Contribution ID: **425** Type: **Poster**

(3+1)D event-by-event pre-equilibrium dynamics in heavy-ion collisions

A major source of uncertainty in the study of heavy-ion collision originates from the early time dynamics which includes initial state and pre-equilibrium dynamics. Among these, pre-equilibrium dynamics link the initial particle production in classical field simulations to subsequent hydrodynamic evolution and a (3+1)D framework is necessary to achieve a complete description of the dynamics. The state-of-art framework, \kompost, provides a pre-equilibrium dynamics in transverse plane by using non-equilibrium Green's functions, calculated in QCD kinetic theory, to propagate the initial energy-momentum tensor to the hydrodynamic phase. In this work, we extend the \kompost\ to include non-boost-invariant response to initial condition which is essential to understand the longitudinal structure of heavy-ion collisions.

Category

Theory

Collaboration (if applicable)

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Session Classification: Poster session 1

Track Classification: Initial state of hadronic and electron-ion collisions & nuclear structure