Contribution ID: **30** Type: **Oral talk**

Dynamic Picture of Relativistic Heavy-Ion Collisions

Wednesday, 17 January 2024 14:40 (20 minutes)

Collider experiments serve as an unique tool to create and study new forms of strongly interacting matter, such as quark-gluon plasma (QGP). This state of matter is believed to have existed in the microseconds after the Big Bang when temperatures and energy densities were extremely high. However, due to confinement under typical Earth conditions, elementary particles of quantum chromodynamics (QCD) exist only in colorless combinations within hadrons. Lattice QCD calculations show that at zero chemical potential, there is no phase transition between these two states of matter - QGP and hadron gas. However, in baryon-rich regions of the QCD phase diagram, a phase transition of finite order is expected to occur which ends with a critical point.

One of the primary goals of current and future experimental programs, including RHIC BES and CBM, is to search for the signal of the critical point in observables. Such studies demand a comparison with predictions of theoretical models. In this talk, I will present a recently developed integrated Hydro-Kinetic model tailored to describe the full dynamics of the system created in heavy-ion collisions at relatively low energies. Additionally, I will discuss an idea for searching for signals of the critical point through a comparison of model simulations and experimental data.

Primary authors: ADZHYMAMBETOV, Musfer (Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine); Prof. SINYUKOV, Yuri (Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine)

Presenter: ADZHYMAMBETOV, Musfer (Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine)

Session Classification: Afternoon Session 2

Track Classification: Physics of Nuclei and Elementary Particles