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Simulation results on bulk properties and hydrodynamic behaviours of the high excited and dense nuclear matter in relativistic nuclear collisions at FAIR energies

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In this work, we present the simulation results obtained by the research group from Faculty of Physics, University of Bucharest, involved in CBM Collaboration, at FAIR-GSI Darmstadt. The simulations have been done using YaPT system, developed in own research center. The results reflect possible bulk properties of the high excited and dense nuclear matter formed in nucleus-nucleus collisions, as well as different hydrodynamic behaviours of the nuclear matter from participant region and possible influences of the spectator regions. Different hypotheses are tested, and analysis methods include global analysis.
The experimental results from experiments performed at JINR, RHIC-BNL, LHC-CERN, as well as simulated results for CBM-FAIR and MPD-NICA-JINR are used to discuss nuclear matter compressibility and viscosity and the possible dependencies on the collision geometry and collision energy. Possible consequences of the transition regime presence are discussed, related to the cumulative effect, mainly.

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