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Editorial
Long-Memory Processes and Applications

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Long-memory processes have been widely used to describe natural and social phenomena which display long-memory characters. Some important long-memory processes include fractional Brownian motions, bifractional Brownian motions, and some other Gaussian processes. Since they are neither Markov processes nor semimartingales, the beautiful theories of stochastic analysis developed for semimartingale theory or for Markov processes cannot be applied. In the last decades, there has been a large amount of works dedicated to the analysis and application of long-memory processes and the number of research in this and relevant areas continues to grow.

This special issue contains some recent work on this and relevant areas. It consists of 25 papers and covers a wide range of topics, including fractional Brownian motion, subfractional Brownian motions, and fractional Brownian fields. It also includes some related topics such as nonlinear expectation and G-Brownian motion.

The first group of papers focuses on fractional Brownian motions and fields. One paper establishes the existence and uniqueness of the global mild solution for stochastic partial differential equation driven by fractional noise and a pure jump Lévy space-time white noise. Another paper considers the problem of pricing equity indexed annuity in fractional Brownian environment. One of the papers deals with the stochastic stability for a hybrid jump-diffusion model by the supplementary variable technique. Another paper studies the stochastic wave equation when the point sources are placed under the influence of fractional Brownian field. The focus is on the identification of the total number of the point sources and the estimation of the location for each point source. One paper constructs ordinary least squares estimators of variogram parameters in long-memory stochastic volatility assuming the discrete observations. The consistency and the asymptotic normality are given. Another paper establishes a relationship between the Lipschitz continuous functions and polar functions, including fractional Brownian motion and the Brownian sheet and many others. The Hausdorff and packing dimensions of the times set for a nonpolar function are obtained. Another paper provides stochastic stability criterions for the stochastic differential equations driven by fractional Brownian motions. One of the papers combines the autocorrelation approach and the maximum likelihood approach to estimate the Hurst parameter in the fractional Brownian motion when the Hurst index is greater than one half. Another paper extends laws of large numbers under upper probability to sequences of stochastic processes generated by linear interpolation. This extension characterizes the relation between sequences of stochastic processes and subsets of continuous function space in the framework of upper probability. Limit results for sequences of functional random variables and some useful inequalities are also obtained as applications. Another paper studies the asymptotic behavior of some functionals of two independent subfractional Brownian motions with different indices. One paper considers a parameter estimation problem in an α-fractional bridge model. Another paper obtains an averaging principle for a class of stochastic differential delay equations driven by fractional Brownian motion with Hurst parameter greater than 1/2. Another paper deals with the existence and