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## Investigations for transition regime apparition in nuclear matter through the study of cumulative particles production in relativistic nuclear collisions using the CBM experiment at FAIR-GSI

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The CBM (Compressed Baryonic Matter) Experiment is one of the major experiments at the future Facility for Antiproton and Ion Research (FAIR) from GSI Darmstadt (Germany). In this experiment will be studied nucleus-nucleus collisions at energies lower than those at RHIC-BNL (USA) and LHC CERN (Switzerland) colliders, at lower temperatures, but at baryonic densities estimated at the highest attended up to now. The main goal of this experiment - currently under construction - is the exploration of the phase diagram of nuclear matter, in the energy range from 2 A GeV up to 45 A GeV [1]. Therefore, one of the objectives of the collaboration is to provide highlights on the transition regime in the nuclear matter thus formed [2]. A possible way could be related to cumulative particles production [3,4].

Using YaPT system [5-7], simulations with field specific codes (UrQMD, AMPT, HIJING), as well as one's own code based on specific chaos theory assumptions [8,9], at energies between 2 A GeV and 25 A GeV, specific for SIS-100 accelerator, for Au -Au collisions, have been done.

The estimations of the cumulative numbers, as well as the models for complex parton systems formation - which allow production of particles with anomalous kinematics from nucleon-nucleon collision kinematics - can offer interesting information on nuclear matter, as well as on the formation of this phase in these collisions at SIS-100 available energies.

### On behalf of collaboration:

NONE

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