
Curriculum Vitae – Ismaël Bailleul

Date of birth	2 nd of December 1979
Citizenship	French
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Employment history

Sept. 2010 - Sept. 2011	Research associate	Statistical Laboratory, Cambridge.
(Apr. 2011 - Sept. 2011)	<i>Funding</i>	Newton Trust research fellowship.
Sept. 2007 - Aug. 2010	Postdoctoral	Statistical Laboratory, Cambridge.
	<i>Field</i>	<i>Probabilistic theory of coagulation</i>
	<i>Collaborator</i>	James Norris
	<i>Funding</i>	EPSRC grant EP/E01772X/1
Sept. 2006 - Aug. 2007	Research Instructor	Univ. Paris XI

Research area

My main research area is at the intersection of probability, geometry and mathematical physics, and is concerned with the study of some random processes intrinsically associated with any relativistic spacetime model, called *relativistic diffusions*. I have also studied (the homogeneous and nonhomogeneous version of) *Smoluchowski equation*, giving the macroscopic evolution of some interacting particle systems. Spacetime random dynamics and particle systems are the main two ingredients of the study of some nonlinear processes on Lorentzian manifolds, in relation with the relativistic Boltzmann equation.

Academic history

Sept. 2003 - Aug. 2006	PhD	Univ. Paris XI, Orsay, France.
	<i>Field</i>	<i>Probability, harmonic analysis, Lorentzian geometry.</i>
	<i>Title</i>	<i>Poisson boundary of a relativistic diffusion</i>
	<i>Advisor</i>	Prof. Yves Le Jan, Univ. Paris XI.
	<i>Viva</i>	13 th of December, 2006. Scientific committee: <ul style="list-style-type: none">• Pr. Alano Ancona, Univ. Paris XI,• Pr. Philippe Bougerol, Univ. Paris 6,• Pr. Michael Cranston (Ref.), Irvine (California),• Pr. Jacques Franchi (Ref.), Univ. de Strasbourg,• Pr. Yves Le Jan, Univ. Paris XI,• Pr. Wendelin Werner, Univ. Paris XI.
	Attended courses	<i>Large deviations and Ising model</i> (Raphaël Cerf), <i>Percolation</i> (Wendelin Werner), <i>Random trees</i> (Jean-François Le Gall).
Sept. 2002 - Aug. 2003	D.E.A.	in Pure Mathematics, Univ. Paris XI (equivalent Part III).
	Topics	<i>Riemannian Geometry</i> (François Labourie), <i>Dynamical Systems</i> (Duncan Sands, Jacek Graczyk), <i>Invariant Manifolds</i> (Marc Chaperon), <i>Stochastic Calculus</i> (Zhan Shi), <i>Brownian Excursions and Local Time</i> (Marc Yor).
Sept. 2001 - Aug. 2002	Agrégation	Highest teaching qualification, 20 th /350 (successful candidates).
Sept. 2001 - Aug. 2003		Student at the École Normale Supérieure , Cachan.
Sept. 2000 - Aug. 2001	Maîtrise	(Master) in Pure Mathematics, Univ. Paris XI.
Sept. 1999 - Aug. 2000	Licence	(equivalent of B.A.), Univ. Paris XI.

Current and past teaching commitments

- Michaelmas 2010 – 2011, lecturer in Part III, Cambridge. *Advanced Probability* course: <http://www.statslab.cam.ac.uk/ismael/files/AdvancedProbability/AdvancedProbability.pdf>
(In addition to devising and lecturing the course, this involves writing question sheets, an examination and running example classes.)
- Teaching for the Cambridge Center for Analysis – doctoral training.
- Michaelmas 2009 – 2010, lecturer in Part III, Cambridge. *Advanced Probability* course.
- Sept. 2007 - Aug. 2010: **Teaching by-Fellow** at **Churchill College**, Cambridge. (Supervised courses: Probability (Part IA), Optimization (Part IB), Markov chains (Part IB), Control and optimization (Part II), Applied probability (Part II), Advanced probability (Part III)).
- Sept. 2003 - Aug. 2007: Example classes in L1 and L2 (Part IA, IB equivalents), in Université Paris Sud. Statistics, probability, linear algebra, bilinear algebra, analysis.

Publication list

- 2010 [1] *A probabilistic view on singularities*, J. Math. Phys., 52, 023520.
[2] *Non-explosion criteria for relativistic diffusions*, accepted in Annals of Probability.
[3] *Spatial coagulation with bounded coagulation rate*, accepted in J. of Evolution Equations (DOI 10.1007/s00028-011-0105-3).
- 2009 [4] *A stochastic approach to relativistic diffusions*, Annales de l'Institut H. Poincaré Vol. 46 (3), 760-795.
[5] *Sensitivity for Smoluchowski equation*, accepted in Journal of Physics A.
[6] *A stochastic algorithm for sensitivity in Smoluchowski equation*, with M. Kraft and P. Man, in SIAM Journal on Numerical Analysis, 48 (3), pp. 1064-1086.
[7] *Coupling algorithm for calculating sensitivities in Smoluchowski equation*, with M. Kraft, P. Man and J. Norris, SIAM Journal on Scientific Computing, 32 (2), pp. 635-655.
- 2008 [8] *Poisson boundary of a random walk on Poincaré group*, with A. Raugi; ESAIM P & S 14, pp. 16-52.
- 2007 [9] *Une preuve simple d'un résultat de Dufresne*, Séminaire de Probabilités de Paris, Vol. XLI, 2008, pp. 203-213.
[10] *Poisson boundary of a relativistic diffusion*, Probability Theory & Related Fields, 141 (1), pp. 283-329.

Invited talks

- November 2010 Probability seminar, Cambridge.
Probability seminar, Univ. of Rennes 1, France.
- October 2010 Probability seminar, Lyon, France.
- July 2010 East Midlands Stochastic Analysis seminar, York.
- June 2010 Journées de probabilités, Dijon, France, invited speaker.
55^{ème} Rencontre entre physiciens théoriciens et mathématiciens,
Strasbourg, invited speaker.
- Sept. 2009 Probability seminar, Univ. of Strasbourg, France.
- July 2009 *33rd Conference on Stochastic Processes and their Applications*,
Berlin, contributed session.
- June 2009 Conference "*Stochastic Analysis and Random Dynamical Systems*",
Lviv, Ukrain, contributed session.
- May 2009 Probability seminar, Oxford.
- April 2009 Probability seminar, Warwick.
- February 2009 Geometric Analysis and Partial Differential Equations seminar, Cambridge.
- April 2008 Probability seminar, Cambridge.
- April 2008 Probability seminar, York.
- October 2007 Bonn (Germany): International workshop on "*Stochastic calculus on manifolds, graphs, and random structures*", invited speaker.
- March 2007 Probability seminar, Univ. of Rennes 1, France,
Workshop, Univ. Paris 6.
- February 2007 Probability seminar, Univ. of Strasbourg, France,
Probability seminar, Univ. of Lyon 1, France,
Probability seminar, Univ. of Swansea,
Probability seminar, Univ. of Warwick.

_____ Services to the community _____

- Reviewer of V. Kolokoltsov's book *Non linear Markov processes and kinetic equations*, for CUP.
- Referee for the journals *Journal of Mathematical Physics* and *Classical and Quantum gravity*.
- Sept. 2003 - Aug. 2006: Organizer of the *PhD's seminar in mathematics*, Université Paris Sud.