1108-60-39 **Jinghai Shao*** (`shaojh@bnu.edu.cn`). *Stability and recurrence of regime-switching diffusion processes.*

In this talk, we introduce some criteria on the stability of regime-switching diffusion processes. The regime-switching diffusion processes can be looked on as diffusion processes in a random environment characterized by a continuous time Markov chain. These processes can provide us more practical models and have been used in biology and mathematical finance, etc. Both the state-independent and state-dependent regime-switching diffusion processes with switching in a finite state space and an infinite countable state space are studied in this work. We provide two methods to deal with switching processes in an infinite countable state space. One is a finite partition method based on the nonsingular M-matrix theory. Another is an application of principal eigenvalue of a bilinear form. Our methods can deal with both linear and nonlinear regime-switching diffusion processes. (Received December 04, 2014)