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Linearized kinetic description of non-equilibrium dynamics in pp and pA collisions

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Momentum anisotropies caused by collective flow phenomena in HICs have been known to convey a rich amount of information on the collision geometry. In pp and pA collisions the system size is too small for the hydrodynamic description of these anisotropies to be applicable. Instead, a microscopic description of the non-equilibrium dynamics has to be employed. Indeed, kinetic theory simulations have reproduced the anisotropies, but detailed insight into the mechanisms of their emergence is obscured by the algorithmical implementation. This prompts attempts to complement them with analytical treatments, which is highly nontrivial. We simplify the problem by applying an appropriate expansion scheme of the Boltzmann equation and linearizing it in small anisotropic perturbations on top of an isotropic Gaussian background. To estimate the range of validity of these appoximations, we compare with numerical treatments of the same problem.

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