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From high-energy collisions to hydrodynamics in strongly coupled non-conformal theories

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We use gauge/string duality to model a heavy ion collision in a non-conformal gauge theory. We focus on new physics (as compared to the conformal case) such as the non-trivial equation of state and the presence of a non-zero bulk viscosity. We study the effect of this non-conformality on the hydrodynamization of the system.

The gravity model consists of solving numerically the collision of shock-waves with a non-trivial scalar field. We adjust the scalar field potential such that the bulk space-time coincides with AdS in the infrared and in the ultraviolet with different AdS radius. This introduces a non-trivial running of the dual gauge theory coupling constant which we choose at our convenience.

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