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## Simulations with YaPT system for nucleus-nucleus collisions FAIR-GSI energies

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Recently, an integrated on-line system for the study of the interactions in High Energy Physics, called YaPT, was developed at the calculation center of the Research Centre „Nuclear Matter in Extreme Conditions” [1]. Using this system, a systematic study of the Au-Au collisions at SIS-100 (FAIR-GSI) energies with a few simulation codes, as well as using a phenomenological geometric picture of the relativistic nuclear collisions [2,3] collisions was been done. Three types of charged particles were considered. The predictions of a few simulation codes (UrQMD, AMPT) were used for estimation in the mentioned model of the terms of the equation of state related to energy density, temperature and compressibility. The proton-proton collisions at similar energies have been used for comparisons. When possible, comparisons with existing experimental results at similar energies were included.

The Rankine-Hugoniot equation permits estimations of the compressibility coefficient, the estimations being between 100 MeV and 1000 MeV. The estimations for viscosity coefficient, according to the model, indicated a significant increase from proton-proton collision to nucleus-nucleus collisions at the same incident energy. A small increase of this coefficient with the increase of the beam energy can be observed, too. A short analysis of the nuclear matter jets formation [4] in nucleus-nucleus collisions at these energies is done. Difference among the simulation codes predictions were observed, too.

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### On behalf of collaboration:

CBM

**Author:** JIPA, A. (Faculty of Physics, University of Bucharest, Romania)

**Presenter:** JIPA, A. (Faculty of Physics, University of Bucharest, Romania)

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