

1150-60-264

**Ziteng Cheng, Igor Cialenco and Ruoting Gong\*** (rgong2@iit.edu). *Bayesian Estimations for Diagonalizable Bilinear SPDEs.*

In this talk, we consider the parameter estimation problem, using the Bayesian methodology, for the drift coefficient of some linear (parabolic) SPDEs driven by a multiplicative noise of special structure. We take the spectral approach by assuming that one path of the first  $N$  Fourier modes of the solution is continuously observed over a finite time interval. First, we show that the model is regular and fits into classical local asymptotic normality framework, and thus the MLE and the Bayesian estimators are weakly consistent, asymptotically normal, efficient, and asymptotically equivalent in the class of loss functions with polynomial growth. Secondly, and mainly, we prove a Bernstein-Von Mises type result, that strengthens the existing results in the literature, and that also allows to investigate the Bayesian type estimators with respect to a larger class of priors and loss functions than that covered by classical asymptotic theory. In particular, we prove strong consistency and asymptotic normality of Bayesian estimators in the class of loss functions of at most exponential growth. Finally, we present some numerical examples that illustrate the obtained theoretical results. (Received July 10, 2019)