

数学与系统科学研究院

计算数学所学术报告

报告人: **Dr. Fei Lu**

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报告题目:

**Nonparametric inference of  
interaction laws in particles/agent  
systems**

邀请人: 洪佳林 研究员

报告时间: 2019 年 7 月 11 日 (周四)

下午 16:00-17:00

报告地点: 科技综合楼三层

311 报告厅

## **Abstract:**

**Self-interacting systems of particles/agents arise in many areas of science, such as particle systems in physics, flocking and swarming models in biology, and opinion dynamics in social science. An interesting question is to learn the laws of interaction between the particles/agents from data consisting of trajectories. In the case of distance-based interaction laws, we present efficient regression algorithms to estimate the interaction kernels, and we develop a nonparametric statistical learning theory addressing identifiability, consistency and optimal rate of convergence of the estimators. In particular, we use the theory to guide the design of the regression algorithms as well as statistical methods for model selection. An open question about a coercivity condition for identifiability and an ongoing work related to data-based eigenfunction problem will be discussed. (Joint work with Mauro Maggioni, Sui Tang and Ming Zhong).**

**欢迎大家参加！**