Contribution ID : **148** Type : **Poster**

Forward-backward correlations between intensive observables

Thursday, 13 October 2016 15:15 (30)

We demonstrate that the investigations of the forward-backward correlations between intensive observables enable to obtain more clear signal about the initial stage of hadronic interaction, e.g. about the process of string fusion, compared to usual forward-backward multiplicity correlations. As an example the correlation between mean-event transverse momenta of charged particles in separated rapidity intervals is considered. We show that this type of correlation is robust against the volume fluctuations and the details of the centrality determination.

The calculations are fulfilled both in the simple model with string fusion by introducing a lattice in transverse plane and in the framework of dipole-based Monte Carlo string fusion model. The dependence of the correlation strength on the collision centrality is obtained for different initial energies. It is shown that at LHC energy the dependence reveals the decline of the correlation coefficient for most central collisions and Pb-Pb, reflecting the attenuation of color field fluctuations due to the string fusion at large string density. This non-monotonic behavior with centrality is achieved only in heavy ion collisions at LHC, while in Au-Au collisions at RHIC and p-Pb at LHC the string density is not enough to provide a decline of the correlation coefficient for most central collisions. We compare the results both with the ones obtained in alternative models and with the ones obtained by us using various MC generators.

We conclude that this type of correlation is promising for the observation of the signatures of string fusion and for detailed study of the initial stage of hadronic interaction in relativistic heavy ion collisions at LHC energy.

The work was supported by the RFBR grant 15-02-02097-a and the Saint-Petersburg State University grant 11.38.197.2014.

Primary author(s) : KOVALENKO, Vladimir (Saint Petersburg State University); VECHERNIN, Vladimir (Saint Petersburg State University)

Presenter(s) : KOVALENKO, Vladimir (Saint Petersburg State University)

Session Classification : Poster session - IV

Track Classification : Nuclear physics and particle physics