数学与系统科学研究院

计算数学所学术报告

报告人： **Prof. Michael Mascagni**

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报告题目：

Monte Carlo Methods for the Telegrapher's Equation (Based on Mark Kac's Probabilistic Representation)

邀请人： 卢本卓 研究员

报告时间：2015 年 12 月 15 日（周二）

下午 **16:00~17:00**

报告地点： 科技综合楼三层

301 小报告厅

Abstract：

Monte Carlo methods for PDEs are mainly restricted to elliptic and parabolic equations using probabilistic representations based on the Feynman-Kac formulas. However, Mark Kac came up with an ingenious probabilistic representation for the solution to the Telegrapher's equation. The Telegrapher's equation is a transitional equation in the sense that one limit yields the heat equation (parabolic), and a different limit yields the wave equation (hyperbolic). We show how to compute numerical solutions to the Telegrapher's equation using an algorithm based on Kac's representation. We show that this provides a finite variance Monte Carlo estimator, and that the technique seems to work in arbitrary dimensions. This provides the first Monte Carlo methods we are aware of for hyperbolic PDEs.

This is joint work with Mr. Hedi Hadiji from the Information Technology Laboratory at NIST and Cambridge University, UK.

欢迎大家参加！