Pierre-Loïc MÉLIOT

Born: 18th December 1985 – Saint-Saulve (France).
Nationality: French.
Married, one child.

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WORK EXPERIENCE

Assistant professor.   2013-
University Paris-Sud, Institute of Mathematics of Orsay.

Postdoctoral research fellow.   2011-2013
Institute of Mathematics of the University of Zürich (Switzerland), under the supervision of Ashkan Nikeghbali.

RESEARCH INTERESTS

My research domain is probability theory, and my works focus on the two following subjects:

▷ asymptotic behavior of random models: mod-Gaussian and mod-ϕ convergence, central limit theorem, large deviations, speed of convergence and concentration inequalities. These results hold for models of random matrices, of random graphs, stemming from number theory, from combinatorics or from statistical mechanics.

▷ random objects on Lie groups or symmetric spaces: use of representation thery of groups in order to study the speed of convergence of random processes traced on symmetric spaces, and the spectrum of random graphs drawn on these spaces.

EDUCATION

Habilitation to supervise researches.   2018
University Paris-Sud. Techniques of harmonic analysis and asymptotic results in probability theory.

Ph.D. in Mathematics.   2007-2010
University Paris-Est. Random partitions and asymptotic theory of symmetric groups, Hecke algebras and finite Chevalley groups, under the supervision of Philippe Biane.

| **M.Sc.** in Mathematics. | 2005-2007 |
| University Paris 6, option: Probability and stochastic processes. | |

| **Undergraduate courses to prepare nationwide competitive exams in sciences.** | 2002-2008 |
| **Graduate studies at École Normale Supérieure (Paris).** | |

TEACHING EXPERIENCE

Agrégation in Mathematics (highest teaching degree in France, national competitive exam; ranked 3rd). — 2006

Teachings as an assistant professor (192 hours per year). — 2013-

M.Sc.2 (Math)	Lectures on *Random Permutations and Representations of* $\mathfrak{S}(n)$.	2020-
M.Sc.2 (Math)	Lectures on *Convergence of Measures, Poisson and Lévy Processes*.	2016-2020
M.Sc.2 (Math)	Preparation of students for the *Agrégation and CAPES of mathematics (competitive exams for teaching degrees)*.	2013-
M.Sc.1 (Math)	Lectures and tutorials on *Markov Chains*.	2015-
M.Sc.1 (Math)	Lectures of *Introduction to Representation Theory*.	2014
B.Sc.3 (Math)	Lectures and tutorials on *Algebra*.	2017-
B.Sc.3 (Engineer)	Lectures *Mathematics for Engineers: Probability and Statistics*.	2015-2016
B.Sc.2 (Biology)	Lectures on *Statistical Tests for Biologists*.	2019-
B.Sc.2 (Biology)	Lectures on *Probability*.	2013-2015
B.Sc.2 (Math)	Tutorials of *Calculus and Algebra*.	2015-2018
B.Sc.1 (Math)	Tutorials of *Calculus*.	2013-2014

Teachings during my postdoctoral stay in Zürich (36 hours per year). — 2011-2013

| M.Sc. | *Convergence of Random Variables and Large Deviations*. | 2013 |
| M.Sc. | *Random Permutations and Representations of Symmetric Groups*. | 2012 |

Teachings during my graduate studies (384 hours). — 2005-2011

B.Sc.2	Tutorials of *Combinatorics, Mathematical Logic*.	2009-2011
B.Sc.1/2	Tutorials of *Calculus and Algebra*.	2008-2011
B.Sc.1	Weekly examinations of undergraduate students in sciences.	2005-2008

PUBLICATIONS

- *A central limit theorem for singular graphons.* https://www.math.u-psud.fr/~meliot/files/singular_final.pdf. Submitted, 2021.

- *Fluctuations of the Gromov-Hausdorff sample model*, with Jacques De Catelan. https://www.math.u-psud.fr/~meliot/files/samplemodel.pdf. To appear in Electronic Journal of Probability, 2021.

- *Graphons, permutons and the Thoma simplex: three mod-Gaussian moduli spaces*, with Valentin Féray and Ashkan Nikeghbali. Proc. London Math. Soc, 121(4):876-926, 2020.

- *Mod-ϕ convergence: Approximation of discrete measures and harmonic analysis on the torus*, with Reda Chhaibi, Freddy Delbaen and Ashkan Nikeghbali. Ann. Inst. Fourier., 70(3):1115-1197, 2020.

- *Asymptotic representation theory and the spectrum of a random geometric graph on a compact Lie group*. Electronic Journal of Probability, 24(43):1-85, 2019.

- *Local limit theorems and mod-ϕ convergence*, with Martina dal Borgo and Ashkan Nikeghbali. Latin American Journal of Probability and Mathematical Statistics, 16(1):817-853, 2019.

- *Mod-ϕ convergence, II: Estimates on the speed of convergence*, with Valentin Féray and Ashkan Nikeghbali. Séminaire de Probabilités L, 405-478, LNM 2252, Springer-Verlag, 2019.

- *Representation Theory of Symmetric Groups*. Discrete Mathematics and Applications, 666+xvi p., CRC Press, 2017.

- *Mod-ϕ convergence: Normality Zones and Precise Deviations*, with Valentin Féray and Ashkan Nikeghbali. Springer Briefs in Probability and Mathematical Statistics, 152+xii p., Springer-Verlag, 2016.

- *Mod-Gaussian convergence and its applications for models of statistical mechanics*, with Ashkan Nikeghbali. In Memoriam Marc Yor – Séminaire de Probabilités XLVII, 369-425, LNM 2137, Springer-Verlag, 2015.

- *The cut-off phenomenon for Brownian motions on compact symmetric spaces*, Potential Analysis, 40(4):427-509, 2014.

- *Partial isomorphisms over finite fields*, Journal of Algebraic Combinatorics, 40(1):83-136, 2014.

- *Fluctuations of central measures on partitions*, Proceedings of the 24th International Conference on Formal Power Series and Algebraic Combinatorics (Nagoya, Japan), p. 387-398, 2012.

- *Asymptotics of q-Plancherel measures*, with Valentin Féray. Probability Theory and Related Fields, 152(3-4):589-624, 2012

- *Kerov's central limit theorem for Schur-Weyl and Gelfand measures*, Proceedings of the 23rd International Conference on Formal Power Series and Algebraic Combinatorics (Reykjavík, Iceland), p. 669-680, 2011.

- *Products of Geck-Rouquier conjugacy classes and the algebra of composed permutations*, Proceedings of the 22nd International Conference on Formal Power Series and Algebraic Combinatorics (San Francisco, USA), p. 789-800, 2010.

SUPERVISION OF STUDENTS

Ph.D.	Jacques de Catelan: *Mod-Gaussian convergence of models from combinatorics, random matrix theory and dynamics* (did not finish).	2017-2020
M.Sc.	Roman Gambelin: *Harmonic analysis for random walks on finite groups*.	2018-2019
M.Sc.	Kévin Marchand: research internship on *Mod-Gaussian convergence for functionals of the Brownian motion on a compact Lie group*.	2017-2018
M.Sc.	Jacques de Catelan: *Stein's method and applications in random matrix theory*.	2016-2017
M.Sc.	Andreas Scheuss: *Zeroes of random analytic functions*.	2012-2013

ORGANISATION OF CONFERENCES AND SEMINARS

Coorganisation of the seminar Probability and Statistics of the Institute of Mathematics of Orsay.   2018-

Coorganisation of an international workshop on Asymptotic Representation Theory, at Institut Henri-Poincaré.   2017

SKILLS / MISCELLANEOUS

Languages	French, English: fluent. German, Spanish, Japanese: notions.
Computer	Python, Sage, HTML/XML, LaTeX, TikZ.
Hobbies	Moutain (ski, bike, trekking), photography, reading, gaming.