

LORICK HUANG

INFORMATIONS PERSONELLES

Né le 18 Octobre 1987
email huang@insa-toulouse.fr
Doctorat Soutenu le 3 Juillet 2015, Mention: *très honorable*
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EXPÉRIENCE PROFESSIONNELLE

<i>MCF</i>	2017–présent	Maître de Conférences INSA Toulouse
<i>Post Doc</i>	2016–2017	Visiting Assistant Professor Michigan State University United States
<i>Post Doc</i>	2015–2016	Research Fellow in Higher School of Economics International Laboratory of Stochastic Analysis and its Applications Moscow
<i>ATER</i>	2014–2015	Attaché Temporaire d'Enseignement et de Recherche Université Paris Diderot
<i>Doctorant contractuel</i>	2011–2014	PhD Student, Teacher Assistant Université Paris Diderot Bourse d'école doctorale

ÉDUCATION

<i>Doctorat</i>	2011–2015	Université Paris 7 - Diderot <i>Mathématiques appliqués, mention très honorable</i> Thèse: <i>EDS dirigées par des processus stables. Méthode paramétrix pour des estimées de densités et application aux algorithmes stochastiques.</i> Directeur: Prof. Stéphane MENOZZI
<i>Master</i>	2010–2011	Université Pierre et Marie Curie, paris 6 <i>Probabilités et Modèles Aléatoires, Note: 14/20 (mention bien)</i> Mémoire: <i>Estimés de densité de solutions d'EDS dirigées par des processus stables</i> Directeur: Prof. Stéphane MENOZZI
<i>Agrégation de Mathématiques</i>	2009–2010	Université Joseph Fourier <i>Préparation Agrégation de Mathématiques</i> Reçu: 131 ^e
<i>Licence</i>	2005–2008	Université Joseph Fourier Licence de Mathématiques Magistère thesis: <i>Le Modèle d'Ising et ses premières propriétés</i> Directeur: Prof. Didier PIAU

Mémoire de Licence: *Le problème de Kakeya et les ensembles de Besicovich*
 Directeur: Prof. Hervé PAJOT

2005 Lycée La Mennais

Baccalauréat

Mention très bien.

PUBLICATIONS

2014 Density estimates for some degenerate Stable-driven SDEs

Publié aux
 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

2015 Richardson Romberg extrapolation for Stochastic algorithm

Publié dans
 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

2017 L^p Estimates For Degenerate Non-Local Kolmogorov Operators

Publié au Journal
 de Mathématiques
 Pures et
 Appliquées

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 $\sum_{i=1}^d \partial_{x_i}^2$. 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

2022 The Malliavin-Stein method for Hawkes functionals

Accepté à Aléa

Abstract: In this paper, following Nourdin-Peccati's methodology, we combine the Malliavin calculus and Stein's method to provide general bounds on the Wasserstein distance between functionals of a compound Hawkes process and a given Gaussian density. To achieve this, we rely on the Poisson embedding representation of an Hawkes process to provide a Malliavin calculus for the Hawkes processes, and more generally for compound Hawkes processes. As an application, we close a gap in the literature by providing the first Berry-Esséen bounds associated to Central Limit Theorems for the compound Hawkes process, for two important classes of fertility functions (exponential and Erlang).

Author: Caroline HILLAIRET, Lorick HUANG, Mahmoud KHABOU, Anthony REVEILLAC

Soumis 2022 Portfolio optimization under CV@R constraint
with stochastic mirror descent

HAL:
0369723201

Abstract: This article studies and solves the problem of optimal portfolio allocation with CV@R constraints when dealing with imperfectly simulated financial assets. We use a Stochastic biased Mirror Descent to find optimal resource allocation for a portfolio whose underlying assets cannot be generated exactly and may only be approximated with a numerical scheme that satisfies suitable error bounds, under a risk management constraint. We establish almost sure asymptotic properties as well as the rate of convergence for the averaged algorithm. We then focus on the optimal tuning of the overall procedure to obtain an optimized numerical cost. Our results are then illustrated numerically on simulated as well as real data sets.
Author: Manon COSTA, Sebastien GADAT, Lorick HUANG

Soumis 2022 Convergence of the Discrete-Time Compound
Hawkes Process with Exponential or Erlang Kernel

ArXiv:
2106.13459

Abstract: Due to its clustering and self-exciting properties, the Hawkes process has been used extensively in numerous fields ranging from sismology to finance. Since data is often acquired on regular time intervals, we propose a piece-wise constant model based on a Discrete-Time Hawkes Process (DTHP). We prove that this discrete-time model converges to the usual continuous-time Hawkes process as the time-step tends to zero.
Author: Lorick HUANG, Mahmoud KHABOU

Courant 2022 Functional Central Limit Theorem for Stable
Processes

En préparation

Abstract: In this short note, we quantify the functional convergence of the rescaled random walk with heavy tails to a Stable process. This generalizes the result of Chen Nourdin and Xu (2018) and others to the functional case. This work derives a technique introduced in Coutin and Decreusefond (2020).
Author: Laure COUTIN, Laurent DEUCREUSEFOND, Lorick HUANG

ENSEIGNEMENT

2017-Présent INSA Toulouse

Service plein maitre de conférences

2020-2022 Université Paul Sabatier

Cours de Spécialité au Master 2:
Introduction au processus de Lévy

2016-2017 Michigan State University

STT 351 - 430

Probability and Statistics for engineers.

2014-2015 Université Paris 7, Diderot

Probabilité

travaux dirigés en L3
64h, incluant TP en salle informatique
Responsable: Raphael LEFEVERE

2014-2015 Université Paris 7, Diderot

*Probabilité et
Statistiques*

travaux dirigés en L2
64h, incluant TP en salle informatique
Responsable: Gabrielle VIENNET

2011-2014 Université Paris 7, Diderot

SD1

travaux dirigés de Statistiques Descriptives en L1

64h, incluant TP en salle informatique
Responsable: Aurélie FISHER

RESPONSABILITÉS COLLECTIVES

<i>Administratif</i>	2018-Présent	INSA Toulouse Responsable de la Page Web du département
<i>Recherche</i>	2019-Présent	Institut Mathématiques de Toulouse Séminaire de probabilités
<i>Administratif</i>	2019-Présent	Institut Mathématiques de Toulouse Membre du Comité Parité
<i>Administratif</i>	2018-2021	INSA Toulouse Membre du Conseil du département

CONFÉRENCE ET EXPOSÉS

<i>Mini cours</i>	2021	Bielefeld, Allemagne IRTG research group retreat
<i>Visite</i>	2019	Kyoto, Japon Séjour de recherche à Ristumeikan
<i>Organisation</i>	2018	Toulouse, France Co-organisateur de la journée des doctorants de l'équipe ESP
<i>Speaker</i>	2018	Barcelona, Spain Barcelona-Toulouse Probability Days
<i>Speaker</i>	2018	Taipei, Taiwan 12 th AIMS Conference on Dynamical Systems, Differential Equations and Applications
<i>Speaker</i>	2018	Moscow, Russia LSA summer meeting 2018
<i>Speaker</i>	2017	Toulouse, France Séminaire de Probabilité
<i>Organisation</i>	2016– 2017	Co-organisateur du Séminaire de Probabilité Michigan State University
<i>Conference</i>	2016	East Lansing, Michigan Michigan State University A Workshop on Future Directions in Fractional Calculus Research and Applications
<i>Speaker</i>	2015	Snegiri, Russia Higher School of Economics New trends in Stochastic Analysis
	2014	Kyoto, Japon

<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

LANGUES

FRANÇAIS · Langue Maternelle

ANGLAIS · Courant

ESPAGNOL · Débutant

JAPONAIS · Débutant

RUSSE · Notions

October 12, 2022