

## **Study of multiplicity and transverse momentum fluctuations in the Monte-Carlo model of interacting quark-gluon strings**

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In the search for the critical point of strongly interacting matter one of the key methods is the study of the event-by-event fluctuations of different event observables. One important aspect of this research is an accurate definition of the initial conditions event-wise. Namely, the influence of the trivial fluctuations, such as those of the system volume should be eliminated in the studied quantities or well-controlled in the experiment. From the phenomenological point of view, one can address this question in the two-stage string model of particle production, whose results can act as a baseline to estimate the non-critical background of fluctuations. In this work we develop and use Monte-Carlo model of interacting quark-gluon strings of the finite length in rapidity space to determine the influence of the string fusion on the final fluctuation measures [1]. On the other hand, the model results in comparison to the experimental data can guide us in the study of the particle production sources and their interactions.

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[1] Prokhorova, D.S., Kovalenko, V.N. Study of Forward-Backward Multiplicity Fluctuations and Correlations with Pseudorapidity. Phys. Part. Nuclei 51, 323–326 (2020).

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