

Abstract Submitted
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Early Flow from Matching Pre-Equilibrium Dynamics to Viscous Hydrodynamics¹ DANIEL WHITE, ULRICH HEINZ, Ohio State University —

In the earliest stage of relativistic heavy-ion collisions, pre-equilibrium dynamics can generate collective flow before hydrodynamics becomes applicable. Most applications of hydrodynamics to heavy ion collisions use parametrized initial conditions, but this begs the question whether the parameters used are a realistic reflection of the (largely unknown) pre-equilibrium dynamics. We present an algorithm that allows to match any pre-equilibrium model for the energy-momentum tensor to relativistic viscous fluid dynamics and thus allows to study the effect of different pre-equilibrium scenarios on late-time observables. We explain how our algorithm differs from what was used in [1,2], and that this has important consequences for the starting values of the flow profile and shear stress tensor of the subsequent hydrodynamic evolution. By examining three specific models of early dynamics, we also find that the initial conditions for the viscous hydrodynamic evolution are sensitive to the specific mechanisms governing the pre equilibrium stage.

[1] Vredevoogd et al, Phys. Rev. C 79 (2009) 044915.

[2] Sinyukov et al, Acta Phys. Pol. B 40 (2009) 1109.

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