

## Welcome to NICA days 2019 and IVth MPD Collaboration Meeting in Warsaw



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### String fusion effects at NICA energies

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The multiparticle production in the relativistic collisions of hadrons and nuclei is often considered in a two-stage approach. At the first stage, a certain number of quark-gluon strings is produced, and the final particles are produced by strings decay. The formation and fragmentation of strings is implemented in various Monte Carlo generators, such as PYTHIA, HIJING, FRITIOF, AMPT, UrQMD, etc. However, a number of new and precise measurements from the SPS, RHIC and LHC experiments shows that the many observed effects don't fit into the picture of the individual, non-interacting strings.

Among the observables sensitive to the collective effects are the multiplicity dependence of the transverse momentum, forward-backward correlations and strongly intensive measures, charge and particle ratio correlations and fluctuations, strangeness and charm production.

In this work, we studied the effect of the interaction between strings in pp and AA collisions using at NICA energy range. We applied a dipole-based Monte Carlo model [1, 2], in which the interaction between strings is implemented according to string fusion model [3, 4]. The model takes into account also the finiteness rapidity length of strings, allowing at NICA energies to probe different ranges of baryon density. For the particle species discrimination, the modified Schwinger mechanism is used [5], where the effective string tension, according to the string fusion prescription, depends on the string density. The results demonstrate that the inclusion of string fusion improves the agreement of the model predictions with experimental data. We discuss the possibilities of new measurements using MPD detector at NICA.

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