Contribution ID: **789** Type: **Oral**

Equilibrium and Dynamical Properties of Hot and Dense Quark-Gluon matter from Holographic Black Holes

Wednesday, September 6, 2023 5:30 PM (20 minutes)

By using the gravity/gauge correspondence, we employ an Einstein-Maxwell-dilaton model to compute the equilibrium and out-of-equilibrium properties of a hot and baryon-rich strongly coupled quark-gluon plasma. The family of 5-dimensional holographic black holes, constrained to mimic the lattice QCD equation of state at zero density, is used to investigate the temperature and baryon chemical potential dependence of the equation of state [1]. Moreover, we obtain the baryon charge transport coefficients, the bulk and shear viscosities as well as the drag force and Langevin diffusion coefficients associated with heavy quark jet propagation and the jet quenching parameter of light quarks in the baryon dense plasma, with a particular focus on the behavior of these observables on top of the critical endpoint and the line of first-order phase transitions predicted by the model [2]. We also show how the time-dependent holographic jet quenching parameter, obtained from Bjorken flow, may impact jet energy loss modeling/phenomenology.

[1] Grefa, J., Noronha, J., Noronha-Hostler, J., Portillo, I., Ratti, C., Rougemont, R. PhysRevD.104.034002
[2] Grefa, J.,Hippert, M., Noronha, J., Noronha-Hostler, J., Portillo, I., Ratti, C., Rougemont, R. PhysRevD.106.034024

Category

Theory

Collaboration (if applicable)

Authors: GREFA, Joaquin; HIPPERT TEIXEIRA, Mauricio (University of Illinois at Urbana-Champaign); KUNNAWALKAM ELAYAVALLI, Raghav (Vanderbilt University); RATTI, Claudia; Prof. NORONHA, Jorge (University of Illinois at Urbana-Champaign); Prof. NORONHA-HOSTLER, Jacquelyn (University of Illinois Urbana Champaign); ROUGEMONT, Romulo

Presenter: GREFA, Joaquin

Session Classification: QCD at finite T and density

Track Classification: QCD at finite density and temperature