

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Renming Song**

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报告题目:

**Weak and strong well-posedness of  
critical and supercritical SDEs with  
singular coefficients**

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报告时间: 2018 年 8 月 29 日 (周三)

下午 16:00-17:00

报告地点: 数学院南楼二层

222 房间

## Abstract:

Consider the following time-dependent stable-like operator with drift

$$\mathscr{L}_t \varphi(x) = \int_{\mathbb{R}^d} \left[ \varphi(x+z) - \varphi(x) - z^{(\alpha)} \cdot \nabla \varphi(x) \right] \sigma(t, x, z) \nu_\alpha(\mathrm{d}z) + b(t, x) \cdot \nabla \varphi(x),$$

where  $d \geq 1$ ,  $\nu_\alpha$  is an  $\alpha$ -stable type Lévy measure with  $\alpha \in (0, 1]$  and  $z^{(\alpha)} = 1_{\{\alpha=1\}} 1_{\{|z| \leq 1\}} z$ ,  $\sigma$  is a real-valued Borel function on  $\mathbb{R}_+ \times \mathbb{R}^d \times \mathbb{R}^d$  and  $b$  is an  $\mathbb{R}^d$ -valued Borel function on  $\mathbb{R}_+ \times \mathbb{R}^d$ . By using the Littlewood-Paley theory, we establish the well-posedness for the martingale problem associated with  $\mathscr{L}_t$  under the sharp balance condition  $\alpha + \beta \geq 1$ , where  $\beta$  is the Hölder index of  $b$  with respect to  $x$ . Moreover, we also study a class of stochastic differential equations driven by Markov processes with generators of the form  $\mathscr{L}_t$ . We prove the pathwise uniqueness of strong solutions for such equations when the coefficients are in certain Besov spaces. This talk is based on a joint paper with Longjie Xie of Jiangsu Normal University.

欢迎大家参加!