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Role of string collectivity and semihard process in multiplicity-dependent transverse momentum and the strangeness enhancement

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The multiplicity dependence of the mean transverse momentum as well as strangeness and multi-strangeness production is studied in the framework of two models: dipole-based Monte Carlo model with string fusion [1-2], and extended multi-pomeron exchange model [3-4]. The first model allows the unifying description of pp, pA and AA collisions [5]. The partonic interactions are described as collisions of dipoles. The hardness of the collision is determined by transverse size of the colliding dipoles. The production of the observed particles is implemented in the string mechanism, taking into account string fusion [6-7]. The second model [3-4] is based on Regge-Gribov approach. The model includes string collectivity, parametrized by one parameter, beta, which is determined by data on pt-multiplicity correlation at wide energy range.
For the particles species discrimination, both models use the modified Schwinger mechanism [8], where the effective string tension, according to the string fusion prescription, depends on the string density. We show that two effects contribute to the transverse momentum: the hardness of the partonic collision, and the modification of the string tension. Only second effect leads to the modification of strangeness and multi-strangeness production. Taking it into account allows one to describe the experimental data [9] at LHC energy.

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