1099-60-363 **Igor Cialenco** (igor@math.iit.edu) and **Liaosha Xu*** (lxu29@hawk.iit.edu), 2800 S Lowe Ave, Side 2R, Chicago, IL 60616. *Hypothesis Testing for Stochastic PDEs Driven by Additive Noise.*

In this talk, we discuss the simple hypothesis testing problem for the drift/viscosity coefficient for stochastic fractional heat equation driven by additive space-time white noise colored in space. We assume that the first N Fourier modes of the solution are observed continuously over time interval $[0, T]$. We introduce the notion of asymptotically the most powerful test, and find explicit forms of such test in two asymptotic regimes: large time asymptotics $T \to \infty$, and increasing number of Fourier modes $N \to \infty$. The proposed statistics are derived based on Maximum Likelihood Ratio. Over the course of proving the main results, we obtain a series of technical results that are also of independent interest. In particular, we find the cumulant generating function of the log-likelihood ratio, we obtain some sharp large deviation type results for both $T \to \infty$ and $N \to \infty$, and find some useful asymptotics for the power of the likelihood ratio type tests. Besides the theoretical work, we also present some simulation results to illustrate that the idea is sensible and practical. Finally, we show some prospective results for discrete sampling. (Received February 11, 2014)