

1154-65-584

Xiaofan Li* (lix@iit.edu), 10 W 32nd St, RE220, Chicago, IL 60616. *Numerical simulations of macroscopic quantities for stochastic differential equations with α -stable processes.*

The mean first exit time, escape probability and transitional probability density are utilized to quantify dynamical behaviors of stochastic differential equations with non-Gaussian, α -stable type Lévy motions. Taking advantage of the Toeplitz matrix structure of the time-space discretization, a fast and accurate numerical algorithm is proposed to simulate the nonlocal Fokker-Planck equations on either a bounded or infinite domain. Under a specified condition, the scheme is shown to satisfy a discrete maximum principle and to be convergent. (Received September 07, 2019)