1093-60-143 **Igor Cialenco** (igor@math.iit.edu), Engineering 1, Room 125B, 10 W. 32nd Street, Chicago, IL 60616, 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 paper, we study 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. (Received August 09, 2013)