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Measurement of the space-time extent of the emission source in d+Au and Au+Au collisions through charged pion interferometry at $\sqrt{s_{NN}} = 200$ GeV

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The recent observation of azimuthal correlations in p+Pb collisions at LHC is consistent with an interpretation as either an initial state gluon saturation effect or the expansion dynamics of a QGP like medium. It is well known that the latter process is characterized by strong final state re-scattering effects. In this work two-pion interferometry measurements in d+Au and Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV are performed to extract and compare the Gaussian source radii R_{out} , R_{side} and R_{long} , which characterize the space-time extent of the emission sources. The comparisons which are carried out as a function of collision centrality and the mean transverse momentum for pion pairs, indicate strikingly similar patterns for the d+Au and Au+Au systems. They also indicate linear dependence of R_{side} on the initial transverse geometric size, as well

as a smaller freeze-out size for the d+Au system. These patterns point to the important role of final-state re-scattering effects in the reaction dynamics of d+Au collisions.

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