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Forward-backward multiplicity correlations in pp collisions at high energy in Monte Carlo model with string fusion

The magnitude of the correlations between multiplicities in two separated rapidity windows, proposed as a signature of the string fusion and percolation phenomena, is studied in the framework of the Monte Carlo string-parton model. The model is based on the picture of strings formation in elementary collisions of color dipoles. The hardness of the elementary collisions is defined by a transverse size of the interacting dipoles.

In the framework of the model the charged particles spectra with the account of string interaction in the transverse plane is calculated. The interaction of strings is realized in the accordance with the string fusion model prescriptions by the introduction of the lattice in the impact parameter plane and taking into account the finite rapidity length of strings. The parameters of the model were fixed with the experimental data on total inelastic cross section and charged multiplicity. The dependencies of the forward-backward correlation strength on the width and position of the pseudorapidity windows and on the transverse momentum range of observed particles were studied. The detailed modeling of the charged particles spectra allowed to make a direct comparison to the results of experimental measurements at different energies.

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