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From full stopping to transparency in a holographic model of heavy ion collisions

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Numerically simulating colliding planar gravitational shock waves in AdS gives rise to rich and interesting dynamics. Wide shocks come to a full stop and expand hydrodynamically, as was found in [1]. High energy collisions (corresponding to thin shocks) pass through each other, after which a plasma forms in the middle, quite akin to heavy-ion collisions. After an initial stage of far-from-equilibrium evolution the pressures become positive and are governed by hydrodynamics within a proper time 1/T, with T the local temperature at that time.

In the end I will comment on recent results where we were able to perform a somewhat similar simulation for central collisions and matched this with recent hydrodynamic and hadronic cascade codes, which enables an interesting comparison with transverse spectra for light particles.

[1] P.M. Chesler, L.G. Yaffe, (PRL 2011)
[2] J. Casalderrey-Solana, M.P. Heller, D. Mateos, W. van der Schee, 1305.4919
[3] W. van der Schee, P. Romatschke, S. Pratt (to appear)

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