

Laura Monk

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Research experience

- 2022 – 25 **Research associate**, *University of Bristol (UK)*, PI: Jens Marklof
Researcher Co-Investigator on EPSRC Standard grant EP/W007010/1
- 2021 – 22 **Postdoctoral fellow**, *Max Planck Institute for Mathematics, Bonn (DE)*,
mentored by Ursula Hamenstädt
- 2018 – 21 **PhD in Mathematics**, *Institut de Recherche Mathématique Avancée, Strasbourg (FR)*, under the supervision of Nalini Anantharaman

Education

- 2018 – 21 **PhD in Mathematics** under the supervision of Nalini Anantharaman,
Université de Strasbourg (FR)
Geometry and spectrum of typical hyperbolic surfaces
- 2014 – 18 **École Normale Supérieure** in Mathematics with minor in Physics, *Paris*
- 2017 – 18 **Master's degree in Mathematics** (with honours), *Paris-Sud University*
- 2017 **Agrégation of Mathematics** (7th place)
Secondary-school and University Teaching degree
- 2014 – 15 **Bachelor's degree in Mathematics** (with honours), *Paris-Sud University*
- 2014 – 15 **Bachelor's degree in Physics** (with honours), *Paris-Sud University*
- 2012 – 14 **Preparatory class**, *Lycée Privé Sainte Geneviève, Versailles (FR)*

Publications

- (4) Anantharaman N., Monk L., *A high-genus asymptotic expansion of Weil-Petersson volume polynomials*, *Journal of Mathematical Physics*, 63, 043502 (2022).
- (3) Monk L., Thomas J., *The tangle-free hypothesis on random hyperbolic surfaces*, *International Mathematics Research Notices*, Volume 2022, Issue 22, November 2022, Pages 18154–18185.
- (2) Monk L., *Benjamini-Schramm convergence and spectrum of random hyperbolic surfaces of high genus*, *Analysis & PDE*, Vol. 15 (2022), No. 3, 727–752.

- (1) Fouvry J.B., Pichon C., Chavanis P., Monk L., *Resonant thickening of self-gravitating discs: imposed or self-induced orbital diffusion in the tightly wound limit*, Monthly Notices of the Royal Astronomical Society, Volume 471, Issue 3, November 2017, Pages 2642–2673.

Preprints

- 2022 Anantharaman N., Monk L., *Friedman-Ramanujan functions in random hyperbolic geometry and application to spectral gaps*, arXiv:2304.02678.

Awards and grants

- 2022 – 25 Researcher Co-Investigator on EPSRC Standard Grant EP/W007010/1, with Jens Marklof as Principal Investigator.
- 2022 PhD prize from the Research committee of the University of Strasbourg.
- 2021 Prize L’Oréal-UNESCO Young Talents France for Women in Science.
- 2021 Postdoctoral fellowship at the Max Planck Institute for Mathematics.
- 2019 Best poster in Mathematics prize from the Doctoral School.
- 2018 – 21 PhD grant from the ENS (Paris, FR).
- 2014 – 18 Full scholarship at the ENS (Paris, FR).

Invited talks

International conferences

- Dec 2022 Brunel–Bielefeld Workshop on Random Matrix Theory and Applications, *London*.
- Sept 2022 Shape Optimisation and Geometric Spectral Theory, *Edinburgh*.
- July 2022 ANR workshop “Quantum Chaos, Randomness and Spectral Problems in Mathematical Physics”, *Paris*.
- July 2022 Journées Nancéennes de Géométrie, *Nancy*.
- June 2022 Young women in Geometric Analysis, *Bonn*.
- May 2022 Laplacians on random hyperbolic surfaces and on random graphs, *Northwestern University*.
- March 2022 Mathematics & Statistics Colloquium, *Dalhousie University*.
- Feb 2022 14th Meeting of the GdR Quantum Dynamics, *Toulouse*.
- Feb 2022 Spectra and Dynamics on (Locally) Symmetric Spaces, *Paderborn*.
- Nov 2021 ANR “Aléatoire, Dynamique et Spectre” meeting, *Nantes*.
- Sept 2021 Hyperbolic dynamical systems and resonances, *Porquerolles*.
- Mars 2021 Young researchers in spectral geometry II, *Spectral geometry in the clouds*.
- Dec 2020 Jeunes géomètres dynamiques, *GdR Platon, Rennes*.

- Oct 2020 Billiards and Surfaces à la Teichmüller and Riemann Online.
- Nov 2019 8th Strasbourg / Zurich Meeting: Frontiers in Analysis and Probability, *Zurich*.
- May 2019 Spectral Theory and pRObability in Mathematical physics, *Strasbourg*.
- Apr 2019 Dynamics of geodesic flows and applications to PDEs, *Palaiseau*.

Seminars

- 2023 Analysis, *Bristol (UK)*.
Mathematical Physics, *Sussex (UK)*.
Topology and Dynamics, *Birmingham (UK)*.
Spectral Geometry in the Clouds (*online*).
Geometry and Topology, *Bristol (UK)*.
- 2022 London Analysis seminar, *London (UK)*.
Spectra/Moduli seminar, *Durham (UK)*.
Differential Geometry and Topology, *Cambridge (UK)*.
Analysis and Geometry, *Bristol (UK)*.
Reading seminar, *Paris Nord (FR)*.
Topology and Dynamics, *Orsay (FR)*.
- 2021 Ergodic Theory and Dynamical Systems, *Bristol (UK)*.
Probability and Statistics, *Marseille (FR)*.
Geometry and Topology, *Jussieu (FR)*.
Algebra, Geometry and Physics, *Bonn (DE)*.
Number theory, *Tel-Aviv (IL)*.
Probability and Mathematical Statistics, *Milan–Pavia (IT)*.
Groups and Geometry, GdR Platon, *online seminar (FR)*.
Geometry and Topology, *Toulouse (FR)*.
Dynamical systems and ergodic theory, *Zurich (CH)*.
- 2020 Analysis, *Cardiff (UK)*.
Geometry, *Leeds (UK)*.
Dynamical systems, *Bremen–Oldenburg (DE)*.
Oberseminar Differentialgeometrie, *Bonn (DE)*.
Probabilities, *Orsay (FR)*.
Geometrical Analysis by Frédéric Naud, *online (FR)*.
- 2019 Spectral theory and Geometry, *Grenoble (FR)*.
- 2018 Analysis, *Strasbourg (FR)*.

Teaching

Mini-courses at research-level

- March 2023 GEoMetric Spectral Theory Online NETwork minicourse, *CRM (Montréal)*.
- Oct 2022 Mini-course at the summer school “Random walks and related random topics”, *University of Göttingen*.
- May 2022 Advance courses “Spectrum of the Laplacian and Geometry”, *University Cergy-Pontoise*.

- 2020 – 21 **Lecturer**, *University of Strasbourg*, analysis - 2nd year
- 2018 – 21 **Teaching assistant**, *University of Strasbourg*
2nd and 3rd year exercise sessions, preparation of the agrégation, math club for high-school students, 1st and 2nd year oral exams.
- 2018 **Higher-education teaching degree (“agrégation”)**
Competition granting a life-long position as a secondary-school or higher-education teacher, ranked 7th out of 315 admitted (1545 candidates).
- 2014 – 18 **Oral examiner in preparatory schools**, 1st and 2nd year

Other activities

Organisation of seminars and reading groups

- 2022 – 23 Analysis Reading Group in Bristol, with Antoine Métras and Dan Speed.
- 2022 – 23 Ergodic Theory and Dynamical Systems seminar in Bristol, with Thomas Jordan and Henna Koivusalo.
- 2021 – ... “Spectral Geometry in the Clouds” with Alexandre Girouard and Jean Lagacé.
- 2019 Reading group on Mirzakhani’s work on random hyperbolic surfaces in Strasbourg, with Yohann Bouilly and Federica Fanoni.
- 2018 and 19 **Organisation of the RJM**, *University of Strasbourg*
Three-day meeting for high school girls to conduct mathematical group activities, meet female researchers and engineers and speak about gender issues.
- 2017 and 21 **Jury for the TFJM²**
Conference-like mathematical competition for high-school students.
- ### Outreach talks
- 2022 Talk to prospective students for the program “Access to Bristol”.
- 2017 Talk for undergraduates in Lycée Privé Sainte-Geneviève.