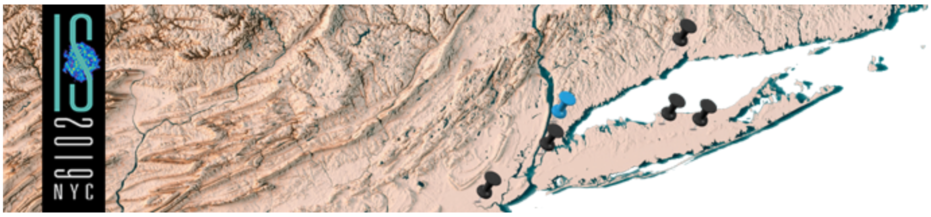

Contribution ID: **36**

Type: **Poster**

Non-perturbative aspects of hydrodynamization for the far-from-equilibrium Bjorken flow

Tuesday, 25 June 2019 16:14 (1 minute)

In relativistic kinetic theory, the one-particle distribution function is approximated by an asymptotic perturbative power series in Knudsen number which is divergent. For the Bjorken flow, we expand the distribution function in terms of its moments and study their nonlinear evolution equations. The resulting coupled dynamical system can be solved for each moment consistently using a multi-parameter transseries which makes the constitutive relations inherit the same structure. A new non-perturbative dynamical renormalization scheme is born out of this formalism that goes beyond the linear response theory. As a result, the transport coefficients get dynamically renormalized at every order in the time-dependent perturbative expansion by receiving non-perturbative corrections present in the transseries. The renormalized transport coefficients feature a transition to their equilibrium fixed point, which is a neat diagnostics of transient non-Newtonian behavior. Furthermore, we show that the first dissipative correction to the distribution function is not only determined by the known effective shear viscous term but also a new high energy non-hydrodynamic mode. Finally, we briefly discuss some possible phenomenological applications of the proposed non-hydrodynamic transport theory.

Primary author: Mr SHI, Haosheng (North Carolina State University)

Co-authors: Dr MARTINEZ , Mauricio (North Carolina State University); Mr BEHTASH, Alireza (North Carolina State University); Dr KAMATA, Syo (North Carolina State University)

Presenter: Mr SHI, Haosheng (North Carolina State University)

Session Classification: Posters

Track Classification: Approach to equilibrium (weak & strong coupling)