

# EoSization in non-conformal holographic shockwave collisions

Understanding the properties of extreme phases of nuclear matter created in relativistic heavy ion collisions is one of the major challenges in theoretical physics. A question that is central to the understanding of the very early stages of such collisions near the cross-over temperature of QCD is: How do non-conformal properties affect the resulting plasma? In this presentation we address this problem in a strongly coupled setup via the gauge/gravity duality by utilizing numerical relativity techniques to describe black hole formation in the gravity side. This allows to access real-time dependent non-equilibrium dynamical quantities like pressure gradients and bulk viscosity. We observe that the equation of state is not obeyed out of equilibrium. We do a systematic explore when the equation of state is applicable again - and will coin this time-scale the EoSization time. The scan in temperature with varying non-conformality shows that EoSization before hydrodynamization can actually happen with only a slight amount of bulk viscosity.

## Preferred Track

Initial State Physics and Approach to Equilibrium

## Collaboration

Not applicable

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**Session Classification:** Poster Session