

数学与系统科学研究院
计算数学所博士后定期学术报告

报告人: **Dr. Yulan Lu**

(*Institute of Computational Mathematics and Scientific/Engineering Computing, CAS*)

报告题目:

**Ergodicity of backward
Euler-Maruyama method for
stochastic differential equations with
piecewise continuous arguments**

报告时间: **2018 年 11 月 21 日 (周三)**

下午 16:00-17:00

报告地点: **科技综合楼三层**

311 报告厅

Abstract:

Stochastic differential equations (SDEs) with piecewise continuous arguments (PCAs) arise in an attempt to extend the theory of functional differential equations (FDEs) with continuous arguments to differential equations with discontinuous arguments. These equations are widely applied in control theory and neural networks. In this talk, we consider the ergodicity of both SDEs with PCAs and the numerical solutions generated by the backward Euler-Maruyama (BEM) method. Since the solutions of SDEs with PCAs are not Markov, we consider the solutions of SDEs with PCAs at integer times, which are proved to be a Markov chain. Also obtained are the existence and uniqueness of the invariant measure for this Markov chain under suitable conditions, which means the ergodicity of this Markov chain. Moreover, the existence and uniqueness of the numerical invariant measure of the BEM method for SDEs with PCAs is obtained, which implies that the BEM preserves the ergodicity of the underlying Markov chain. Furthermore, it is revealed that the numerical invariant measure converges to the underlying invariant measure.

欢迎大家参加！