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Anisotropic Hydrodynamics with a Realistic Scalar Scattering Kernel DEKRAYAT ALMAALOL, MICHEAL STRICKLAND, Kent State Univ - Kent — Prior studies of non-equilibrium dynamics using anisotropic hydrodynamics have all relied on the use of the relativistic Anderson-Witting scattering kernel. In this paper, we make the first study of the impact of using a more realistic scalar scattering kernel in anisotropic hydrodynamics. For this purpose, we consider a conformal transversally homogenous system undergoing boost-invariant Bjorken expansion and take the collisional kernel to be given by the leading order $2 \leftrightarrow 2$ scattering kernel in scalar $\lambda\phi^4$. We consider both classical and quantum statistics in order to assess the impact of Bose enhancement on the dynamics. We also determine the anisotropic non-equilibrium attractor of a system subject to this collisional kernel in the context of anisotropic hydrodynamics. We find that, when the shear viscosity to entropy density ratio (η/s) obtained using the Anderson-Witting and scalar collisional kernels is matched, the system develops a higher degree of early-time momentum-space anisotropy given the same value of η/s. Additionally, we find that taking into account Bose enhancement further increases early-time momentum-space anisotropy.

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