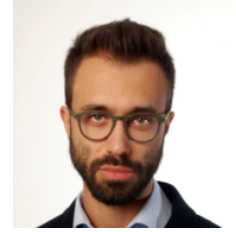


Matteo D'Achille

Curriculum Vitae



Date and place of birth: December 6, 1990—Monza, Italy
Nationality: Italian

Email: matteo.dachille@u-pec.fr
Personal webpage: <https://matteodachille.github.io>

Research interests

Statistical and Mathematical Physics

Current position

2020– Research and Teaching Assistant, Laboratoire d'Analyse et de Mathématiques Appliquées (LAMA), UMR 8050 CNRS, Université Paris-Est Créteil (UPEC)

Past position

2019–2020 Associated Member, Laboratoire d'Informatique de Paris Nord (LIPN), UMR 7030 CNRS, Université Sorbonne Paris Nord (Paris XIII)

Education

2020 **Ph.D.** Paris-Saclay University
Thesis title: *Statistical Properties of the Euclidean Random Assignment Problem*
Supervisors: William Jalby, Olivier Rivoire and Andrea Sportiello
Thesis Defended on October 16, 2020 before the Committee composed by: Michel Ledoux (president), Charles Bordenave (referee), Massimiliano Gubinelli (referee), Guilhem Semerjian (examiner), Lenka Zdeborová (examiner), Sergio Caracciolo (invited member)

2016 **M.Sc.** University of Milan, 110/110 summa cum laude
Thesis title: *On two linear assignment problems: random assignment and Euclidean bipartite matching*
Supervisor: Sergio Caracciolo
Assistant Supervisor: Gabriele Sicuro

2012 **B.Sc.** University of Milan, 110/110
Thesis title: *La teoria di Schwarz-Christoffel e il Biliardo Quantistico Poligonale*
Supervisor: Luca Guido Molinari

Scientific Visits

- 2021 Two weeks visit (09/09-24/09), CASA, Eindhoven University of Technology, Netherlands.
Host: Oliver Tse.
- 2018 Two weeks visit (18/02-04/03), Banach Center of the Polish Academy of Sciences, (IM PAN),
Warsaw, Poland.

Publications

In preparation

- 2021 10. “Decimations for Two-dimensional Ising and Rotator Models II”, with A. van Enter
and A. Le Ny
- 2020- 9. “Euclidean Random Assignment Problems at non-integer Hausdorff dimensions $d_H \in (1, 2)$ ”,
with A. Sportiello
- 2020- 8. “Anomalous scaling of the optimal assignment in the one dimensional Random Assignment
Problem: some rigorous results”, with A. Sportiello

Preprints

- 2021 7. “Decimations for Two-dimensional Ising and Rotator Models I”, with A. van Enter and A. Le
Ny, submitted. arXiv: [2105.07950](https://arxiv.org/abs/2105.07950) [math-ph]
6. “Almost Gibbsian Measures on a Cayley Tree”, with A. Le Ny, submitted. arXiv: [2105.05767](https://arxiv.org/abs/2105.05767)
[math-ph]

Published in peer-reviewed journals

- 2021 5. “Random Assignment Problems on $2d$ Manifolds”, with D. Benedetto, E. Caglioti, S. Carac-
ciolo, G. Sicuro and A. Sportiello, *Journal of Statistical Physics* **183**, art. 34, doi: [10.1007/s10955-
021-02768-4](https://doi.org/10.1007/s10955-021-02768-4)
- 2020 4. “The Dyck bound in the concave 1-dimensional random assignment model”, with S. Carac-
ciolo, V. Erba and A. Sportiello, *Journal of Physics A: Mathematical and Theoretical* **53** (6), 064001
doi: [10.1088/1751-8121/ab4a34](https://doi.org/10.1088/1751-8121/ab4a34)
- 2018 3. “Anomalous scaling of the optimal cost in the one-dimensional random assignment problem”,
with S. Caracciolo and G. Sicuro, *Journal of Statistical Physics* **174** (4), 846–864, doi: [10.1007/s10955-
018-2212-9](https://doi.org/10.1007/s10955-018-2212-9)
- 2017 2. “Random Euclidean matching problems in one dimension”, with S. Caracciolo and G. Sicuro,
Physical Review E **96** (4), 42102, doi: [10.1103/PhysRevE.96.042102](https://doi.org/10.1103/PhysRevE.96.042102)
1. “Finite-size corrections in the random assignment problem”, with S. Caracciolo, E.M. Malat-
esta and G. Sicuro, *Physical Review E* **95** (5), 52129, doi: [10.1103/PhysRevE.95.052129](https://doi.org/10.1103/PhysRevE.95.052129)

Talks in presence (P) or in visioconference (V)

2021	14/09 - SPOR Seminar, EURANDOM, TU/E, Eindhoven, NL (website) <i>TBA</i> , 45 min	P
	07/07 - Franco-Dutch meeting, CNRS IRP, Institut Henri Poincaré, Paris, FR (website) <i>On the phase diagram of Euclidean Random Assignment Problems at low dimensions</i> , 40 min	P
	23/06 - 1 st Italian Society of Statistical Physics (SIFS) conference, Parma, IT (recording) <i>Consequences of Weyl's law in low-dimensional Euclidean Random Assignment Problems</i> , 12 min	V
	21/06 - Journées de Probabilités 2021, Guidel Plages, FR (website) <i>Euclidean Random Assignment Problems: origin, state of the art and some open problems in one dimension</i> , 40 min	P
	18/03 - ALÉA Days 2021, CIRM Marseilles Luminy, FR (website) <i>Multiple zeta-star values in the one dimensional ERAP with stretched-exponentially distributed points</i> , 20 min	V
	21/02 - Laboratoire Painlevé, Université de Lille, Lille, FR (website) <i>Différences d'énergie asymptotique dans l'ERAP sur des variétés bidimensionnelles</i> , 45 min	V
2020	10/11 - Probability and Statistics Seminar, Université Paris-Est Créteil, Créteil, FR (website) <i>Le problème d'assignation aléatoire euclidienne: état de l'art et quelques problèmes ouverts en dimension $d \leq 2$</i> , 45 min	P
	16/10 - PhD Thesis Defense, Université Paris-Saclay, FR <i>Statistical properties of the Euclidean random assignment problem</i> , 45 min	V
	14/01 - Combinatorics Seminar, Université Sorbonne Paris Nord, Villataneuse, FR (website) <i>Le problème d'assignation aléatoire euclidienne: état de l'art et quelques résultats récents en dimension $d = 1$</i> , 45 min	P

Referee activity in peer-reviewed journals

2017- *Chaos (AIP), Physical Review X (APS)*

Membership of Scientific Societies

2019- Italian Society of Statistical Physics (SIFS), *voting member*
2017- European Physical Society (EPS), *individual member*
2013- Italian Physical Society (SIF), *voting member*

Other memberships

2019- *Member of the WIMS EDU association ([website](#))*

Students supervision

Supervisor of TER (~ 3 months Study and Research Work and realization of a ~ 20 pages report), Master 1 “Mathématiques et Applications”, Université Paris-Est Créteil. Students:

2021 *Moustapha Mohamadou BA, Yuqi LIU, Issa Konate SY*

Participation in Evaluation Committees

2021 *TER committee of M1 students at Université Paris Est Créteil: MD'A, Raphaël Danchin, Stéphane Sabourau, Etienne Sandier, Stéphane Seuret, Julien Sobier.*

Teaching activities

2020-current *Teaching Assistant (Mathematics), Université Paris-Est Créteil (~ 192 hours for 2nd-3rd year Bachelor students in Economics, ongoing)*

Spring Term 2022: Tutorials/Course for the class “Statistical Inference” by S. Laruelle.

Program: point estimators, confidence interval estimators, statistical tests, least squares.

Fall Term 2021: Tutorials for the class “Mathematics for Dynamical Systems” by A. Deshayes.

Program: TBD.

Tutorials/Course for the class “Probability” by S. Laruelle.

Program: Introduction to Probability, discrete and continuous random variables, convergence of random variables, limit theorems.

Spring Term 2021: Tutorials/Course for the class “Statistical Inference” by S. Laruelle.

Program: point estimators, confidence interval estimators, statistical tests, least squares.

Fall Term 2020: Tutorials for the class “Mathematics for Dynamical Systems” by A. Le Ny.

Program: dynamical systems in discrete time dynamical systems in continuous time, applications to models in Economics.

2019-2020 *Lecturer (Mathematics), Paris-Saclay University (Orsay) (15 hours for 1st year Bachelor students in Mathematics, Physics and Informatics)*

Spring Term 2020: WIMS activity for “Remédiation en Mathématiques (OuiSi)” by G. Moreau.

Program: basic operations, Euclidean geometry, trigonometry, functions, complex numbers, mean value theorem, integral calculus.

2018-2019 *Tutor (Mathematics), Paris-Saclay University (Orsay) (65 hours for 1st year Bachelor students in Mathematics, Physics and Informatics, and dual Bachelor Physico-Chimie)*

Spring Term 2019: Tutorials+WIMS for “Remédiation en Mathématiques (OuiSi)” by G. Moreau.

Program: basic operations, Euclidean geometry, trigonometry, functions, complex numbers, mean value theorem, integral calculus.

Fall Term 2018: Tutorials for the class “Calculus Math 151” by G. David.

Program: functions, limits and continuity, Taylor expansion, derivative, parametric curves, behaviors of functions over a closed and bounded interval,

Taylor expansion of order ≥ 2 , ODEs, primitives and integrals, functions of several variables.

Participation as auditor to research schools, conferences, seminars, workshops

- 2021 “Theory of Probability and Its Applications: P.L. Chebyshev - 200”, Moscow, RU ([website](#))
- Journées Aléa 2021, Research School, CIRM Marseilles Luminy, FR, ([website](#))
- “Inhomogeneous Random Systems”, Institut Henri Poincaré and Institut Curie, Paris ([website](#))
- 2020 “Integrable Probability Online Summer School”, Clay Mathematics Institute & Heilbronn Institute for Mathematical Research, Zoom virtual sessions ([website](#))
- “Journées de combinatoire de Bordeaux 2020”, LaBRI, Université de Bordeaux, FR ([website](#))
- 2019 “Combinatorics and Arithmetic for Physics: special days” meeting Marilyn and James Simons Conference Center, IHES, Le Bois-Marie, Bures-sur-Yvette, FR ([website](#))
- “Journées MathSTIC 2019 – Probabilités et Combinatoire” workshop, Bâtiment Galilée, Université Paris 13, Villetaneuse, FR ([website](#))
- 2018 “Paths in Statistical Physics”, Physics Department, Université Paris Diderot, FR ([website](#))
- “Information transmission in biological systems” conférence, Simons Semester on Mathematical Biology, Mathematical Research and Conference Center, Będlewo, Poland ([website](#))
- 2016 “Optimal Transport and Applications”, Scuola Normale Superiore, Pisa, IT ([website](#))
- “Mathematical Physics, Analysis and Stochastics”, Summer School, Ruprecht Karls Universität, Heidelberg, DE ([website](#))

Languages

Italian (native), French (advanced), English (advanced)

Programming languages and computer skills of everyday use

*C++, Python, Wolfram LanguageTM
L^AT_EX, HTML, CSS*

Last updated: August 29, 2021