

# CHRISTOPHER E. H. LUTSKO

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## BIOGRAPHICAL

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Born: April 26 1994

Pronouns: He/Him

Citizen: USA/UK

Spoken Languages: English, French, Spanish, German.

## CAREER

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**University of Houston**

2024 +

Assistant professor

**University of Zürich**

2023-2024

Postdoctoral researcher

**Rutgers University**

2020-2023

Hill assistant professor

## EDUCATION

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**University of Bristol**

2016-2020

PhD in Mathematics

Advisors: Jens Marklof & Bálint Tóth

**University of Texas at Austin**

2012-2016

B.S Mathematics

Dean's Scholars Honors Program

## PUBLICATIONS

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### Preprints:

21. *The Gauss circle problem for Penrose tilings* with A. Haynes, arXiv:2512.212444 (2025).
20. *Sign changes along geodesics of modular forms* with D. Kelmer and A. Kontorovich, arXiv:2409.17248 (2024).
19. *Average variance bounds for integer points on the sphere*, arXiv:2402.12822 (2024).
18. *Counting in lattice orbits* with A. Kontorovich, arXiv:2401.07740 (2024).

### Papers:

17. *Diffusion of the random Lorentz process in a magnetic field* with B. Tóth, **J. Math. Phys.**, **66**(11), (2025) (Editor's pick).
16. *Polyhedral bounds on the joint spectrum and temperedness of locally symmetric spaces* with T. Weich and L. Wolf, arXiv:2402.02530 (2024) [Accepted: **Duke Math. J.**].
15. *An abstract spectral approach to horospherical equidistribution*, **Nonlinearity**, **38**(10), 105014, (2025).

14. *Hyperbolic lattice point counting in unbounded rank* with V. Blomer, **J. Reine Angew. Math.**, **2024**(812), 257-274, (2024).
13. *Norm bounds on Eisenstein series* with D. Kelmer and A. Kontorovich, **Int. J. Number Theory**, **20** (08), 2083-2098 (2024).
12. *These Numbers Look Random but Aren't, Mathematicians Prove* **Scientific American** (also featured in **Spektrum der Wissenschaft**).
11. *m-Point Correlations of the Fractional Parts of  $\alpha n^\theta$* , with N. Technau, arXiv:2112.11524 (2021) [Accepted: **Amer. J. Math.**].
10. *Full poissonian local statistics of slowly growing sequences*, with N. Technau, **Compos. Math.**, **161**(1), 148-180, (2025).
9. *Effective counting in sphere packings*, with A. Kontorovich, **J. of the Assoc. Math. Res.**, **2**, 15-52 (2024).
8. *Sarnak's spectral gap question*, with D. Kelmer, and A. Kontorovich, **J. Anal. Math.** **151**, 171-179 (2023) (special volume for P. Sarnak).
7. *Pair correlation of the fractional parts of  $\alpha n^\theta$* , with A. Sourmelidis, N. Technau, **J. of the Eur. Math. Soc. (JEMS)**, **27**(10), 4069-4082 (2024).
6. *Long-range correlations of sequences modulo 1*, **J. of Number Theory**, **234**, 333-348 (2022).
5. *Farey sequences for thin groups* **Int. Math. Res. Not. (IMRN)**, **15**, 11642-11689 (2022).
4. *Invariance principle for the random wind-tree process*, with B. Tóth, **Ann. Henri Poincaré**, **22**(10), 3357-3389 (2021).
3. *Invariance principle for the random Lorentz gas – beyond the Boltzmann-Grad limit*, with B. Tóth, **Comm. in Math. Phys.**, **379**, 589-632, (2020).
2. *Directions in orbits of geometrically finite hyperbolic subgroups* **Math. Proc. of the Cambridge Philos. 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, **Phys. Rev. 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)

#### FUNDING AND AWARDS

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Simons Travel Grant (5 years, \$35,000)	2025
Nominated for doctoral dissertation prize for outstanding excellence	2020
William's Scholar Honored Graduate	2016

#### TEACHING

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**Instructor:**

Houston: Math 2451 Accelerated Calculus	Spring 2026
Houston: Math 3338 Probability	Fall 2025
Houston: Math 2451 Accelerated Calculus	Spring 2025
Houston: Math 2450 Accelerated Calculus	Fall 2024
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:**

Acted as TA for approximately 11 different courses from 2013-2024

**GRADUATE STUDENTS**

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Anish Ray	2025+
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**UNDERGRADUATE MENTORSHIP**

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Ozan Acikgoz	Spring 2021
Saketh Sitaram	Spring 2023

**ORGANIZATIONAL DUTIES**

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Organizer: Linfoot number theory seminar (Bristol)	Fall 2019 - Spring 2020
Organizer: Rutgers number theory seminar	Fall 2021 - Spring 2023
Organizer: Houston dynamics seminar	Fall 2024 +
Organizer: Rice-UH Dynamics Day (once per semester)	Spring 2026 +

**ACADEMIC INVITATIONS**

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1 week - Budapest University of Technology (BME)	2017
2 weeks - University of Bonn	2023
1 week - UW Madison	2026

**SEMINAR TALKS**

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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 (recording: <a href="https://www.youtube.com/watch?v=EODTepggUuU">https://www.youtube.com/watch?v=EODTepggUuU</a> )	2021
Hong Kong University	2022
University of Illinois Urbana-Champaign	2022
Stony Brook <b>Colloquium</b> (recording: <a href="https://www.youtube.com/watch?v=SOHhKdno2jA">https://www.youtube.com/watch?v=SOHhKdno2jA</a> )	2022
Rutgers University	2022
New England Dynamics and Number Theory Seminar (recording: <a href="https://nednt.wescreates.wesleyan.edu/fall-2022-schedule/">https://nednt.wescreates.wesleyan.edu/fall-2022-schedule/</a> )	2022
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	2024
University of Bristol	2024
Manchester University ( $\times 2$ )	2024
University of Houston <b>Colloquium</b>	2024
Rice University	2024
One World Probability Seminar	2024
Yale University	2024
University of Houston	2025
IST Austria - University of Graz Joint Seminar	2025
UW Madison ( <i>Upcoming</i> )	2026

## CONFERENCE TALKS

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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 Forschungsinstitut Oberwolfach	2019
Large Scale Stochastic Dynamics - Mathematisches Forschungsinstitut Oberwolfach	2019
MINGLE post-graduate event - University of Bristol	2019
CRC Workshop "Geometry and analysis of locally symmetric spaces" - Paderborn, Germany	2024
Stochastics and Influences - Erdős Center, Budapest, Hungary	2025
Rice-UH Dynamics Day	2026

## OUTREACH

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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
Contributor to Scientific American <a href="#">[link]</a> (this article was also featured in <b>Spektrum der Wissenschaft</b> )	2024
Interview on ABC 13 Houston (Houston area television news program)	2025

## REFEREING/REVIEWING

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AMS Mathematical Reviews/MathSciNet [11 reviews]  
 Advances in Mathematics  
 American Journal of Mathematics  
 Annales Henri Poincaré  
 Chaos, Solitons and Fractals  
 Communications of the AMS  
 Ergodic Theory and Dynamical Systems  
 Indagationes Mathematicae  
 International Mathematics Research Notices  
 Journal of the European Mathematical Society  
 Journal of the London Mathematical Society  
 Journal of Mathematical Physics  
 Journal of Number Theory  
 Journal of Statistical Physics  
 Mathematical Proceedings of the Cambridge Philosophical Society  
 Nonlinearity  
 Random Structures and Algorithms  
 Research in Number Theory  
 Stochastic Processes and their Applications