

LORICK HUANG, Ph.D.

PERSONAL INFORMATIONS

Born in Tahiti, October 18th 1987

email lorick.huang@gmail.com

Ph.D. Defended July 3rd, 2015, Mention: *très honorable*

website <http://www.proba.jussieu.fr/dw/doku.php?id=users:huang:index>

Phone: (M) +33 06 27 52 43 85

WORK EXPERIENCE

2016–present Visiting Assistant Professor
Post Doc Michigan State University
United States

2015–2016 Research Fellow in Higher School of Economics
Post Doc International Laboratory of Stochastic Analysis and its Applications
Moscow

2014–2015 Attaché Temporaire d’Enseignement et de Recherche
ATER Université Paris Diderot

2011–2014 PhD Student, Teacher Assistant
Doctorant contractuel Université Paris Diderot
Bourse d’école doctorale

EDUCATION

2011–2015 Université Pierre et Marie Curie, paris 6
Doctorate *Mathématiques appliquées, mention très honorable*
Thesis: *Stable-driven SDEs: a Parametrix Approach to Heat Kernel Estimates with an Application to Stochastic Algorithms*
Advisor: Prof. Stéphane MENOZZI

2010–2011 Université Pierre et Marie Curie, paris 6
Master *Probabilités et Modèles Aléatoires, Note: 14/20 (mention bien)*
Thesis: *Estimés de densité de solutions d’EDS dirigées par des processus stables*
Advisor: Prof. Stéphane MENOZZI

2009–2010 Université Joseph Fourier
Agrégation de Mathématiques *Préparation Agrégation de Mathématiques*
Passed: 131th

2005–2008 Université Joseph Fourier
License License de Mathématiques
Magistère thesis: *Le Modèle d’Ising et ses premières propriétés*
Advisor: Prof. Didier PIOT
Licence thesis: *Le probleme de Keakeya et les ensembles de Besicovich*
Advisor: Prof. Hervé PAJOT

2005 Lycée La Mennais

PUBLICATIONS

February 2014 Density estimates for some degenerate
Stable-driven SDEs

Published in
Annales de
l'institut Poincaré

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

Published in
Stochastic
Processes and their
Applications

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 :

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

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

Coming Soon Weak Error for Stable Driven SDEs with Hölder coefficients

Work in Progress

Abstract: We study the weak error of the Euler Scheme for a non-degenerate SDE driven by a symmetric stable process with bounded Hölder coefficients. We precisely quantify the distance between the densities of the SDE and its Euler scheme, establishing a convergence rate depending non trivially on both the Hölder exponent of the coefficients and the stability index of the driving process. Our analysis relies on pointwise estimates of the fractional derivatives of the underlying heat kernel in this setting. These controls have independent interest and seem, to our best knowledge, new.

Authors: , Lorick HUANG, Stéphane MENOZZI

Coming Soon Short time asymptotics for some degenerate Kolmogorov equations

Work in Progress

Authors: Noufel FRIHKA, Lorick HUANG, Arturo KOHATSU-HIGA, Stéphane MENOZZI

Coming Soon Local Limit Theorem for Robbins-Monro procedure

Work in Progress

Authors: Lorick HUANG, Valentin KONAKOV, Anna MARKOVA

TEACHINGS

2016-present Michigan State University

STT 351

Probability and Statistics for engineers.

2014-2015 Université Paris 7, Diderot

Probability

First course in probability theory
64h, including computer classes
Main Teacher: Raphael LEFEVERE

2014-2015 Université Paris 7, Diderot

Probability and Statistics

Second semester course in probability and statistics
64h, including computer classes
Main Teacher: Gabrielle VIENNET

2011-2014 Université Paris 7, Diderot

SD1

Statistiques Descriptives
64h, including computer classes
Main Teacher: Aurélie FISHER

CONFERENCES AND TALKS

2016- present Co-organiser of the Probability seminar

Organisation

Michigan State University

2016 East Lansing, Michigan

Conference

Michigan State University
A Workshop on Future Directions in Fractional Calculus Research and Applications

2015 Snegiri, Russia

Speaker

Higher School of Economics
New trends in Stochastic Analysis

	2014	Kyoto, Japan
<i>Speaker</i>		Ritsumeikan University Seminar of Probability and Finance
	2014	Buenos Aires, Argentine
<i>Conference</i>		37th Conference on Stochastic Processes and their Applications
	2014	Forges-les-eaux, France
<i>Speaker</i>		Journées de rencontres des jeunes probabilistes et statisticiens April 6-11, 2014
	2014	Ecole Polytechnique
<i>Speaker</i>		Seminar of Probability and Finance
	2014	Université d'Évry-val-d'essone
<i>Speaker</i>		Seminar Analysis and Probability
	2013	Pise, Italie
<i>Conference</i>		Probability and PDEs, May 20-24, 2013 Centro di Ricerca Matematica Ennio De Giorgi Scuola Normale Superiore
	2012	Université Paris 7, Diderot
<i>Speaker</i>		Groupe de travail de Finance, probabilité Numériques et Statistique des Processus.
	2012	Paris, France
<i>Conference</i>		Approximations de Processus de Lévy, June 14-15, 2012 Halle aux farines Université Paris 7, Diderot
	2012	Barcelone, Espagne
<i>Summer School</i>		Functional Itô Calculus and Malliavin Calculus for Lévy Processes July 23-27, 2012 Centre de Recerca Matemàtica

COMPUTER SKILLS

<i>Basic</i>	C++, C
<i>Intermediate</i>	R, SCILAB, L ^A T _E X

LANGUAGES SPOKEN

FRENCH	· Native Language
ENGLISH	· Fluent
SPANISH	· Basic
JAPANESE	· Basic

December 2, 2016