

Repulsion of quark-gluon strings and collective effects in two-particle angular long-range correlations in hadronic collisions

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\begin{document}
\title{
Repulsion of quark-gluon strings and collective effects in two-particle angular long-range correlations in
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\maketitle

Color flux tubes (quark-gluon strings), formed at early stages of hadron-hadron collision,
may overlap in case of sufficiently high densities and interact by repelling or attracting each other \cite{1}.
In the hypothesis of repulsive interaction,
strings may acquire, before the hadronization, the additional transverse boost that is an efficient sum of all
accounted string-string interactions.
This produces additional transverse momenta to the particles formed in string decays
over a wide range of rapidity,
thus leading to
modification of observables and to azimuthal asymmetry of two-particle correlations.
Monte Carlo toy-model \cite{2,3}
with the account of the string repulsion
is implemented, where an efficient string-string interaction radius is introduced.

We consider this string repulsion as the main dynamic origin of the elliptic flow and of the higher harmonics
that describe the complicated structures observed in two-particle correlation topology in nucleus-nucleus
collisions at RHIC and at LHC.

The approach is also discussed for the high-multiplicity proton-proton and proton-nucleus high-energy colli-
sions.

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