

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 “ Spectral statistics for random hyperbolic surfaces”
- 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.
Geometry and spectrum of typical hyperbolic surfaces

Education

- 2018 – 21 **PhD in Mathematics** under the supervision of Nalini Anantharaman, *Université de Strasbourg (FR)*.
- 2014 – 18 **École Normale Supérieure** in Mathematics with minor in Physics, *Paris*.
- 2017 – 18 **Master in Pure Mathematics** (with highest honours), *Paris-Sud University*.
Dynamical systems and ergodic theory, Harmonic analysis, Spectral theory.
- 2017 **Agrégation of Mathematics**.
Higher-education teaching competition, rank 7 / 315 admitted
- 2014 – 15 **Bachelor in Mathematics** (with highest honours), *Paris-Sud University*.
- 2014 – 15 **Bachelor in Physics** (with honours), *Paris-Sud University*.
- 2012 – 14 **Preparatory class**, *Lycée Privé Sainte Geneviève, Versailles (FR)*.
Mathematics, Physics and Computer science

Publications and preprints

- 2022 Nalini Anantharaman, Laura Monk, *A high-genus asymptotic expansion of Weil-Petersson volume polynomials*, *Journal of Mathematical Physics*, 63, 043502 (2022).
- 2022 Laura Monk, *Benjamini-Schramm convergence and spectrum of random hyperbolic surfaces of high genus*, *Analysis & PDE*, Vol. 15 (2022), No. 3, 727–752.
- 2021 Laura Monk, Joe Thomas, *The tangle-free hypothesis on random hyperbolic surfaces*, *International Mathematics Research Notices*, rnab160.
- 2017 Jean-Baptiste Fouvry, Christophe Pichon, Pierre-Henri Chavanis, Laura Monk, *Resonant thickening of self-gravitating discs: imposed or self-induced orbital diffusion in the tightly wound limit*, *Monthly Notices of the Royal Astronomical Society*.

Teaching experience

- 2022 – 23 **Mini-courses in summer schools or advanced courses for PhD students.**
- July 2023 “Microlocal and probabilistic methods in geometry and dynamics”, *Sorbonne Université (FR)*.
- Apr 2023 “GEoMetric Spectral Theory Online NETwork”, *CRM (CA, online)*.
- Oct 2022 “Random walks and related random topics”, *University of Göttingen (DE)*.
- May 2022 “Spectrum of the Laplacian and Geometry”, *University Cergy-Pontoise (FR)*.
- 2023 **Tutoring**, *University of Bristol*, Analysis - 1st year.
- 2020 – 21 **Lecturer**, *University of Strasbourg*, Analysis - 2nd year.
- 2018 – 21 **Teaching assistant**, *University of Strasbourg*.
Tutoring in Analysis (2nd year) and ODEs (3rd year), agrégation preparation (marking + mock oral exams), 1st and 2nd year oral exams in Analysis and Algebra.
- 2018 **Higher-education teaching degree (“agrégation”)**.
Grants a position as a civil servant teaching mathematics at high-school and preparatory school levels (i.e. including 1st and 2nd year undergraduate).
- 2014 – 18 **Oral examiner in preparatory schools**, 1st and 2nd year.

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*.
- May 2022 Laplacians on random hyperbolic surfaces and on random graphs, *Northwestern*.
- 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*.

Recent and future seminars.

- 2023 Geometry (Bordeaux), Séminaire Orléans de l'Institut Denis Poisson, Geometry Topology and Algebra (Montpellier).
- 2022 Spectra/Moduli seminar (Durham), London Analysis seminar, Differential Geometry and Topology (Cambridge), Analysis and Geometry (Bristol), Mathematics & Statistics Colloquium (Dalhousie), Reading seminar (Paris Nord), Topology and Dynamics (Orsay).
- 2021 Ergodic Theory and Dynamical Systems (Bristol), Probability and Statistics (Marseille), Geometry and Topology (Jussieu, Paris), Algebra, Geometry and Physics (Bonn), Number theory (Tel-Aviv), Probability and Mathematical Statistics (Milan–Pavia), Groups and Geometry (GdR Platon), Geometry and Topology (Toulouse), Dynamical systems and ergodic theory (Zurich).

Awards and grants

- 2022 – 25 Researcher Co-Investigator on EPSRC standard grant EP/W007010/1 “ Spectral statistics for random hyperbolic surfaces”, with Jens Marklof as PI.
- 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, Strasbourg.
- 2018 – 21 PhD grant from the ENS (Paris).
- 2014 – 18 Full scholarship at the ENS (Paris).

Other activities

Organisation of seminars and reading groups.

- 2022 - 23 Analysis Reading Group in Bristol, with Antoine Métras and Dan Speed.
- 2022 – ... 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.
- 2020 – 21 **PhD students representative**, at the Doctoral School council, Strasbourg.
- 2017 and 21 **Jury for the TFJM²**.
Conference-like mathematical competition for high-school students.

Skills

- Languages French (mother tongue), English (fluent), Spanish (basic).
- Programming C, L^AT_EX, Maple, Mathematica, Python.