Contribution ID: **26** Type: **talks**

Integrated HydroKinetic Model at Relativistic Heavy Ion Collider Energies

Tuesday, January 21, 2025 2:30 PM (20 minutes)

One of the objectives of current and future collider experiments in the GeV range, such as the Beam Energy Scan program at the Relativistic Heavy Ion Collider (RHIC BES) and the Compressed Baryonic Matter experiment at the Facility for Antiproton and Ion Research (FAIR CBM), is to study the phase diagram of Quantum Chromodynamics. These experiments aim to detect signals of a phase transition from quark-gluon plasma to hadron-resonance gas in the observables. Recently, we developed an updated version of the integrated hydrokinetic model specifically tailored for GeV-range experiments. In my talk, I will present preliminary results from our simulations of heavy-ion collisions at RHIC BES energies, comparing two different equations of state—one incorporating a phase transition and the other assuming a crossover. Our findings indicate potential signals of a phase transition at the lowest energies of this experimental program.

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Session Classification: Session INVITED TALKS. “Ukraine for ESPP Update-2025”