

# Raphael Ducatez

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## Curriculum Vitae

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French

Born January 29, 1992 in Paris

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## Education/Employment

2021-... **Post-doct**, *Ecole Normale Supérieur de Lyon*.

2018-2021 **Post-doct**, *University of Geneva, Switzerland*.

2015-2018 **PhD**, *University Paris Dauphine*, advisor: Mathieu Lewin.

2011-2015 **Ecole Normale Supérieure de Paris:**

- **Master 2** in Probability, Master PMA, University Paris 6.
- **Master 2** in Mathematical logic, Master LMFI, University Paris 7.
- **Bachelor** in Mathematics, ENS Paris.
- **Bachelor** in Physics, ENS Paris.

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## Publications

### Pre-print

J Alt, RD and A Knowles, *Poisson statistics and localization at the spectral edge of sparse Erdős–Rényi graphs*, arXiv:2106.12519, 2021.

RD, *Analysis of the one dimensional inhomogeneous Jellium model with the Birkhoff-Hopf Theorem* (revision requested in Journal of Functional Analysis) arXiv:1806.07681, 2018.

### Published

J Alt, RD and A Knowles, *The completely delocalized region of the Erdős–Rényi graph*, accepted in Electronic Communications in Probability, arXiv:2005.14180, 2021.

J Alt, RD and A Knowles, *Delocalization transition for critical Erdős–Rényi graphs*, accepted in Communications in Mathematical Physics, arXiv:2005.14180, 2020.

J Alt, RD and A Knowles, *Extremal eigenvalues of critical Erdős–Rényi graphs*, Annals of Probability. arXiv:1905.03243, 2019.

RD, *Foward Backward process for one dimension Anderson model*, Electronic Communication of Probability, arXiv:1711.11302, 2017.

RD and F Huveneers, *Periodically driven Anderson model*, Annales Henri Poincare, arXiv:1607.07353, 2017.

RD, *Anderson localization for infinitely many interacting particles under Hartree Fock theory*, Journal of Spectral Theory, arXiv:1602.02896, 2016.

### PhD Thesis

RD, *Analyse mathématique de divers systèmes de particules en milieu désordonné*. tel-01886142

### Popular Science Article

RD, *Une version simplifiée du Théorème de Gauss-Bonnet*. Image des Maths

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## Research Experiences before the PhD

- 2014 **5 month internship**, *University Paris Diderot*, advisor: T. Tsankov.
- 2013 **5 month internship**, *University of Warwick*, United Kindom, advisor: D. Ueltschi.
- 2012 **2 month internship, experimental physics**, *Laboratoire LKB, ENS Paris*, advisor: F. Chevy.

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## Oral presentations

### International Conferences

- 2021 ○ **Aug**, International Congress of Mathematical Physics (Geneva).
- 2020 ○ **Aug**, One World probability Symposium (Web Conference).
- 2019 ○ **Aug**, QMath14 (Aarhus, Danemark).
- **May**, Spectral Theory and Probability in mathematical physics (Strasbourg).
- 2018 ○ **Nov**, Theorie spectral des operateurs quasi-periodiques et aleatoires (Montreal).
- **Jul**, International Congress of Mathematical Physics (Montreal).
- 2017 ○ **Jun**, Mathematical aspects of disordered quantum systems (Zurich).
- 2016 ○ **Oct**, QMath13 (Atlanta, USA).

### Seminars

- 2021 ○ **Oct**, GDR Matrices et graphes aléatoires (Toulouse).
- **Jun**, Probability Seminar (LPSM Paris).
- **May**, Groupe de Travail Large Deviation for Random Matrices (ENS Lyon).
- **Mar**, Journées Jeunes EDPistes (Besançon).
- **Mar**, Mathematical Physics and Harmonic Analysis Seminar (Texas A and M University).
- **Feb**, Quantum and Classical dynamics seminar (Toulon).
- **Feb**, Probability seminar (Marseille).
- **Jan**, Working group Point process and applications (Lille).
- **Jan**, Winter School of Mathematical Physics (Switzerland).
- 2020 ○ **Dec**, Seminar of the group Image, Optimisation and Probability (Bordeau).
- **Nov**, Seminar of Analysis (Strasbourg).
- **June**, Probability Seminar of UMPA-ICJ (Lyon).
- **Jan**, Probability Seminar in University of Paris Orsay (Orsay).
- 2019 ○ **Nov**, Informal pizza seminar on probability (Geneva).
- **Oct**, PhD Seminar in University of Zurich (Zurich).
- **May**, PhD Seminar in University of Geneva (Geneva).

- 2018
  - **Oct**, Seminar of mathematical physics at University of Geneva (Geneva).
  - **June**, Seminar of random matrices and graphs (MEGA), (Paris).
  - **May**, Les probabilités de demains (Paris).
- 2017
  - **Oct**, PhD summer school of Paris Dauphine.
  - **Apr**, PhD seminar at University Pierre et Marie Curie (Paris).
- 2016
  - **Mars**, PhD seminar at University Paris Dauphine (Paris).

## Teaching Experiences

### In academia

- 2018-2021 **Lecturer**, *University of Geneva*, Martingale and Brownian motion, 1<sup>st</sup> year Master.
- 2018-2019 **Teaching assistant**, *University of Geneva*, Brownian motion and Finance, 1<sup>st</sup> year Master.
- 2015-2018 **Teaching assistant**, *University Paris Dauphine*.
  - Linear Algebra, 1<sup>st</sup> year Bachelor
  - Analysis, 2<sup>nd</sup> year Bachelor
  - Python Language, 2<sup>nd</sup> year Bachelor

### In the Préparation Olympique Française de Mathématiques (POFM), Animath association

- 2018-... **Member of the board of the POFM.**
- 2019-... **Director of the POFM workshop for high school students.**
  - Oct 2021, Cachan.
  - Aug 2021, Valbonne.
  - Feb 2021, Online.
  - Aug 2020, Valbonne.
  - Oct 2019, Cachan.
  - Aug 2019, Valbonne.
  - Feb 2019, Cachan.
- 2020-... **Organisor of the POFM Online courses.**
- 2021-... **Author of the POFM YouTube Channel**, [www.youtube.com/c/POFM-yt](http://www.youtube.com/c/POFM-yt).
- 2019 **Deputy Team Leader of the French team**, *Junior Balkanic Mathematics Olympiads*, Cyprus.
- 2017 **Teacher**, *POFM workshop and Parimath association*.

## Distinctions

- 2013 **First Price in International Mathematic Competition for university students (IMC)**, *Bulgaria*, (ranked 9<sup>th</sup> out of 320 participants).

## Miscellaneous

- 2016-2019 **Participant in the Semaine Math Entreprise (SEME)**.
  - 2019, Bordeaux.
  - 2017, Clermont Ferand.
  - 2016, Marseille
- 2017 **Organizer of the PhD summer school**, *Paris Dauphine*.

- 2016 **Organizer of the Chinese Cultural week** , *Ecole Normale Supérieure Paris*.
- Jul-Aug 2014 **Teacher**, *High school and in a child prison*, Natitingou, Benin.
- 2016-... **Involved on the website Mathoverflow**, *pseudo RaphaelB4*,  $\approx 4000$  pts.