

Statistics and Data Science Seminar

Statistical Inference for Stochastic PDEs

Igor Cialenco (IIT)

Abstract: We consider a parameter estimation problem for finding the drift coefficient for a large class of parabolic Stochastic PDEs driven by additive or multiplicative noise. In the first part of the talk, we derive several different classes of estimators based on the first N Fourier modes of a sample path observed continuously on a finite time interval. In the second part of the talk we will investigate the simple hypothesis testing problem for the drift coefficient for stochastic fractional heat equation driven by additive noise. We introduce the notion of asymptotically the most powerful test, and find explicit forms of such tests in two asymptotic regimes: large time asymptotics, and increasing number of Fourier modes. Also, we will discuss how to estimate and control the Type-I and Type-II errors. Finally, we illustrate the theoretical results by some numerical examples/simulations.

Wednesday, February 17 at 4:00 PM in SEO 636