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# Far-from-equilibrium slow modes and momentum anisotropy in expanding plasma

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We discuss the evolution of initial momentum anisotropy in the early-stage quark-gluon plasma. We use kinetic theory to study the far-from-equilibrium evolution of an expanding plasma with an anisotropic momentum-space distribution. We identify slow and fast degrees of freedom in the far-from-equilibrium plasma from the evolution of moments of this distribution. At late times, the slow modes correspond to hydrodynamic degrees of freedom and are naturally gapped from the fast modes by the inverse of the relaxation time. At early times, however, there are an infinite number of slow modes. From the evolution of the slow modes we generalize the paradigm of the far-from-equilibrium attractor to vector and tensor components of the energy-momentum tensor, and even to higher moments of the distribution function that are not part of the hydrodynamic evolution. We predict that initial-state momentum anisotropy decays slowly in the far-from-equilibrium phase and may persist until the relaxation time.

## Category

Theory

## Collaboration (if applicable)

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