Publication List

Lorick Huang

December 2, 2016

Febuary 2014 — **Density estimates for some degenerate Stable-driven SDEs**

Abstract: We consider a stable driven degenerate stochastic differential equation, whose coefficients satisfy a kind of weak Hörmander condition. Under mild smoothness assumptions we prove the uniqueness of the martingale problem for the associated generator under some dimension constraints. Also, when the driving noise is scalar and tempered, we establish density bounds reflecting the multi-scale behavior of the process.
Authors: Lorick HUANG, Stéphane MENOZZI

November 2015 — **Richardson Romberg extrapolation for Stochastic algorithm**

Abstract: We obtain a development of the implicit weak discretization error for stochastic approximation algorithm studied in [Frikha2013]. This allows us to develop a Richardson-Romberg extrapolation method for inverse problems. We also study some extensions of results obtained in [Frikha2013]. We also propose several applications.
Authors: Noufel FRIKHA, Lorick HUANG

Submitted — **Density Estimates for SDEs Driven by Tempered Stable Processes**

arXiv

Abstract: We study a class of stochastic differential equations driven by a possibly tempered Lévy process, under mild conditions on the coefficients. We prove the well-posedness of the associated martingale problem as well as the existence of the density of the solution. Two sided heat kernel estimates are given as well. Our approach is based on the Parametrix series expansion
Author: Lorick HUANG

Submitted — **Density stability for some Lévy-driven Stochastic Differential Equation**

arXiv

Abstract: We consider a Stochastic Differential Equation driven by a Lévy process whose Lévy measure satisfy a stable domination. We study how the perturbation of the coefficients reflects on the density of the solution. We quantify the proximity of the densities in term of the proximity of the coefficients. This extend to the stable case the works of Konakov Kozhina and Menozzi, where the noise input is Gaussian.
Author: Lorick HUANG

Submitted — **L^p Estimates For Degenerate Non-Local Kolmogorov Operators**

arXiv

Abstract: Let $z = (x,y) \in R^d \times R^{N-d}$, with $1 \leq d < N$. We prove a priori estimates of the following type :

$$\|\Delta_x^{\frac{\alpha}{2}} v\|_{L^p(R^N)} \leq c_p \left(\left\| L_x v + \sum_{i,j=1}^{N} a_{ij} z_i \partial_{z_j} v \right\|_{L^p(R^N)} + \|v\|_{L^p(R^N)} \right), \ 1 < p < \infty,$$

for $v \in C_0^\infty(R^N)$, where L_x is a non-local operator comparable with the R^d-fractional Laplacian $\Delta_x^{\frac{\alpha}{2}}$ in terms of symbols. In particular, it could be $\Delta_x^{\frac{\alpha}{2}}$ or $\sum_{i=1}^{d} \partial_{x_i}^{\frac{\alpha}{2}}$. The linear drift term $\sum_{i,j=1}^{N} a_{ij} z_i \partial_{z_j}$ verifies a weak type Hörmander condition with invariance by suitable dilations. This is, up to our best knowledge, one of the first results on L^p estimates for degenerate non-local operators under Hörmander type conditions.
Author: Lorick HUANG, Stéphane MENOZZI, Enrico PRIOLA