Contribution ID: **200** Type: **oral**

Inferring properties of quark-gluon plasma

Wednesday 13 January 2021 16:10 (20 minutes)

Using Bayesian inference, we present state-of-the-art quantifications of initial conditions as well as pre-hydrodynamic and hydrodynamic transport properties of quark-gluon plasma based on hadronic observables from both the Relativistic Heavy Ion Collider and the Large Hadron Collider [1,2]. Estimations of initial state properties are performed by marginalizing over the theoretical uncertainties in the subsequent dynamical evolution. We quantify the effect of theoretical modeling uncertainty at late stages of the collision which can influence the estimation of initial condition properties. We also quantify the experimental evidence for the evolution with collision energy of model parameters describing the initial condition's transverse profile [2].

This work is supported by the NSF through the JETSCAPE Collaboration, grants ACI-1550223 and ACI-1550300.

[1] D. Everett et al., arxiv:2010.03928

[2] D. Everett et al., in preparation

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Session Classification: CD

Track Classification: Collective dynamics from small to large systems