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Stochastic hydrodynamics and long time tails under the effect of multiplicative noise

Summary

We investigate hydrodynamic fluctuations on correlation functions in a conserved U(1) charge fluid beyond the white noise approximation. We introduce two additional nonlinear mode coupling constants to study the effect of multiplicative noise due to the position dependent transport coefficients. The behaviors of two vertexes are constrained by the disappearance while averaging the noise term due to the conservation law and the fluctuation-dissipation theorem in the near equilibrium system. We generalize the kinetic equations for the two-point functions of pressure, momentum and heat energy densities within the context of the path integral formalism. We reproduce the long time tails which have obtained from other approaches.

Primary author: Dr CHAO, Jingyi (IMP, CAS)

Presenter: Dr CHAO, Jingyi (IMP, CAS)