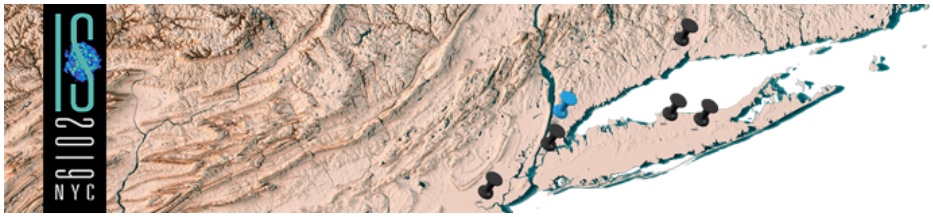

Contribution ID: **64** Type: **Poster**

Toward a full mapping of the hydrodynamic response to initial conditions

Tuesday, June 25, 2019 4:07 PM (1 minute)

Anisotropic flow is well understood as a hydrodynamic response to spatial anisotropies in the system density at early times. This response function can be written explicitly as a systematic expansion in terms of length scales, such that the leading contribution is the familiar eccentricity ε_n that represents global structure. These relations have allowed for direct connections to be made between the initial state and experimental data, and constraints to be put on the initial stages.

However, the initial conditions for hydrodynamics consist of an entire tensor $T^{\mu\nu}$ (as well as conserved currents). Although they are thought to be less important than energy density, other components such as momentum density and shear tensor can also contribute, and their affects should have increasing importance for smaller collision systems. It is therefore interesting to extend the response framework in order to probe these aspects of the initial stages and their affect on flow observables.

I will present a framework for including the effects of the full hydrodynamic initial conditions, along with numerical tests from full hydrodynamic simulations to demonstrate its efficacy. In addition, I will present an extension to include rapidity dependence.

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Session Classification: Posters

Track Classification: Initial conditions for hydrodynamics & transport coefficients