CHRISTOPHER E. H. LUTSKO

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BIOGRAPHICAL

Born: April 1994
Pronouns: He/Him
Citizen: USA/UK
Spoken Languages: English, French (proficient), Spanish (proficient), German (beginner).

CAREER

University of Zurich 2023-2025
Postdoctoral researcher (Mentor: Alex Gorodnik)

Rutgers University 2020-2023
Hill Assistant Professor (Mentor: Alex Kontorovich)

EDUCATION

University of Bristol 2016-2020
PhD in Mathematics
Advisor: Jens Marklof
Nominated for doctoral dissertation prize for outstanding excellence

University of Texas at Austin 2012-2016
B.S Mathematics
Dean's Scholars Honors Program
William's Scholar Honored Graduate

PUBLICATIONS

Preprints:

16. *The hunt for pseudo-randomness* [Invited to prepare for **Scientific American** under editor Clara Moskowitz] *(In Preparation)*
15. *Counting in lattice orbits* with A. Kontorovich, (2023).
14. *Hyperbolic lattice point counting in unbounded rank* with V. Blomer, arXiv:2309.00522 (2023).
13. *Mean square bounds on Eisenstein series* with D. Kelmer and A. Kontorovich, arXiv:2305.14162 (2023).
12. *An abstract spectral approach to horospherical equidistribution*, arXiv:2211.01900 (2022).

Papers:

11. *m-Point Correlations of the Fractional Parts of* αn^{θ}, with N. Technau, arXiv:2112.11524 (2021) [Under revision **American Journal of Mathematics**].
10. *Full poissonian local statistics of slowly growing sequences* , with N. Technau, arXiv:2206.07809 [Under revision **Compositio Mathematica**] (2022).

9. *Effective counting in sphere packings*, with A. Kontorovich, arXiv:2205.13004 [Under revision: **Journal of the Association for Mathematical Research**] (2022).

8. *Sarnak's spectral gap question*, with D. Kelmer, and A. Kontorovich, arXiv:2210.13969 [Accepted for publication: **Journal d'Analyse Mathématique**] (2022).

7. *Pair correlation of the fractional parts of* αn^{θ}, with A. Sourmelidis, N. Technau, arXiv:2106.09800 [Accepted for publication: **Journal of the European Mathematical Society (JEMS)**] (2021).

6. *Long-range correlations of sequences modulo* 1, **Journal of Number Theory**, **234**, 333-348 (2022).

5. *Farey sequences for thin groups* **International Mathematics Research Notices (IMRN)**, **15**, 11642-11689 (2022).

4. *Invariance principle for the random wind-tree process*, with B. Tóth, **Annales Henri Poincaré**, **22**(10), 3357-3389 (2021).

3. *Invariance principle for the random Lorentz gas – beyond the Boltzmann-Grad limit*, with B. Tóth, **Communications in Mathematical Physics (CMP)**, **379**, 589-632, (2020).

2. *Directions in orbits of geometrically finite hyperbolic subgroups* **Mathematical Proceedings of the Cambridge Phil. Soc. 171**(2), 277-316 (2021)

1. *A microscopic approach to nonlinear Reaction-Diffusion: the case of morphogen gradient formation* with J.P. Boon, J.F. Lutsko, **Physical Review E** 85:021126 (2016)

PhD Thesis:

Statistical Properties of Dynamical Systems: From Statistical Mechanics to Hyperbolic Geometry, 2020 (Bristol University). [Nominated for doctoral dissertation prize]

Conference Proceedings:

1. *Invariance principle for random Lorentz gas in the Boltzmann-Grad Limit*, Oberwolfach Report 10/2019 p. 33-35 (2019)

2. *Invariance principle for random Lorentz gas — Beyond the Boltzmann-Grad Limit*, Oberwolfach Report 42/2019 p. 12-15 (2019)

TEACHING

Instructor:

Rutgers: Math 152 Calculus II (Math/Physics)	Spring 2023
Rutgers: Math 152 Calculus II (Math/Physics)	Spring 2023
Rutgers: Math 356 Theory of Numbers	Fall 2022
Rutgers: Math 437 History of Mathematics	Spring 2022
Rutgers: Math 152 Calculus II (Math/Physics)	Spring 2022
Rutgers: Math 356 Theory of Numbers	Fall 2021
Rutgers: Math 356 Theory of Numbers	Spring 2021
Rutgers: Math 152 Calculus II (Math/Physics)	Spring 2021
Rutgers: Math 152 Calculus II (Math/Physics)	Fall 2020

Teaching Assistant:

Zürich: Analysis on Matrix Groups	Fall 2023
Bristol: Probability II	Fall 2018
Bristol: Measure Theory and Integration	Fall 2018
Bristol: Analysis & Group Theory - 2 groups	Spring 2018

Bristol: Analysis & Proofs - 2 groups	Fall 2017
Bristol: Calculus & Mechanics - 2 groups	Spring 2017
Bristol: Calculus & Computational Mathematics - 2 groups	Fall 2016
Texas: Intro to Math	Spring 2016
Texas: Intro to Math	Fall 2015
Texas: Intro to Physics	Summer 2013

UNDERGRADUATE MENTORSHIP

Ozan Acikgoz	Spring 2021
Saketh Sitaram	Spring 2023

ORGANIZATIONAL DUTIES

Organizer: Linfoot Number Theory Seminar (Bristol)	Fall 2019 - Spring 2020
Organizer: Rutgers Number Theory Seminar	Fall 2021 - Spring 2023

ACADEMIC INVITATIONS

1 week - Budapest University of Technology (BME)	2017
2 weeks - University of Bonn	2023

SEMINAR TALKS

University of Bristol	2017
Budapest University of Technology	2017
University of Bristol	2017
University of Warwick	2018
University of Bristol	2018
University of Bristol	2018
Univ. Libre de Bruxelles	2018
University of Bristol	2018
Rutgers University	2019
University of Texas at Austin	2019
University of Houston	2019
University of Exeter	2019
Manchester University	2019
University of Bristol	2019
University of Loughborough	2020
University of Oklahoma	2020
Yeshiva University	2020
Rutgers University	2021
Tata Institute of Fundamental Research	2021
New England Dynamics and Number Theory Seminar	2021
(recording: `https://www.youtube.com/watch?v=EODTepggUuU`)	
Hong Kong University	2022
University of Illinois Urbana-Champaign	2022
Stony Brook **Colloquium**	2022
(recording: `https://www.youtube.com/watch?v=SOHhKdno2jA`)	
Rutgers University	2022
New England Dynamics and Number Theory Seminar	2022
(recording: `https://nednt.wescreates.wesleyan.edu/fall-2022-schedule/`)	
University of Maryland	2022

Philadelphia Area Number Theory Seminar (Bryn Mawr) 2023
Rutgers University 2023
University of Bonn 2023
Paderborn University 2023
University of Zurich 2023
EPFL *(Upcoming)* 2024
Manchester University ($\times$ 2) *(Upcoming)* 2024

CONFERENCE TALKS

MINGLE post-graduate event - University of Bristol 2017
Dynamics Days Europe (Billiards Minisymposium) - University of Loughborough 2018
Probability and NonLocal PDEs - University of Swansea 2018
Mini-Workshop: Lorentz Gas Dynamics: particle systems and scaling limits - Mathematisches Forschunginstitut Oberwolfach 2019
Large Scale Stochastic Dynamics - Mathematisches Forschunginstitut Oberwolfach 2019
MINGLE post-graduate event - University of Bristol 2019

OUTREACH

Volunteer Chemistry Tutor – Garza high school (Austin Texas) 2015
Help with Bristol maths day 2018
Participant in "Skype a Scientist" 2021
Speaker at Chicago public schools teen mentoring program STEM event 2021
Contributor to EMS magazine problems section 2022
Help with Museum of mathematics' polyplane project 2023

REFEREEING/REVIEWING

AMS Mathematical Reviews/MathSciNet [5 papers]
Advances in Mathematics
Annales de l'Institut Henri Poincaré
Chaos, Solitons and Fractals
Ergodic Theory and Dynamical Systems
International Mathematics Research Notices [2 papers]
Journal of the European Mathematical Society
Journal of Number Theory
Mathematical Proceedings of the Cambridge Philosophical Society
Research in Number Theory
Stochastic Processes and their Applications