

Turbulence in a Stochastic Forced Burgers Equation

Zhao DONG, *Institute of Applied Mathematics, The Chinese Academy of Sciences, PRC*, E-mail:

dzhao@amt.ac.cn

Zuo-Huan Zheng, *Institute of Applied Mathematics, The Chinese Academy of Sciences, PRC*

Abstract: A stochastic forced Burgers equation in arbitrary dimension noncompact space and Lagrangian system related to it are considered. The existence of one-sided minimizers and two-sided minimizers for stochastic Lagrangian system are given. The property of minimizers for stochastic Lagrangian system is discussed. It is show that the two-sided minimizer is not unique and there exists at least countable the shock line. We also show that with probability one there exists a unique (up to a constant) ‘viscosity’ solution of the random Hamilton-Jacobi equation.