

Curriculum Vitæ of HUGO DUMINIL-COPIN

French. Married. Born on August 26, 1985.

Education and Employment

2013 / today Assistant Professor, Université de Genève. Invited researcher (maximum of two months a year) at the Weizmann institute for a period of five years.

2008 / 2012 PhD & Postdoctorat, Université de Genève (supervised by S. Smirnov).

2006 / 2008 École Normale Supérieure de Paris. Agrégation de mathématiques (rank 2).

2006 / 2007 Master, summa cum laude, Université Paris XI (supervised by W. Werner).

2003 / 2005 MPSI and MP* (preparatory classes), Lycée Louis-Le-Grand, Paris.

Honors

2013 Plenary speaker, 36th SPA (Conference Stochastic Processes and their Applications).

2012 Rollo Davidson Prize (joint with V. Beffara).

2012 Vacheron-Constantin prize (best PhD thesis in mathematics during 2009–2012 in Unige).

Organizational roles

Conferences

- *Two-Dimensional statistical mechanics* (Switzerland, 2013).
- *Workshop on near-critical statistical physics* (Sanya, China, 2013).
- *Workshop on Diffusion Limited Aggregation* (Switzerland, 2012).
- *Workshop in Mathematical physics* (Switzerland, 2012).
- *Young European Probabilists* (Eurandom, 2012).
- *mini-Summer school* (Switzerland, 2011).

Others

- *Probability seminar* in Geneva (2010/today).
- *Lyon-Genève Probability Day* (2012/today).

Teaching

Research level courses and mini-courses

- *Conformal invariance in Lattice models* (Weizmann summer school, 2012),
- *The 2D random-cluster model at and around criticality* (St Petersburg probability summer school, 2012),
- *Bootstrap percolation* (ENS Paris, 2012),
- *Planar percolation with a glimpse of SLE* (La Pietra Summer School, 2011),
- *TAs of SLE and other conformally invariant processes* (Clay summer school, 2010),
- *Conformal invariance of the FK Ising model* (IMPA, 2010).

Undergraduate courses (Genève 2012/today) Analysis 1, Probability, Percolation, Brownian motion and stochastic calculus.

Popular-science activities

Talk Plenary speaker at the graduation ceremony (Université de Genève, 2012), talks for high-school students (Genève, 2010, and Paris, 2013), talk for mathematics teachers (plenary talk, Congrès Sion, 2013).

Articles

- 1** *La percolation, un jeu de pavages aléatoires*. Pour la Science (French edition of Scientific American), September 2011, **407**. Translated to Spanish for Investigacion y Ciencia (Spanish edition of Scientific American).
- 2** *Tests de Primalité : "Prime is in P"*. Revue de la filière mathématiques RMS, 116th year May 2006 **4**.

Long term visits

- *Weizmann Institute* (Juli 2013, January 2013, Juli/August 2012, January 2012, March/May 2011, December 2010/January 2011),
- *IMPA* (February/March 2013, January/February 2010, May 2008),
- *Paris* (fall 2009),
- *UBC* (September 2008/January 2009).

Talks

Named lectures and invited talks in conferences

- 2013** SPA (plenary speaker), Marc Kac seminar, Combinatorics and Probability (Oberwolfach), Analytical Aspects of Mathematical Physics (ETH).
- 2012** 8th World Congress in Probabilities and Statistics (Istanbul), Random Networks & Environments (Istanbul), Perspective in Discrete Mathematics (Barcelona), Conformal Invariance Discrete Holomorphicity and Integrability (Helsinki), Scaling Limits in Models of Statistical Mechanics (Oberwolfach).
- 2011** Action Now Seminar (Utrecht), Conference in honor of Harry Kesten's 80th birthday (Cornell), Stochastic Analysis (Oberwolfach).
- 2010** ICM satellite conference (Bangalore), Geneziss meeting (String theory, Lausanne), Marc Kac seminar (Utrecht), Brazilian School of Probability and Clay Mathematics Institute Summer School (Brazil), Conformal maps from probability to physics (Ascona).
- 2009** Scaling Limits in Models of Statistical Mechanics (Oberwolfach).

Colloquia

Technion, IMPA, Nancy (2013). Genève, Eurandom (2012). Tel Aviv (2011). Genève (2010).

Seminars

- 2013** Princeton, MIT, ETH, Paris Dauphine, Genève, Montreux, Leipzig, Paris 13, Nancy.
2012 Ben Gurion university, Cambridge, Oxford, Paris 6.
2011 ENS Lyon, Columbia, Grenoble, Weizmann Institute, Hebrew University, Technion, Ben Gurion, Cambridge.
2010 Eurandom, ETH, Nancy, Genève, ENS Lyon, Paris 13, Roma tre, Paris 6, IMPA.
2009 Warwick, Helsinki.

Publication list of Hugo DUMINIL-COPIN

Published and in press articles

- 1** Self-avoiding walk is sub-ballistic (with A. Hammond), *to appear in Communications in Mathematical Physics*, arXiv:1205.0401 (26 pages).
- 2** Seven-dimensional forest fires (with D. Ahlberg, G. Kozma and V. Sidoravicius), *to appear in Annals of IHP*, arXiv:1302.6872 (8 pages).
- 3** The critical fugacity for surface adsorption of self-avoiding walks on the honeycomb lattice is $1 + \sqrt{2}$ (with N. Beaton, M. Bousquet-Mélou, J. De Gier and A. Guttmann), *to appear in Communications in Mathematical Physics*, arXiv:1109.1549 (24 pages).
- 4** The near-critical planar FK-Ising model (with C. Garban and G. Pete), *to appear in Communications in Mathematical Physics*, arXiv:1111.0144 (32 pages).
- 5** Supercritical self-avoiding walks are space-filling (with G. Kozma and A. Yadin), *to appear in Annals of Institut Henri Poincaré*, arXiv:1110.3074 (14 pages).
- 6** On the Gibbs states of the noncritical Potts model on \mathbb{Z}^2 (with L. Coquille, D. Ioffe and Y. Velenik), *Probability Theory and Related Fields*, online first DOI: 10.1007/s00440-013-0486-z (30 pages).
- 7** The critical temperature for the Ising model on planar doubly periodic graphs (with D. Cimasoni), *Electronic Journal of Probability*, **18(44)**, 1–18, 2013.
- 8** Containing Internal Diffusion Limited Aggregation (with C. Lucas, A. Yadin and A. Yehudayoff), *Electronic Communications in Probability*, **18(50)**, 1–8, 2013.
- 9** Sharp metastability threshold for an anisotropic bootstrap percolation model (with A. C. D. Van Enter), *Annals of Probability*, **41(31A)**, 1218–1242, 2013.
- 10** The self-dual point of the two-dimensional random-cluster model is critical for $q \geq 1$ (with V. Beffara), *Probability Theory and Related Fields*, **153(3)**, 511–542, 2012.

- 11** Divergence of the correlation length for critical planar FK percolation with $1 \leq q \leq 4$ via parafermionic observables, *Journal of Physics A: Mathematical and Theoretical*, **45** 494013, 26 pages, 2012.
- 12** The connective constant of the honeycomb lattice equals $\sqrt{2 + \sqrt{2}}$ (with S. Smirnov), *Annals of Mathematics*, **175(3)**, 1653–1665, 2012.
- 13** The sharp threshold for bootstrap percolation in all dimensions (with J. Balogh, B. Bollobás and R. Morris), *Transaction of the American Mathematical Society*, **364**, 2667–2701, 2012.
- 14** Smirnov’s fermionic observable away from criticality (with V. Beffara), *Annals of Probability*, **40(6)**, 2667–2689, 2012.
- 15** Connection probabilities and RSW-type bounds for the FK Ising model (with C. Hongler and P. Nolin), *Communications in Pure and Applied Mathematics*, **64(9)**, 1165–1198, 2011.
- 16** Bridge decomposition of Restriction Measures (with T. Alberts), *Journal of Statistical Physics*, **140**, 467–493, 2010.

Preprints and submitted papers

All the preprints are available online at

www.unige.ch/~duminil/publicationlist.html

- 17** Limit of the Wulff Crystal when approaching criticality for site percolation on the triangular lattice, arXiv:1305.6034 (15 pages).
- 18** The endpoint of self-avoiding walk delocalizes (with A. Glazman, A. Hammond and I. Manolescu), arXiv:1305.1257 (30 pages).
- 19** Disorder, entropy and harmonic functions (with I. Benjamini, G. Kozma and A. Yadin), arXiv:1111.4853 (37 pages).
- 20** Absence of infinite cluster for critical Bernoulli percolation on slabs (with V. Sidoravicius and V. Tassion), *preprint* (14 pages).
- 21** Random Currents and Continuity of Ising Model’s Spontaneous Magnetization (with M. Aizenman and V. Sidoravicius), *preprint* (29 pages).
- 22** Convergence of Ising interfaces to Schramm’s SLEs (with D. Chelkak, C. Hongler, A. Kemppainen and S. Smirnov), *preprint* (7 pages).
- 23** On the critical parameters of the $q > 4$ random-cluster model on isoradial graphs (with V. Beffara and S. Smirnov), *preprint* (22 pages).
- 24** Crossing probabilities in topological rectangles for the critical planar FK-Ising model (with D. Chelkak and C. Hongler), *preprint* (28 pages).
- 25** Finite volume bootstrap percolation with balanced threshold rules on \mathbb{Z}^2 (with A. Holroyd), *preprint* (30 pages).
- 26** The Internal Diffusion Limited Aggregation model with random starting point (with I. Benjamini, G. Kozma and C. Lucas), *preprint* (21 pages).

In preparation

The redaction of these papers is in the process of being completed. The articles will be available soon.

- 27** Continuity of the phase transition for planar Potts models with $1 \leq q \leq 4$ (with V. Sidoravicius and V. Tassion), *in preparation* (50 pages).
- 28** Sharpness of the phase transition for a class of planar lattice models satisfying the FKG lattice condition (with I. Manolescu), *in preparation* (25 pages).
- 29** 1D Quantum Potts models and 2D Potts models on isoradial graphs (with I. Manolescu), *in preparation* (40 pages).
- 30** Conformal invariance of crossing probabilities for the Ising model with free boundary conditions (with C. Hongler and S. Benoist), *in preparation* (15 pages).
- 31** Abundance of maximal paths (with H. Kesten, F. Nazarov, Y. Peres and V. Sidoravicius), *in preparation* (14 pages).

Books, Survey articles and Lecture notes

- 32** Parafermionic observables and their applications to the study of two-dimensional lattice models, *book in preparation, to appear in Ensaios Matematicos* (340 pages).
- 33** Lectures on self-avoiding walks (with R. Bauerschmidt, J. Goodman, and G. Slade), *Lecture notes in Probability and Statistical Physics in Two and More Dimensions, Editors David Ellwood, Charles Newman, Vladas Sidoravicius, Wendelin Werner, published by CMI/AMS – Clay Mathematics Institute Proceedings* (74 pages).
- 34** Conformal invariance in lattice models (with S. Smirnov), *Lecture notes in Probability and Statistical Physics in Two and More Dimensions, Editors David Ellwood, Charles Newman, Vladas Sidoravicius, Wendelin Werner, published by CMI/AMS – Clay Mathematics Institute Proceedings.* (82 pages).
- 35** Critical point in planar lattice models (with V. Beffara), *to be published in a volume on the occasion of the St Petersburg summer school 2012* (50 pages).
- 36** Planar percolation with a glimpse of Schramm-Loewner Evolution (with V. Beffara), *to appear in Probability surveys, arXiv:1107.0158* (43 pages).

Thesis manuscripts

- 37** Phase transition in planar random-cluster and $O(n)$ models, *PhD thesis* (356 pages).
- 38** Law of the iterated logarithm for the random walk on the infinite percolation cluster, *master thesis*, (10 pages).