

Research Experience

Research Interests: Decidability, Dynamical Systems, and Ergodic Theory.

Jun 2018– **Research Associate**, *Department of Computer Science, University of Oxford*.
Postdoctoral researcher in Infinite-State Systems and Dynamical Systems.

Education

2013–2017 **PhD in Mathematics**, *University of Warwick*.
Thesis title: Asymptotics in conjugacy classes for free groups. EPSRC doctoral award funding.

2009–2013 **MMath, Master of Mathematics**, *First class Hons*, University of Warwick.
Dissertation: Periodic orbits for hyperbolic and quasihyperbolic toral automorphisms.

Publications and Preprints

(With M. Hosseini et al.). “On the Termination of Linear Constraint Loops”. Submitted.

(With O. Klurman, et al.). *On Positivity and Minimality for Second Order Holonomic Sequences*. Submitted. arXiv: 2007.12282.

2020 (with R. Lipton, J. Ouaknine, and J. Worrell). “On the Skolem Problem and prime powers”. In: *International Symposium on Symbolic and Algebraic Computation, ISSAC '20*. ACM. doi: 10.1145/3373207.3404036.

2019 (with R. Sharp). “Statistics in conjugacy classes in free groups”. In: *Geom. Dedicata* 198.1, pp. 57–70. doi: 10.1007/s10711-018-0329-2.

2017 (with R. Sharp). “Orbit counting in conjugacy classes for free groups acting on trees”. In: *J. Topol. Anal.* 9.4, pp. 631–647. doi: 10.1142/S1793525317500261.

Research Seminars and Talks

- 2020 **On the Skolem Problem and Prime Powers**, *Online*, International Symposium on Symbolic and Algebraic Computation.
- 2019 **Skolem meets Euclid**, *Gump research station*, Workshop on Dynamical Systems and Computation.
Skolem’s Problem and prime powers, *Oxford*, Formal Verification Seminar.
- 2018 **Skolem’s Problem and prime powers**, *Bristol*, Ergodic Theory and Dynamical Systems Seminar.
Statistics in conjugacy classes in free groups, *Warwick*, Ergodic Theory and Dynamical Systems Seminar.
- 2017 **Statistics in conjugacy classes in free groups**, *Bristol*, Ergodic Theory and Dynamical Systems Seminar.
Asymptotics in conjugacy classes for free groups, *Manchester*, Dynamical Systems Seminar.
Asymptotics for free group actions, *Manchester*, Workshop on Dynamical Systems, Ergodic Theory and Applications.
- 2015 **Orbit counting in conjugacy classes for free groups acting on trees**, *Goettingen*, Summer School on Dynamical Approaches in Spectral Geometry.

Conference and Workshop Participation

- 2020 **International Symposium on Symbolic and Algebraic Computation**, *Kalamata, Greece*, 20–22 July.
- 2019 **Thermodynamic Formalism: Ergodic Theory and Validated Numerics**, *Centre International de Rencontres Mathématiques in Marseille*, Aix-Marseille University, 08–12 July.
Dynamical Systems and Computation, *Gump Research Station in French Polynesia*, 01–08 June.
Number Theory and Dynamics, *University of Cambridge*, 25–29 March.
- 2018 **Dynamics at ICTP**, *International Centre for Theoretical Physics in Trieste*, Advanced Summer School in Dynamics, 23–27 July.
Thermodynamic Formalism in Dynamical Systems, *International Centre for Mathematical Sciences, Edinburgh*, 18–22 June.
Analytic Aspects of Dynamical Systems, *Imperial College London*, 16–18 May.

- 2017 **Analytical Aspects of Hyperbolic Flows**, *University of Nantes*, Henri Lebesgue centre de recherche en mathématiques summer school, 3–7 July.
- Ergodic Theory, Algorithms and Rigorous Computations**, *University of Warwick*, 3–7 April.
- 2016 **Dynamical Systems, Ergodic Theory and Applications**, *University of Manchester*, London Mathematical Society Northern Regional Meeting, 23–24 June.
- Dynamics, Geometry and Number Theory**, *Henri Poincaré Institute in Paris*, a conference in honour of Gregory Margulis’ 70th birthday, 13–17 June.
- Géométrie Ergodique**, *Pierre and Marie Curie University*, a conference in honour of François Ledrappier, 1–3 June.
- 2015 **Dynamical Approaches in Spectral Geometry**, *University of Goettingen*, school on thermodynamic formalism and transfer operator methods, 14–18 September.
- Statistical Properties of Dynamical Systems**, *Loughborough University*, London Mathematical Society & Clay Mathematics Institute research school, 13–17 April.

Teaching Experience

- 2019–2020 **Stipendiary Lecturer**, *Dept of Computer Science, University of Oxford*.
- **Co-lecturer** for MSc course *Probabilistic Model Checking*. Topics: *temporal logics including CTL, PCTL, LTL and CSL. Model checking for both discrete- and continuous-time Markov chains.*
- 2018–2020 **Stipendiary Lecturer in Pure Mathematics**, *St Peter’s College, Oxford*.
- **Academic tutor** for second year undergraduates. Tutorials in *Linear Algebra, Lebesgue Integration, Group Theory and Graph Theory*. Duties include feedback, assessment, and writing progression reports.
 - **Admissions interviewer** for prospective undergraduate mathematicians.
- 2017–2018 **Teaching Associate**, *School of Mathematics, University of Bristol*.
- **Academic tutor** for *Linear Algebra & Geometry, Calculus, Metric Spaces and Geometry*.
- 2013–2017 **Teaching Assistant**, *Mathematics Institute, University of Warwick*.
- **Undergraduate supervisor**. Small group teaching across the first year mathematics curriculum.
 - **Support classes** in *Analysis, Metric Spaces, Experimental Maths and Dynamical Systems*.
- Fellow of the Higher Education Academy**.
January 2019 to date.
- Departmental teaching award**, *Mathematics Institute, University of Warwick*.
Award for inspirational mathematics teaching. July 2015.

Student Feedback.

- “Always prepared, always cheerful and always willing to go that extra mile in helping students to understand—a true inspiration!”
- “He was engaging, whilst provoking the students to find their own way to the answers.”
- “I was involved in an incident in term one and if it wasn’t for his support, both [academic and pastoral], I wouldn’t have made it through the term and hence the year.”
- “George made me feel comfortable asking questions and... his analysis classes were a highlight of my week.”

Widening Participation and Outreach

- 2017 **Mathematics Mentor, Mathematics in Education and Industry**.
Problem Solving Matters summer school. Preparing secondary school students for the MAT and TMUA entrance exams. Academic mentor for 11 students with teaching responsibilities including workshop sessions and marking.
- 2012–2019 **Teaching Associate, Further Maths Support Programme**.
Multiple outreach and widening participation events for secondary school students including: STEP/AEA workshop sessions, enrichment days, Royal Institution masterclasses and problem solving conferences.

Departmental & University Service

- 2015–2017 **Sessional Teachers’ Representative**, *University of Warwick*, Departmental representative at meetings discussing pay and conditions for hourly-paid teachers.
- 2014–2017 **Staff & Graduate Student Liaison Committee**, *Warwick Mathematics Institute*, Chair of the committee and graduate student representative at departmental meetings. Previously committee Secretary.