

1079-60-68

Sivaguru S Sritharan* (sssriitha@nps.edu), Naval Postgraduate School, Monterey, CA 93943.
THE STOCHASTIC NAVIER-STOKES SEMIMARTINGALE: SOLVABILITY, CONTROLS & LARGE DEVIATIONS.

In this talk we will consider incompressible and compressible fluid dynamics subject to jump noise modeled by stochastic Navier-Stokes equations with Levy noise forcing. The mathematical problem is that of an infinite dimensional cadlag valued semimartingale whose solvability can be characterized through pathwise strong solutions and martingale solutions for the probability law. Existence of martingale solutions can be proven by generalizing M. Metivier's techniques of semimartingales on Lusin spaces and tightness of measures. We will also describe control theoretic aspects of the model as well as large deviation theorems. Large deviation theory for the small noise limit as well as long time limit and Donskar-Varadhan theory are of interest in this context and we will describe what is accomplished and outline open problems. (Received December 15, 2011)