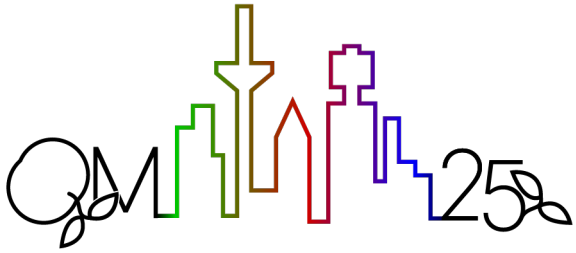

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Validating the Pre-equilibrium Evolution of Heavy Ion Collisions in KøMPøST

We explicitly verify the validity of the open source package KøMPøST˜[1] for modelling the early time dynamics of the QGP in heavy ion collisions. Since KøMPøST is based on the dynamics of a kinetic theory description to implement a macroscopic evolution of the energy-momentum tensor, we assess its applicability by comparing KøMPøST results to fully microscopic calculations in kinetic theory in the relaxation time approximation (RTA)˜[2]. We find that KøMPøST accurately describes the full 2+1D evolution of the energy-momentum tensor in the pre-equilibrium stage with the exception of the components related to elliptic flow. We investigate possible error sources and attempt to modify KøMPøST in order to bring it into agreement with the full kinetic theory solution.
[1] KoMPoST, Phys.Rev.C 99 (2019) 3, 034910
[2] Ambrus, Werthmann, Schlichting, "Opacity dependence of transverse flow, preequilibrium, and applicability of hydrodynamics in heavy-ion collisions" Phys.Rev.D 107 (2023) 9, 094013

Category

Theory

Collaboration (if applicable)

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