

Guillaume Cébron

Date of birth: 28/07/1989

Nationality: French

Institut de Mathématiques de Toulouse

Université Paul Sabatier

118 Route de Narbonne

31062 Toulouse

Cedex 4 France

☎ (+33) (0)6 30 09 85 39

✉ guillaume[at]math.univ-toulouse.fr

🌐 <https://www.math.univ-toulouse.fr/~gcebron/>

Education and employment

- 2016–present **Maître de conférences**, *Institut de Mathématiques de Toulouse*, Toulouse, France.
- 2014–2016 **Postdoctoral position**, *Saarland university*, Saarbrücken, Germany.
with Prof. Dr. Roland Speicher
- 2011–2014 **PhD of Mathematics**, *Laboratoire de Probabilités et Modèles Aléatoires (Paris 6)*, Paris.
Title: Processes on the unitary group and free probability
Advisor: Thierry Lévy
Defense: 13th November 2014
- 2010–2011 **Master of Science**, *Université Pierre et Marie Curie (Paris 6)*, Paris.
Probability and Random Models
- 2008–2012 **Ecole Normale Supérieure de Lyon**, Lyon, France.
Advanced Mathematics

Research interests

Random matrix theory, free probability, stochastic analysis, analysis on Lie groups, quantum groups, two dimensional Yang-Mills theory, Stein's method, combinatorics.

Publications

Published or accepted work

- (1) **Free convolution operators and free Hall transform**, *Journal of Functional Analysis*, 265 (11), 2013.
- (2) **Matricial model for the free multiplicative convolution**, *Annals of Probability*, 44 (4), 2016.
- (3) **Haar states and Lévy processes on the unitary dual group**, *Journal of Functional Analysis*, 270 (7), 2016 (with Michael Ulrich).
- (4) **The generalized master fields**, *Journal of Geometry and Physics*, 119, 2017 (with Antoine Dahlqvist et Franck Gabriel).
- (5) **Fluctuation of matrix entries and application to outliers of elliptic matrices**, *Canad. J. Math.*, 70: 3-25, 2018 (with Florent Benaych-Georges et Jean Rochet).

- (6) **Segal-Bargmann transform: the q-deformation**, *Lett Math Phys*, 108: 1677, 2018 (with Ching-Wei Ho).
- (7) **A note on existence of free Stein kernels**, *Proceedings of the AMS*, 148: 1583-1594, 2020 (with Max Fathi and Tobias Mai).
- (8) **A quantitative fourth moment theorem in free probability theory**, *Advances in Mathematics*, Volume 380, 2021.
- (9) **Large permutation invariant random matrices are asymptotically free over the diagonal**, *Annals of Probability*, Vol. 49, No. 1, 2021 (with Au Benson, Antoine Dahlqvist, Franck Gabriel and Camille Male).
- (10) **Outlier eigenvalues for non-Hermitian polynomials in independent i.i.d. matrices and deterministic matrices**, *Electronic Journal of Probability*, Vol. 26, no. 100, 2021 (with Serban Belinschi, Charles Bordenave and Mireille Capitaine).
- (11) **Fluctuations of Brownian Motions on $\mathbb{G}L_N$** , *Ann. Inst. Henri Poincaré Probab. Stat.*, 58 (1), 524-547, 2022 (with Todd Kemp).
- (12) **De Finetti Theorems for the unitary dual group**, *SIGMA*, 18 (67), 2022 (with Isabelle Baraquin, Uwe Franz, Laura Maassen and Moritz Weber).
- (13) **Operator-Valued Matrices with Free or Exchangeable Entries**, *Ann. Inst. H. Poincaré Probab. Statist.*, 59 (1), 503–537, 2023 (with Marwa Banna).
- (14) **Quantum groups based on spatial partitions**, *To appear in Annales de la Faculté des Sciences de Toulouse*, arXiv:1609.02321, (with Moritz Weber).

Preprint

- (15) **Universal constructions for spaces of traffics**, *in revision*, arXiv:1601.00168, (with Antoine Dahlqvist et Camille Male).
- (16) **Universality of free random variables: atoms for non-commutative rational functions**, *submitted*, arXiv:2107.11507, (with Octavio Arizmendi, Roland Speicher and Sheng Yin).
- (17) **Freeness of type B and conditional freeness for random matrices**, *in revision*, arXiv:2205.01926, (with Antoine Dahlqvist and Franck Gabriel).
- (18) **Asymptotic cyclic-conditional freeness of random matrices**, *submitted*, arXiv:2207.06249, (with Nicolas Gilliers).

Talks

- January 2023 **Seminar on Free Probability and Random Matrices**, Queen's university, Canada (online).
- September 2022 **XVème Colloque Franco-Roumain de Mathématiques Appliquées**, Toulouse, France.
- July 2022 **ACPMs Seminar**, Trondheim, Norway (online).
- Janvier 2022 **One World Probability Seminar**, (online).
- November 2021 **Seminar on Probability Theory**, *Institut de Mathématiques de Marseille*, Marseille, France.

- September 2021 **Probabilistic Operator Algebra Seminar**, UC Berkeley, California (online).
- April 2021 **Colloquium**, *NYUAD*, Abou Dabi, Émirats arabes unis (online).
- Février 2021 **Journée GDR Matrices et Graphes Aléatoires**, *CNRS*, Paris, France (online).
- October 2020 **CIRM conference "Entangling Non-commutative Functional Analysis and Geometry of Banach Spaces Intriquer l'analyse fonctionnelle non-commutative et la géométrie des espaces de Banach"**, *CIRM*, Luminy, France.
- June 2019 **Journées IOPS**, *Institut Mathématiques de Bordeaux*, Le Teich, France.
- May 2019 **Workshop on Non-commutative stochastic analysis**, *NTNU*, Trondheim, Norway.
- April 2019 **Seminar on Probability Theory**, *Université Paris-Sud*, Orsay, France.
- March 2019 **Conference "New Developments in Free Probability and Applications"**, *Centre de Recherches Mathématiques*, Montréal, Canada.
- December 2018 **Oberwolfach conference "Free Probability Theory"**, *Oberwolfach Institute*, Oberwolfach, Germany.
- May 2018 **Conference: Random Matrices and Free Probability Theory**, *IPAM*, Los Angeles, California.
- November 2017 **Workshop on "Brownian motion in cones: algebraic and analytic approaches"**, *Institut de Mathématiques de Toulouse*, Toulouse, France.
- April 2017 **Conference: ProbabLY ON Random Matrices**, *Ens Lyon*, Lyon, France.
- March 2017 **Workshop on "Random matrices and graphs"**, *IHP*, Paris, France.
- January 2017 **Workshop on "Notions of freeness"**, *Saarland University*, Saarbrücken, Germany.
- November 2016 **Workshop IMT-LAAS**, *LAAS*, Toulouse, France.
- July 2016 **7ECM Satellite conference on "Compact quantum group"**, Greifswald, Germany.
- March 2016 **Workshop on "Notions of freeness"**, *Saarland University*, Saarbrücken, Germany.
- October 2015 **Seminar on Probability and Statistics**, *Laboratoire Paul Painlevé*, Lille, France.
- June 2015 **Oberwolfach conference "Free Probability Theory"**, *Oberwolfach Institute*, Oberwolfach, Germany.
- May 2015 **Seminar on Free Probability**, *Saarland University*, Saarbrücken, Germany.
- February 2015 **Seminar on Probability Theory**, *Université Claude Bernard*, Lyon, France.
- January 2015 **Seminar on Functional Analysis**, *Université de Franche-Comté*, Besançon, France.
- January 2015 **Seminar on Probability Theory**, *Université de Franche-Comté*, Besançon, France.
- November 2014 **Seminar on Functional Analysis**, *Saarland University*, Saarbrücken, Germany.

- April 2014 **AMS Western Spring Sectional Meeting**, *University of New Mexico*, Albuquerque, New Mexico.
- April 2014 **UCSD Probability Seminar**, *University of California*, San Diego, California.
- March 2014 **Workshop "Les probas du vendredi"**, *Laboratoire de Probabilités et Modèles Aléatoires (Paris 6)*, Paris, France.
- February 2014 **Research seminar "Free Probability Theory"**, *Saarland University*, Saarbrücken, Germany.
- December 2013 **Workshop "Les probas du vendredi"**, *Laboratoire de Probabilités et Modèles Aléatoires (Paris 6)*, Paris, France.
- November 2013 **Conference ProbaGeo**, *University of Luxembourg*, Luxembourg.
- September 2013 **PhD student seminar**, *Laboratoire de Probabilités et Modèles Aléatoires (Paris 6)*, Paris, France.
- July 2013 **Workshop on Analytic, Stochastic, and Operator Algebraic Aspects of Noncommutative Distributions and Free Probability**, *Fields Institute*, Toronto, Canada.
- May 2013 **PhD student seminar**, *Institut Mathématiques de Bourgogne*, Dijon, France.
- February 2012 **PhD student seminar**, *Laboratoire de Probabilités et Modèles Aléatoires (Paris 6)*, Paris, France.

Grants

- 2021-2025 **Principal Investigator of the JCJC project « STARS »**, *funded by the ANR*, EUR 120,200.
- 2017-2020 **Co-Principal Investigator of the project « Operator-valued random matrices: the limit in large dimension »**, *funded by the Labex CIMI*, EUR 13,200.
- March 2019 **Simons CRM Scholar**, *at the CRM in Montreal*.
- 2018 **Co-Principal Investigator of the project « Random matrix dynamics and spherical Hecke algebra »**, *funded by the PEPS program of the CNRS*, EUR 3,500.
- 2017 **Co-principal Investigator of the project « Random Graphs and Matrices, Free Probability »**, *funded by the PEPS program of the CNRS*, EUR 8,500.

Teaching

- 2021–present **In charge of the Master 1 of Applied Mathematics (MAPI3)**, *Université Paul Sabatier*, Toulouse.
- 2016–present **Assistant professor in Mathematics**, *Université Paul Sabatier*, Toulouse.
- 2012–2014 **Teaching assistant in Mathematics**, *Université Pierre et Marie Curie (Paris 6)*, Paris.

Other outreach

- 2020–present **Co-advisor of the PhD student**, Clément Chouard.
- 2021–present **Mentoring of the postdoc**, Nicolas Gilliers.

- 2020–2021 **Mentoring of the postdoc**, Sheng Yin.
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- Février 2023 **Co-organizer of the full-day seminar GDR Matrices et graphes aléatoires**, *Institut de Mathématiques de Toulouse*, Toulouse, France.
- December 2022 **Committee member for the PhD thesis of Adrian Celestino**, *Trondheim*, Norway.
- Octobre 2021 **Co-organizer of the full-day seminar GDR Matrices et graphes aléatoires**, *Institut de Mathématiques de Toulouse*, Toulouse, France.
- November 2018 **Co-organizer of the meeting "Brown measures and non-normal random matrices"**, *Institut de Mathématiques de Toulouse*, Toulouse, France.
- August 2018 **Organizer of a parallel session in "Journées MAS 2018"**, *Université de Bourgogne*, Dijon, France.
- November 2017 **Co-organizer of the meeting "Distributional symmetries and independences"**, *Institut de Mathématiques de Bordeaux*, Bordeaux, France.
- March 2016 **Co-organizer of the meeting "Notions of freeness"**, *Saarland University*, Saarbrücken, Germany.
- May 2015 **Committee member for the PhD thesis of Carlos Vargas**, *Saarland University*, Saarbrücken, Germany.
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- 2014–present **Referee for the following journals**, Advances in Mathematics, Journal of Functional Analysis, Infinite Dimensional Analysis Quantum Probability and Related Topics, Advances in Applied Mathematic, International Journal of Applied and Experimental Mathematics, SIGMA, Memoirs of AMS, Journal of Combinatorial Theory, International Mathematics Research Notices, Canadian Journal of Mathematics, Semigroup Forum, Communications in Mathematical Physics, Dissertationes Mathematicae, Electronic Communications in Probability, Journal of Theoretical Probability, Mathematics, Proceedings of the AMS, Random Matrices: Theory and Applications, Studia Mathematica.