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## Study of the influence of initial-state fluctuations on hydrodynamic simulations

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In this work, we focus on assessing the contribution of the initial-state fluctuations of heavy ion collision in the hydrodynamic simulations. We try to answer the question of whether the hydrodynamic simulation retains the same level of fluctuation in the final-state as for the initial stage. In another scenario, the hydrodynamic simulations the fluctuation drowns in the final distribution of expanding matter. For this purpose, we prepared sufficient relativistic hydrodynamic program to study A+A interaction which allows analyzing initial-state fluctuations in the bulk nuclear matter. For such an assumption, it is better to use high spatial resolution. Therefore, we applied the (3+1) dimensional Cartesian coordinate system and we implemented our program using parallel computing on graphics cards processors Graphics Processing Unit (GPU). Simulations were carried out with various levels of fluctuation in initial conditions using the averaging method of events coming from Glauber Monte Carlo and UrQMD models. Energy density distributions were analyzed and the contribution of fluctuations in initial conditions was assessed in the hydrodynamic simulation.

### Consider for promotion

Yes

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