SQM2022

Contribution ID: **229** Contribution code: **POS-BLK-15**   Type: **Poster**

Multi-Fluid Hydrodynamics for RHIC BES/FAIR/NICA, Remade

Tuesday 14 June 2022 17:19 (1 minute)

Fluid dynamical modelling of heavy-ion collisions at RHIC BES, as well as at future FAIR and NICA energies, has its own challenges as compared to classical top RHIC or LHC studies. One of them is due to the long inter-penetration phase of the incoming nuclei, which results in a complex geometry of the initial state. Conventional hydrodynamic models, where fluid phase starts at a fixed proper time τ_0, therefore miss a part of the compression stage of collision and may be therefore less sensitive to the EoS of the medium. Multi-fluid dynamics addresses the above challenge with a phenomenological albeit self-consistent way, where the incoming nuclei are modelled as droplets of cold nuclear fluid.

We present a multi-fluid dynamic approach 3FH-NG to simulate heavy-ion collisions at RHIC BES, reimplemented from scratch using 3+1 dimensional relativistic viscous hydro code vHLLE. We discuss the challenges in constructing the approach and present benchmark calculations for Au-Au collisions at different RHIC BES energies.

Present via

Online

Primary authors: TOMASIK, Boris (Univerzita Mateja Bela (SK));   Dr KARPENKO, Iurii (FNSPE CTU in Prague);   CIMERMAN, Jakub (Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University)

Presenter: Dr KARPENKO, Iurii (FNSPE CTU in Prague)

Session Classification: Poster

Track Classification: Bulk matter phenomena, QCD phase diagram, and Critical point