mr ZHANG, ZHENGQIAO (BNL)

Session Classification: Multiparticle Correlations and Fluctuations

Track Classification: Multiparticle Correlations and Fluctuations