Curriculum Vitæ

Christophe GARBAN
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Born on Novembrer
the 13th, 1982
French citizen

Academics

2014 -	—	Professor, Université Lyon 1
2009 − 2014	—	CNRS researcher at ENS Lyon. (CR1 since October 2013). Habilitation à Diriger des Recherches (HDR), soutenue le 9 décembre 2013 à l'ENS Lyon.
2005 − 2009	—	**PhD thesis** at Université Paris-Sud (Orsay) under the supervision of Wendelin Werner : *SLE Processes and sensitivity to perturbations of planar critical percolation.* Defended in December 2008.
2002 − 2006	—	Ecole Normale Supérieure (Paris).

Research interests

Probability theory, SLE processes, conformal invariance, statistical mechanics, Fourier analysis of Boolean functions, critical and near-critical percolation, minimal spanning tree, random cluster model, Liouville Quantum Gravity, coalescing flows.

Distinctions

— 2014 Plenary speaker, 37th SPA (Conference Stochastic Processes and their Applications).
— Prix Peccot (Collège de France), 2013.
— Rollo-Davidson Prize (together with Gábor Pete), 2011.
— Prix Perrissin-Pirasset de la chancellerie de Paris, 2009.
— Ostrowski Fellowship 2008 (from Oded Schramm, recipient of the Ostrowski prize 2007).

Research Articles

[19] **KPZ formula derived from Liouville heat kernel**, with Nathanael Berestycki, Rémi Rhodes and Vincent Vargas. *Submitted.* arXiv :1406.7280. 22 pages.

[18] **The scaling limits of the Minimal Spanning Tree and Invasion Percolation in the plane**, with Gábor Pete and Oded Schramm. *Submitted.* arXiv :1309.0269. 50 pages.

[17] **The scaling limits of near-critical and dynamical percolation**, with Gábor Pete and Oded Schramm. arXiv :1305.5526 *Submitted*, 86 pages

[16] **Liouville Brownian motion**, with Rémi Rhodes and Vincent Vargas. arXiv :1301.2876 *Submitted*, 30 pages.

[15] **Coalescing Brownian flows : a new approach**, with Nathanael Berestycki and Arnab Sen. arXiv :1307.4313, to appear in *Annals of Probability*, 36 pages

[14] **On the heat kernel and the Dirichlet form of Liouville Brownian Motion**, with Rémi Rhodes and Vincent Vargas. arXiv :1302.605, to appear in *Electron. J. Probab.*, 31 pages

[13] **The Ising magnetization exponent is 1/15**, with Federico Camia and Charles M. Newman, arXiv :1205.6612, to appear in *Probab. Theory and Related Fields*, 12 pages.

[12] **Planar Ising magnetization field II. Uniqueness of the critical scaling limit**, with Federico Camia and Charles M. Newman. arXiv :1307.3926, to appear in *Ann. Inst. Henri Poincaré (B)*, 18 pages.

[11] **Planar Ising magnetization field I. Properties of the critical and near-critical scaling limits.** , with Federico Camia and Charles M. Newman, arXiv :1205.6610, to appear in *Annals of Probability*, 35 pages.

[10] **The near-critical planar FK-Ising model**, with Hugo Duminil-Copin and Gábor Pete, arXiv :1111.0144, to appear in *Communications in Mathematical Physics*, 35 pages.

 [9] **Quantum gravity and the KPZ formula**. Bourbaki seminar (after Duplantier-Sheffield), no 1052 (mars 2012) arXiv :1206.0212, 38 pages.

 [8] **Pivotal, cluster and interface measures for critical planar percolation**, with Gábor Pete and Oded Schramm, *J. Amer. Math. Soc.* 26, no. 4, 939–1024 (2013). 85 pages.

 [7] **Lectures on noise sensitivity and percolation**, with Jeffrey E. Steif. *"Probability and Statistical Physics in Two and more Dimensions".* Proceedings of the Clay Mathematics Institute Summer School and XIV Brazilian School of Probability (Buzios, Brazil), Clay Mathematics Proceedings 15 (2012), 49-154. 106 pages.

 [6] **Exclusion Sensitivity of Boolean Functions**, with Erik Broman and Jeffrey Steif. *Probab.Theory and Related Fields*, 155 (2013), issue 3-4 , 621–663

 [5] **Appendix** to the paper "On the scaling limits of planar percolation" by Oded Schramm and Stanislav Smirnov. Ann. Probab. 39 (2011), no. 5, 1768–1814

 [4] **Oded Schramm's contributions to Noise Sensitivity**, *Annals of probability*, Volume 39, Number 5 (2011), 1702–1767.

[3] Continuity of the SLE trace in simply connected domains, with Steffen Rohde and Oded Schramm, *Israel Journal of Mathematics*, Volume 187, Number 1 (2012), 23-36.

[2] The Fourier Spectrum of Critical Percolation, with Gábor Pete and Oded Schramm, *Acta Mathematica*, Volume 205, Number 1 (2010), 19–104.

[1] The expected area of a filled planar Brownian loop is Pi/5, with José Trujillo-Ferreras, *Communications in Mathematical Physics*, **264** (2006), no. 3, 797–810.

Book

Noise sensitivity of Boolean functions and percolation, with Jeffrey E. Steif. Book in progress, to be published in Cambridge University Press.

Invited lectures (research level courses and mini-courses)

— Cours Peccot 2013, Collège de France.
— Foundational course "Noise sensitivity and percolation" with Jeffrey E. Steif, at the Clay Summer School in Buzios, Brazil, July 2010.
— Hypatie seminar with Federica Camia, Marseille, June 2009.
— Hypatie seminar with Jeffrey E. Steif, Marseille, June 2008.

Administrative duties

— Organization of the probability seminar, 2009/2014 (partly with C. Bernardin).
— Hiring committees : Dauphine (2012), Saint-Etienne (2012).
— Conseil de laboratoire, UMPA, 2009–2013.
— Member of the scientific committee of the Laboratory of Excellence (Labex) MILYON.
— Member of the ANR grant MAC2 "Modèles aléatoires critiques bi-dimensionnels". Coordinator : Vincent Beffara (UMPA, ENS Lyon). 2010-2014.
— Organizer (with V. Beffara) of the mini-summer school "Statistical PhysiX in Lugdunum", Lyon, June 24–28, 2013.
— Jury de thèse de Laurent Veysseire, July 2012.
— Referee for the following journals : Ann. Probab., PTRF, Comm. Math. Phys., STOC (computer sciences), Ann. Inst. Fourier., Electron. J. Probab., Elec. Comm. Probab., Arkiv för Matematik, Stoch. Proc. and App ...

Supervision of students

— **Juhan Aru**, PhD student, 2012-2015.

— Xiaolin Zeng, Master thesis, 2012.

Teaching

2013/2014	—	Graduate course in ENS Lyon on *Advanced probability theory*.
2012/2013	—	Graduate course in ENS Lyon on *stochastic calculus* (with C. Bernardin).
	—	Reading class seminar on *fractals* (together with V. Tassion).
2011/2012	—	Graduate course in ENS Lyon on *Boolean functions and percolation*.
April 2008	—	Teaching assistant at the summer school "Conformally Invariant Models", IMPA, Brazil, course given by Wendelin Werner.
July 2007	—	Teaching assistant for the course *SLE Processes* given by Greg Lawler at the Park City - IAS summer school 2007.
2006/2008	—	Teaching assistant for the first year course *Mathematics for Biology*, Université Paris-Sud.

Seminars - Talks

2013/2014	—	Colloquium of the Physics department, ENS Lyon, (October 2013)
	—	Probability seminar, Lille, (November 2013)
	—	Probability seminar, University of Warwick, UK (January 2014)
	—	Colloquium of the Institut Fourier, Grenoble (January 2014)
	—	Probability seminar, Nancy (February 2014)
	—	Probability seminar, Nanterre, (February 2014)
	—	Simons Symposium on Discrete Analysis : Beyond the Boolean Cube, Puerto Rico (February 2014)
	—	Probability seminar, MIT Boston (April 2014)
	—	Plenary speaker, 37th SPA (Conference Stochastic Processes and their Applications), July 2014
2012/2013	—	International Summer School of Mathematics for Young Students, Lyon (August 2012)
	—	Rencontres Analyse/Probabilités, Lyon (September 2013)
	—	Probability seminar, Dauphine, (October 2012)
	—	Probability seminar, Toulouse, (November 2012)
	—	"Soirées mathématiques de Lyon". General audience talk on "Random walks, from the Avagadro Number to Google". (December 2012).
	—	Mini-course, journées BOOLE, Marseille, (January 2013)
	—	Probability seminar, Oxford, (January 2013)
	—	Conference "Two-Dimensional statistical mechanics", Les Diablerets, (February 2013)

- — Cours Peccot, March and April 2013
- — Probability seminar, Grenoble (May 2013)
- — Probability seminar, Paris 6 (May 2013)

2011/2012
- — Probability Seminar, Université de Genève (September 2011)
- — Séminaire d'Analyse Fonctionnelle de Paris 6, (Novembre 2011)
- — Séminaire de probabilités, Université de Strasbourg (Novembre 2011)
- — Colloque en l'honneur de David Aldous (Doctor Honoris Causa), Marseille, (December 2011)
- — PASI conference "Topics in percolative and disordered systems", Santiago and Buenos Aeres (January 2012)
- — MSRI workshop "Percolation and Interacting Systems", Berkeley (February 2012)
- — Bourbaki seminar, IHP Paris (March 2012)
- — Colloquium Paris 5, Descartes (April 2012)
- — Probability Seminar, Statistical Laboratory, University of Cambridge (May 2012)
- — Invited session "Critical 2-D Systems and SLE", 8th World Congress in Probability and Statistics, Istanbul, July 2012

2010/2011
- — Short lecture, Ceremade, Dauphine (October 2010)
- — Probability Seminar, Statistical Laboratory, University of Cambridge (October 2010)
- — Workshop "Informal week on Influences, sharp thresholds and k-wise independance", IHP Paris (March 2011)
- — Conference "Discrete Harmonic Analysis", Newton Institute, Cambridge (April 2011)
- — Oberwolfach workshop "Stochastic Analysis" (June 2011)
- — Conference "the 4th La pietra week on probability", Firenze (June 2011)

2009/2010
- — Oded Schramm Memorial conference, Microsoft Research, Redmond (September 2009)
- — Probability seminar, Section mathématiques, Geneva (September 2009)
- — Probability seminar, Institut Fourier, Grenoble (November 2009)
- — Short lecture, Midrasha Mathematicae : The Mathematics of Oded Schramm, Jerusalem (December 2009)
- — Fondational course on noise sensitivity, given with Jeffrey Steif at the Clay summer school in Buzios (July 2010).

2008/2009
- — Statistical Mechanics Workshop, *Institut Henri Poincaré* (December 2008)
- — Séminaire Analyse-Probabilités, Ceremade Dauphine (December 2008)
- — Mittag-Leffler weekly seminar (February 2009)
- — Statistics Seminar, Chalmers Gothenburg (March 2009)
- — Probability Seminar, Laboratoire Dieudonné, Université de Nice Sophia-Antipolis (March 2009)
- — Probability Seminar, Université de Provence (March 2009)
- — Probability Seminar, Institut de Mathématiques de Toulouse (April 2009)
- — Harmonic analysis Seminar, Orsay (May 2009)
- — Colloquium "Analysis and Probability in Nice" (June 2009)
- — Hypathie Seminar (with Federico Camia), CMI Marseille (June 2009)

2007/2008	—	Probability Seminar, Weizmann Institute (November 2007)
	—	Probability Seminar, IMPA Rio de Janeiro (April 2008)
	—	Stochastic Analysis Workshop, Oberwolfach (June 2008)
	—	Hypathie Seminar (with Jeff Steif), CMI Marseille (June 2008)
2006/2007	—	Journées de Probabilités, CIRM (September 2006)
	—	Probability Seminar, Institut Fourier Grenoble (November 2006)
	—	IAS/Park City Summer School (July 2007)
2005/2006	—	Journées "SLE, percolation", MAPMO Orléans (October 2005)
	—	Probability Seminar, Orsay (November 2005).
2004/2005	—	Seminar on Stochastic Processes, Cornell University (March 2005)
	—	Summer School in Probability, PIMS Vancouver (June 2005)