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

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By using 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, which are 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]. We also obtained 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 end point and the line of first order phase transition predicted by the model.
[1] Grefa, J., Noronha, J., Noronha-Hostler, J., Portillo, I., Ratti, C., Rougemont, R. 10.1103/PhysRevD.104.034002

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