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Scientific interests

Probability theory and mathematical physics.

Keywords: Statistical Physics, Interacting particle systems, Integrable probability, random walks in random environment, quantum integrable systems, random matrix theory, symmetric functions, stochastic PDEs.

Academic positions

- 2018 – ... **CNRS researcher**, École Normale Supérieure, Laboratoire de Physique de l'ENS.
2016 – 2018 Ritt assistant professor, Columbia University, Department of Mathematics.
2015 – 2016 Postdoctoral researcher, Columbia University, Department of Mathematics.

Education

- 2012 – 2015 **Université Paris-Cité (Paris 7)**, Ph.D. in applied mathematics.
2011 – 2012 **Sorbonne Université (Paris 6)**, M.S. in probability and statistics.
2008 – 2011 **École Polytechnique**, undergraduate studies.
2006 – 2008 **Lycée Henri IV**, Classes préparatoires aux grandes écoles, mathematics and physics.

Funding

- 2025 – 2029 Coordinator of one PSL's "grand programme" [Statistical Physics and Mathematics](#). It gathers 25 mathematicians and physicists from ENS and Dauphine. Budget: 2M€.
2023 – 2025 ANR Tremplin ERC IntStoch, PI – [Integrable stochastic models of non-intersecting paths, interfaces and diffusion in random media](#)
2022 – 2026 Member of [ANR CORTIPOM](#) – Combinatorial representation theory and interactions with probabilistic models.
2020 – 2024 Member of [ANR MICMOV](#) – Description microscopique des interfaces mobiles.
2020 – 2023 France-MIT MISTI travel grant (joint with Alexei Borodin and Pierre Le Doussal).

Publications

Mathematics

21. Integral formulas for two-layer Schur and Whittaker processes, **preprint**. [ArXiv:2409.08927](#)
20. KPZ exponents for the half-space log-gamma polymer, with Ivan Corwin and Sayan Das, **Probability Theory and Related Fields**. [ArXiv:2310.10019](#)
19. Stationary measures for integrable polymers on a strip, with Ivan Corwin and Zongrui Yang, **Inventiones Mathematicae**. [ArXiv:2306.05983](#)
18. Weakly asymmetric facilitated exclusion process, with Oriane Blondel and Marielle Simon, **preprint**. [ArXiv:2301.04689](#)
17. Markov duality and Bethe ansatz formula for half-line open ASEP, with Ivan Corwin, **Probability and Mathematical Physics**. [ArXiv:2212.07349](#)

16. Stationary measures for the log-gamma polymer and KPZ equation in half-space, with Ivan Corwin, **Annals of Probability**. [ArXiv:2203.11037](#)
15. Random walk on nonnegative integers in beta distributed random environment, with Mark Rychnovsky, **Communications in Mathematical Physics**, 2023. [ArXiv:2201.07270](#)
14. An identity in distribution between full-space and half-space log-gamma polymers, with Shouda Wang, **International Mathematics Research Notices**, 2022. [ArXiv:2108.08737](#)
13. Maximal free energy of the log-gamma polymer, with Ivan Corwin and Evgeni Dimitrov, **Journal d'Analyse Mathématique**. [ArXiv:2105.05283](#)
12. Spatial tightness at the edge of Gibbsian line ensembles, with Ivan Corwin and Evgeni Dimitrov, **Communications in Mathematical Physics**, 2023. [ArXiv:2101.03045](#)
11. Fluctuations of the log-gamma polymer free energy with general parameters and slopes, with Ivan Corwin and Evgeni Dimitrov, **Probability Theory and Related Fields**, 2021. [ArXiv:2012.12316](#)
10. Large deviations for sticky Brownian motions, with Mark Rychnovsky, **Electronic Journal of Probability**, 2020. [ArXiv:1905.10280](#)
9. Half-space Macdonald processes, with Alexei Borodin et Ivan Corwin, **Forum of Mathematics Pi**, 2020. [ArXiv:1802.08210](#)
8. Tracy-Widom asymptotics for a river delta model, with Mark Rychnovsky, in **Stochastic Dynamics Out of Equilibrium**, Institut Henri Poincaré, Paris, France, 2017, Springer Proceedings in Mathematics & Statistics, 2019. [ArXiv:1807.01824](#)
7. Stochastic six-vertex model in a half-quadrant and half-line open ASEP, with Alexei Borodin, Ivan Corwin and Michael Wheeler, **Duke Mathematical Journal**, 2018. [ArXiv:1704.04309](#)
6. Facilitated exclusion process, with Jinho Baik, Ivan Corwin and Toufic Suidan, **Computation and Combinatorics in Dynamics, Stochastics and Control**. Abel Symposia, 2018. [ArXiv:1707.01923](#)
5. Pfaffian Schur processes and last passage percolation in a half-quadrant, with Jinho Baik, Ivan Corwin and Toufic Suidan, **Annals of Probability**, 2018. [ArXiv:1605.00525](#)
4. Random walks in Beta-distributed random environment, with Ivan Corwin, **Probability Theory and Related Fields**, 2017. [Arxiv:1503.04117](#).
3. The q -Hahn asymmetric exclusion process, with Ivan Corwin, **Annals of Applied Probability**, 2016. [ArXiv:1501.03445](#).
2. A phase transition for q -TASEP with a few slower particles. **Stochastic Processes and their Applications**, 2015. 2674–2699. [ArXiv:1404.7409](#)
1. A short proof of a symmetry identity for the q -Hahn distribution. **Electronic Communications in Probability**, 2014. [ArXiv:1404.4265](#)

Physics

8. Stationary measures of the KPZ equation on an interval from Enaud-Derrida's matrix product ansatz representation, with Pierre Le Doussal, **Journal of Physics A: Mathematical and Theoretical**, 2023. [ArXiv:2209.03131](#)
7. A stationary model of non-intersecting directed polymers, with Pierre Le Doussal, **Journal of Physics A: Mathematical and Theoretical**, 2023. [ArXiv:2205.08023](#)
6. Half-space stationary Kardar-Parisi-Zhang equation beyond the Brownian case, with Alexandre Krajenbrink and Pierre Le Doussal, **Journal of Physics A: Mathematical and Theoretical**, 2022. [ArXiv:2202.10487](#)
5. Steady state of the KPZ equation on an interval and Liouville quantum mechanics, with Pierre Le Doussal, **EuroPhysics Letters**, 2021. [ArXiv:2105.15178](#)
4. The KPZ equation in a half space with flat initial condition and the unbinding of a directed polymer from an attractive wall, with Pierre Le Doussal, **Physical Review E**, 104, 2021. [ArXiv:2104.08234](#)
3. Half-space stationary Kardar-Parisi-Zhang equation, with Alexandre Krajenbrink and Pierre Le Doussal, **Journal of Statistical Physics**, 2020. [ArXiv:2003.03809](#)

2. Moderate deviations for diffusion in time dependent random media, with Pierre Le Doussal, **Journal of Physics A: Mathematical and Theoretical** 2020. [ArXiv:1912.11085](https://arxiv.org/abs/1912.11085)

1. Stochastic growth in time dependent environments, with Pierre Le Doussal and Alberto Rosso, **Physical Review E, rapid communications**, 2020. [ArXiv:1909.11557](https://arxiv.org/abs/1909.11557)

PhD Thesis

[Some integrable models in the KPZ universality class](#), Université Paris Diderot – Paris 7, June 2015. Advisor: Sandrine Péché.

Service and Organization of events

Workshops, Conferences, Programs co-organized

- Apr-May 2025 Two-month research program at CMSA, Harvard: [Classical, quantum, and probabilistic integrable systems – novel interactions and applications](#).
- Oct. 2022 Workshop in Lille, [Asymmetry in interacting particle systems, microscopic and macroscopic effects](#).
- June 2020 Conference [Random networks and interacting particle systems](#) at École Normale Supérieure – event cancelled at the last minute due to Covid.
- Oct. 2017 Workshop at Columbia University for the NSF Focused Research Group Integrable Probability.

Seminars co-organized

- 2024 – present Rencontres de probabilité intégrables: integrable probability meetings, one day twice a year at Institut Henri Poincaré.
- 2019 – 2024 [Seminar MEGA](#), a Parisian seminar on random matrix theory at Institut Henri Poincaré.
- 2018 – 2022 Seminar [Statistical Physics Forum](#) at École normale supérieure Physics department.
- Apr. 2017 Spring Columbia-Courant probability seminar.
- 2015 – 2018 Columbia Probability Seminar.
- 2013 – 2014 PhD students probability seminar joint between Paris 6 and Paris 7.

Main other responsibilities

- 2023 – 2025 Member of CNRS Mathematics “comité national” (section 41).

Teaching

- 2024 – Specialized master level course on “Integrable probability and the KPZ universality class”, Master MATH, PSL University.
- 2016 – 2018 Instructor at Columbia University Mathematics Department: Linear algebra, Ordinary differential equations, Calculus.
- 2012 – 2015 “Chargé de TD” at University Paris-Cité.

Invited talks

General audience talks and colloquia

- Nov. 2024 Séminaire Bourbaki, Institut Henri Poincaré.
Le paysage dirigé, d’après Dauvergne, Ortmann, Virág.
- May 2023 Mathematics and Physics Colloquium, Strasbourg.
The Kardar-Parisi-Zhang equation and its universality class.

Conferences

- Oct. 2024 Discrete integrable systems: difference equations, cluster algebras and probabilistic models, ICTS Bangalore, India.
Last passage percolation in a strip.
- Oct. 2024 Algebraic Aspects of Random Matrices, CIRM.
Last passage percolation in a strip.
- Sept. 2024 Random Matrices and Scaling Limits, focus week at Mittag Leffler Institute, Stockholm.
Last passage percolation in a strip.
- Aug. 2024 Intertwining between Probability, Analysis and Statistical Physics, Singapore.
Last passage percolation in a strip.
- May 2024 At the crossroads of physics and mathematics : the joy of integrable combinatorics — A conference in the honor of Philippe Di Francesco's 60th birthday
Last passage percolation in a strip.
- Apr. 2024 Kardar–Parisi–Zhang equation: new trends in theories and experiments, Les Houches School of Physics.
Non-equilibrium steady state for the open KPZ equation.
- Mar. 2024 Conference for Jeremy Quastel's 60th birthday, New York
Stationary measures for the open KPZ class.
- Oct. 2023 The Asymmetric Simple Exclusion Process, Simons center, Stony Brook.
Stationary measures in last passage percolation.
- July 2023 Stochastic Processes and their Applications, Lisbon, Portugal
Stationary measures of the open KPZ equation
- June 2023 Simons Symposia on Solvable Lattice Models and Interacting Particle Systems, Schloss-Elmau, Germany
Stationary measures for directed polymer models on a strip
- Déc. 2022 Coulomb gases and universality in Paris.
Non-intersecting directed polymers
- Déc. 2022 Recent developments in stochastic duality, EURANDOM, Delft.
ASEP with boundary, stationary measures and Markov duality
- Nov. 2022 Rouen probability meeting 2022
Stationary measures for the Kardar-Parisi-Zhang equation and ASEP
- May 2022 Randomness, Integrability, Universality, Galileo Galilei Institute, Florence.
Characterizing invariant measures using symmetries of integrable probabilistic models
- May. 2022 Random Matrix Eurasia, Singapore.
Pinning of directed polymers and the Baik-Ben Arous-Péché phase transition.
- Jan. 2022 Inhomogeneous Random Systems, Institut Henri Poincaré.
Half-space Kardar-Parisi-Zhang equation
- Oct. 2021 Workshop of the GDR MEGA, Saint Malo.
The KPZ universality class and integrable probability
- July 2021 Classical and Quantum Integrable Systems, Sochi, Russia.
Cancelled.
- Mar. 2020 NYC Integrable Probability 2020 – Cancelled.
Half-space stationary KPZ equation
- Feb. 2020 Third Haifa Probability School, Israel.
Diffusions in random environment
- Jun. 2019 Virginia summer school in integrable probability, Charlottesville, USA.
Diffusions in random environment.
- Jun. 2018 Young Researchers Meeting on Integrable Systems, Cergy, France.
Kardar-Parisi-Zhang equation and Macdonald processes in a half-space.
- May 2018 Integrable Probability Boston 2018, MIT.
Macdonald processes and KPZ equation in a half space.
- Jul. 2017 27th Annual PCMI Summer Session, Random Matrices, Park city, USA.
ASEP and KPZ equation in a half- space with open boundary.
- Jun. 2017 Stochastic dynamics out of equilibrium, Institut Henri Poincaré, France.
ASEP and the KPZ equation in a half space.
- Apr. 2017 Qualitative Methods in KPZ Universality, CIRM, Marseille, France.
ASEP on the positive integers with an open boundary and the KPZ equation in a half space.

- Jan. 2017 Joint mathematics meeting American Mathematical Society-Mathematical Association of America, Atlanta, USA.
Facilitated TASEP and half-space KPZ growth.
- Apr. 2016 Columbia-Princeton Probability Day, New York, USA.
Random walks in Beta random environment.
- Jan. 2016 New approaches to non-equilibrium and random systems, Kävli institute, Santa Barbara, USA.
Fluctuations of the first particle in exclusion processes.
- Dec. 2015 *Master Lectures in Mathematics* around the work of Horng-Tzer Yau, Tsinghua Sanya International Mathematics Forum, China.
Fluctuations of the first particle in exclusion processes.
- May 2015 Clay Mathematics Institute workshop “Random Polymers and Algebraic Combinatorics”, Oxford, UK.
Random walks in Beta random environment.

Seminars

- 2024 Sorbonne Université (CORTIPOM workshop), KTH (Stockholm), Université Paris-Nord, Université Grenoble-Alpes, Sorbonne Université Physics (LPTMC), University College Dublin
- 2023 Université Paris-Dauphine (séminaire Analyse-Probabilités), University of Cincinnati, Université Paris-Cité, University of Bristol (online), University of Edimburg, University of Bonn
- 2022 Ecole Normale Supérieure, Sorbonne Université, Seminário de Probabilidade e Mecânica Estatística (online), MIT, Leipzig (Oberseminar Analysis-Probability), Université Paris-Saclay (LPTMS), Columbia University, Warsaw University of Technology (online)
- 2021 Université d'Aix-Marseille, Université de Toulouse, MSRI (Berkeley), Columbia University
- 2020 Université de Lille, University of Bath, École Normale supérieure de Lyon.
- 2019 Université de Lyon, Université Paris Saclay, University College Dublin, Institut Henri Poincaré, Université d'Angers
- 2018 Université Paris 5, ENS (LPTENS), Sorbonne Université (LPTHE), Institut Henri Poincaré (MEGA seminar), Université Paris Dauphine, Université Paris Diderot, Universität Bonn, NYU Shanghai
- 2017 New York University, CUNY, University of Kansas
- 2016 UCLA, University of Virginia, NYC Integrable Probability Working Group
- 2015 Université d'Angers, Université Paris 6, Institut Henri Poincaré (MEGA seminar), Stanford University, UC Davis, UC Berkeley, University of Michigan, New York University, MIT, MIT, Harvard