

# CURRICULUM VITAE

## Personal details

**Dr. Henri Elad Altman**

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## Employment

**Since Oct. 2021:** Dirichlet Postdoctoral Fellow in Mathematics at Freie Universität Berlin

- Conducted research on scaling limit results for additive functionals of stochastic processes, and study of their local times
- Taught a Master course of “Statistics for Data Science”, a mathematical statistics course with both a theoretical and a programming content
- Supervised 1 Master and 2 Bachelor research projects

**2019-2021:** Chapman Fellow in Mathematics at Imperial College London.

- Conducted research on properties of solutions to singular stochastic partial differential equations
- Taught a MSc (3<sup>rd</sup> year) course of “Measure and Integration”
- Supervised 4 undergraduate research projects and mentored 7 undergraduate students

## Qualifications

**2016-2019** **PhD degree in Mathematics** at Sorbonne Université in Paris, France.

- Thesis *Integration by parts formulae for the laws of Bessel bridges and associated SPDEs*, defended on 18 April 2019. Advisor: Lorenzo Zambotti. Referees: Arnaud Debussche and Tadahisa Funaki.
- Derived integration by parts formulae for the laws of Bessel bridges of dimension smaller than 3, introduced a new family of singular SPDEs involving renormalized local times, constructed a weak solution for two particular instances of these equations.
- Delivered 20 talks in research conferences

**2014-2015** Master’s degree in Probability, Université Paris-Sud, mention très bien

**2012-2014** Student (Bachelor) in Mathematics at École Normale Supérieure in Paris

## Funding

**April-July 2019** Secured a funding by the FSMP for a research project at the University of Toronto, supervised by Jeremy Quastel, on hydrodynamic limits of particle systems.

## Teaching and Supervision

### 1) Freie Universität Berlin (since Oct. 2021):

**Since January 2023:** Supervisor of a Bachelor Project on random graphs

**Summer Semester 2021-2022:** Co-supervisor of a Bachelor Project on a model of random walk in random environment.

**Winter Semesters 2021-2022 and 2022-2023:** Lecturer for the Master course “Statistics for Data Science” at Freie Universität Berlin

### 2) Imperial College London (2019-2020):

**2020-2021** Supervisor of a MSci (4<sup>th</sup> year) project on applications of the signature method to high-frequency trading; supervised an MSc project in stochastic analysis

**Autumn 2020** Lecturer: “Measure and Integration”, 3<sup>rd</sup> year module (taught online to 70 students, 25 recorded lectures and 5 problem classes)

**Summer 2020** Supervisor of 4 UROP (2<sup>nd</sup> year) projects on applications of the signature method to handwritten character recognition

**Spring 2020** Supervisor of a MSci (4<sup>th</sup> year) research project in stochastic analysis

**2019-2020** Tutor: mentored 7 undergraduate students in Mathematics

**Autumn 2019** Teaching assistant: 3<sup>rd</sup> year module “Measure and Integration”

### 3) Sorbonne Université (2016-2019):

**Spring 2019** Teaching assistant: undergraduate (3<sup>rd</sup> year) Probability course (monitored Problem classes, 30 hrs total)

**Autumn 2017** Teaching assistant: undergraduate (3<sup>rd</sup> year) course ‘Measure theory, integration and probability’ for the ISUP program (monitored problem classes, 90 hrs total)

## Evidence of esteem

- **Participated in the following research programmes:**
  - Nov.-Dec. 2019: “Randomness, PDEs, and non-linear fluctuations” Junior Research Programme, Hausdorff Research Institute for Mathematics, Bonn
  - Sept.-Dec. 2018: “Scaling limits, rough paths, quantum field theory” research programme at the Isaac Newton Institute, Cambridge
- **Delivered the following talks in research conferences:**
  - «Local times and Global Limits»
    - Invited talk at the Seminar of the "Institut Elie Cartan de Lorraine", Nancy, France, January 2023
    - Presentation for the 16<sup>th</sup> Oxford-Berlin Young Researchers Meeting on Applied Stochastic Analysis, Oxford December 2022
    - Invited Talk in the BMS-BGSMath Junior Meeting, Barcelona, September 2022
  - “Scaling Limits of additive functionals of non-self-similar rough processes”

- Contributed Talk for the UNA Europa Online Workshop, February 2022
  - Invited talk for the Oberwolfach Mini-Workshop “Regularization by Noise: Theoretical Foundations, Numerical Methods and Applications”
  - presentation for the TU Berlin SPDE Seminar, January 2022.
- «On scaling limits of dynamical wetting models in the discrete and the continuum»
  - online presentation for the TU Berlin SPDE Seminar, July 2020.
- « A wetting model in the continuum »
  - presentation for the probability seminar at the Hausdorff Center for Mathematics, Bonn, Germany, December 2019.
- « Pinning models : discrete and continuous, static and dynamic »
  - presentation for the conference « Random Partial Differential Equations » at CIRM, Marseilles, France, April 2019.
- « Bessel stochastic PDEs and renormalized local times »
  - presentation for the seminar of the CRC « Mathematics of emergent effects », Bonn, Germany, December 2018.
- « An SPDE for the law of the modulus of a Brownian bridge »
  - talk for the Oxford-Berlin meeting, Oxford, November 2018.
- « Bessel S(P)DEs : a story of renormalisation »
  - presentation for the seminar at the Max Planck Institute, Leipzig, January 2019.
  - presentation for the seminar of the programme “Scaling limits, rough paths, quantum field theory” at the Isaac Newton Institute, Cambridge, November 2018.
- « Bessel-like SPDEs »
  - contributed talk for the RISM school « Developments in Stochastic Partial Differential Equations », Varese, Italy, July 2018.
  - talk for the Berlin-Oxford meeting at WIAS, Berlin, June 2018.
- « Renormalization phenomena in SPDEs with reflection »
  - talk for the RMR conference « Rough paths, Malliavin Calculus and Applications », Rouen, France, June 2018.
- « Random obstacle problems and integration by parts formulae for the laws of Bessel bridges »
  - presentation for the seminar of the Maths Department of Université d’Orléans, June 2018.
- « Integration by parts formulae for the laws of Bessel bridges and SPDEs with reflection »
  - contributed talk for the conference « Stochastic Partial Differential Equations » at CIRM, Marseilles, May 2018.
  - presentation for the Thursday seminar of the research group « Rough paths, stochastic partial differential equations and related topics » at TU Berlin, April 2018.
  - short talk for the 2nd Haifa Probability School at Technion, Haifa, December 2017.
  - presentation for the Probability seminar at Luxembourg University, November 2017.
- « Bismut-Elworthy-Li formulae for Bessel processes »
  - short talk for the PIMS Summer School, Vancouver, June 2017.
  - short talk for the Berlin-Oxford meeting, Berlin, May 2017.
  - presentation for the Maths PhD seminar at Université Paris-Dauphine, May 2017.
  - presentation for the Probability Seminar at ENSTA Paris Tech, Paris, April 2017.
- « Reflecting SPDEs and Bessel bridges »
  - presentation for the Saint-Flour Summer School, France, July 2016.

○ **Reviewed 17 articles for the following journals**

- Annals of Probability
- Annales de l'Institut Henri Poincaré
- Electronic Communications in Probability
- Communications in Mathematical Physics
- Stochastic Analysis and Applications
- Proceedings A of the Royal Society

**Outreach**

- Co-author of a "Snapshot of modern mathematics from Oberwolfach". Topic: *Regularization by noise*. (2022)
- Co-animating a workshop for the outreach event "Maths in the real life" of New Scientist Live, London, September 2018.
- Delivered an outreach presentation on the Brownian motion using an augmented reality device for the event Holomath, March and July 2018, Paris.
- Sat in the jury of the French young mathematicians' tournament "TFJM"

**Administration experience**

- 2018-2019** Representative of the PhD Students at the LPSM, Sorbonne Université, Paris,  
**2016-2017** Co-organized the PhD students' seminar at the LPMA, Sorbonne Université, Paris.

**Publications**

- (1) H. Elad Altman (2021) : "Bessel SPDEs with general Dirichlet boundary conditions." *Electron. J. Probab.* 26 1 - 36, 2021. <https://doi.org/10.1214/21-EJP632>
- (2) H. Elad Altman (2020): *Integration by parts formulae for the laws of Bessel bridges via hypergeometric functions*, *Electronic Communications in Probability*, Volume 25, <https://projecteuclid.org/euclid.ecp/1593569166#abstract>
- (3) H. Elad Altman and L. Zambotti (2018): *Bessel SPDEs and renormalised local times*, *Probability Theory and Related Fields* (2019). <https://doi.org/10.1007/s00440-019-00926-0>
- (4) H. Elad Altman (2018) : *Bismut-Elworthy-Li formulae for Bessel processes*, *Séminaire de Probabilités XLIX 2018 – Springer*, [https://link.springer.com/chapter/10.1007/978-3-319-92420-5\\_6](https://link.springer.com/chapter/10.1007/978-3-319-92420-5_6)

**Preprints:**

- (5) J.D. Deuschel, H. Elad Altman, T. Orenshtein (2019): *On the gradient dynamics associated with wetting models*, arXiv preprint 1908.08850, <https://arxiv.org/abs/1908.08850>
- (6) H. Elad Altman (2022): *Taylor Estimates for the laws of pinned Bessel bridges, and Integration by Parts*

**Paper to appear soon:**

- (7) H. Elad Altman, K. Lê: Limit Theorems related to mixed fractional Brownian motions

**PhD thesis:** [thesis\\_revised.pdf](#)