

1107-35-296

Susan Friedlander, Nathan Glatt-Holtz and Vlad Vicol* (vvicol@math.princeton.edu),
Fine Hall, Washington Road, Princeton, NJ 08544. *Inviscid limits for a stochastically forced shell
model of turbulent flow.*

We establish the anomalous mean dissipation rate of energy in the inviscid limit for a stochastic shell model of turbulent fluid flow. The proof relies on viscosity independent bounds for stationary solutions and on establishing ergodic and mixing properties for the viscous model. The shell model is subject to a degenerate stochastic forcing in the sense that noise acts directly only through one wavenumber. We show that it is hypo-elliptic (in the sense of Hormander) and use this property to prove a gradient bound on the Markov semigroup. (Received January 17, 2015)