The Onset of Intermittency in Stochastic Burgers Hydrodynamics

Trabalho #04

> Apresentação Oral
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Stochastic Burgers hydrodynamics is a one-dimensional model which displays intermittent statistics and a complex dynamics of shocks. We study the onset of intermittency in this system, as characterized by the statistical behavior of negative velocity gradient fluctuations. The right tails of the velocity gradient correspond to smooth ramps, and sub-Gaussian statistics, whereas the left tails represent sudden shocks, with large fluctuations. The analysis is based on the response functional formalism, where specific velocity configurations - the viscous instantons - play a dominant role in modeling the left tails of the velocity gradient probability distribution functions. We find that the field theoretical approach becomes meaningful in practice only if the effects of fluctuations around instantons are taken into account.

Comentários adicionais

> A abordagem de instantons tem sido usada para entender as flutuações intermitentes de fluidos, e esse trabalho discute a importante contribuição das correções perturbativas aos instantons nessa descrição. Este trabalho foi publicado em Março deste ano em: https://doi.org/10.1103/PhysRevE.99.033104.