

Henry Bradford – Curriculum Vitae

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Date of birth: 20/01/1989

Professional Experience

- Postdoctoral Research Assistant, Georg-August Universität Göttingen (March 2016 - present)
Advisor: Prof Harald Andrés Helfgott
- Visiting Fellow, Hausdorff Research Institute for Mathematics (September-December 2018)
- College Teaching Associate and Director of Studies in Mathematics, Trinity Hall, University of Cambridge (October 2015 – March 2016)

Education

- D.Phil in Mathematics, St John's College, University of Oxford (2011-2015).
Supervisor: Prof Marc Lackenby.
Thesis Topic: Spectral Properties of Finite Groups.
- M.Math in Mathematics, St John's College, University of Oxford (2007-2011).
First class honours.

Research Interests

- Geometric Group Theory
- Spectral Graph Theory
- Profinite Group Theory
- Random Walks
- Arithmetic Combinatorics

Publications and Preprints

- *On LEF Growth in Groups* (in preparation)
- *Diameter, Growth and Lie Algebra in Non-Analytic Pro-p Groups*, with Laurent Bartholdi (in preparation)
- *Short Laws for Finite Groups of Lie Type*, with Andreas Thom. ArXiv: 1811.05401 [math.GR]
- *Constructing Directed Cayley Graphs of Small Diameter: A Potent Solovay-Kitaev Procedure*. ArXiv: 1710.04591 [math.GR] (submitted)
- *Uniform Diameter Bounds in Branch Groups*. ArXiv: 1703.05852 [math.GR] (submitted)
- *Short Laws for Finite Groups and Residual Finiteness Growth*, with Andreas Thom. ArXiv: 1701.08121 [math.GR], to appear in Transactions of the AMS
- *New Uniform Diameter Bounds in Pro-p Groups*. Groups, Geometry, and Dynamics, Volume 12, Issue 3, pp 803-836
- *Expansion, Random Walks and Sieving in $SL_2(\mathbb{F}_p[t])$* . Israel Journal of Mathematics, Volume 215, Issue 2, pp 559-582

Awards, Prizes and Scholarships

- LMS Postdoctoral Mobility Grant (2015, declined)
- EPSRC Doctoral Studentship (2011)
- EPSRC Vacation Bursary (2010)

Invited Talks

- Manhattan Algebra Day, New York, 12/2018
- Geometry Seminar, Technische Universität Dresden, 07/2018
- Algebra Seminar, University of Oxford, 04/2018
- L2-Invariants Seminar, ICMAT Madrid, 02/2018
- Seminar on Algebra, Combinatorics, Measure, University of Lancaster, 01/2018
- Algebra Seminar, University of Lincoln, 12/2017
- Groups and their Applications, Birkbeck University of London, 12/2017
- Forschungsseminar Gruppentheorie, Heinrich Heine Universität Düsseldorf, 11/2017
- Oberseminar Gruppen und Geometrie, Universität Bielefeld, 05/2017
- Group Theory Seminar, École Normale Supérieure Paris, 04/2017
- Oberseminar Analytische Zahlentheorie, Georg-August Universität Göttingen, 10/2016
- Algebra, Geometry and Combinatorics Seminar, Technische Universität Dresden, 06/2016
- Geometry and Analysis on Groups Seminar, Universität Wien, 03/2016
- Algebra and Geometry Seminar, University of Newcastle, 11/2015
- Pure Mathematics Colloquium, University of Southampton, 11/2015
- Pure Mathematics Seminar, Royal Holloway University of London, 11/2015
- Groups and Geometry in the South-East, University College London, 10/2015
- Conference: Groups, Graphs, Action, Université de Neuchâtel, 10/2015
- Conference: Manifolds and Groups, Ventotene, Italy, 09/2015
- Analysis Seminar, University of Bristol, 03/2015
- Algebra Seminar, University of the Basque Country, 03/2015
- Algebra Seminar, Universidad Autónoma de Madrid, 02/2015
- Group Theory Seminar, UCLouvain, 01/2015
- Algebra Seminar, University of Cambridge, 10/2014
- Algebra Seminar, University of Oxford, 10/2014
- Graduate Seminar, University of Newcastle, 03/2013

Other Conferences and Workshops Attended

- Problem Solving in Florence: Workshop at Villa Finaly, Florence, 11/2018
- Groups, Geometry and Representations, Oxford 09/2018
- Simple Groups: New Perspectives and Applications, Bristol, 08/2018
- Topological and Homological Methods in Group Theory, Bielefeld, 04/2018
- L2-Invariants and Their Analogues in Positive Characteristic, ICMAT Madrid, 02-04/2018
- Groups St Andrews, University of Birmingham, 08/2017
- Groups in Galway 2017, NUI Galway, 05/2017
- Young Geometric Group Theory Meeting, Oxford, 03/2017
- Permutation Groups: Methods and Applications, Bielefeld, 01/2017
- Some Problems in the Theory of Simple Groups: Workshop at CIB, Lausanne, 09/2016
- Geometry and Computation in Groups and Complexes, University of Newcastle, 06/2016
- Analytic Methods in Arithmetic Geometry, University of Arizona, 03/2016
- Growth, Symbolic Dynamics and Combinatorics of Words in Groups, ENS, Paris, 06/2015
- Asymptotic Invariants of Groups, Oxford, 04/2015
- Zariski-Dense Subgroups, IPAM, Los Angeles, 02/2015
- Young Geometric Group Theory Meeting, Spa, Belgium, 01/2015
- Postgraduate Conference in Group Theory, University of Birmingham, 06/2014
- Asymptotic Properties of Groups, IHP, Paris, 03/2014
- Random Walks on Groups, IHP, Paris, 01/2014
- Young Geometric Group Theory Meeting, CIRM, Luminy, 01/2014

- Random Walks and Asymptotic Geometry of Groups, CIRM, Luminy, 01/2014
- Geometric and Analytic Group Theory, Ventotene, Italy, 09/2013
- Groups St Andrews 2013, St Andrews, 08/2013
- Locally Compact Groups Beyond Lie Theory, Spa, Belgium, 03/2013
- Golod-Shafarevich Groups; Rank Gradient and Algebra, ESI Vienna, 08/2012
- Cubical Complexes and Applications, ICMS, Edinburgh, 07/2012
- Topology and Groups, Freie Universität Berlin, 06/2012
- Young Geometric Group Theory Meeting, Bedlewo, Poland, 01/2012
- Infinite Monster Groups, ESI Vienna, 12/2011

Teaching Experience

- College Teaching Associate at Trinity Hall, Cambridge (Michaelmas Term 2015-Lent Term 2016): Part IA and IB Pure Mathematics.
- College Lecturer at St Catherine's College, Oxford (Michaelmas Term 2012-Trinity Term 2015): Prelims Pure Mathematics.
- Class Tutor at the Mathematical Institute, Oxford (Michaelmas Term 2014): Part B Topology and Groups, Lecturer Prof Andrew Dancer.
- College Tutor at St John's College, Oxford (Trinity Term 2012): Part A Core Algebra; Group Theory; Fields and Number Theory.
- Teaching Assistant at St Catherine's College, Oxford (Hilary Term 2012): Part A Topology, Tutor Prof Marc Lackenby.
- Teaching Assistant at the Mathematical Institute, Oxford (Hilary Term 2012): Part C Geometric Group Theory, Lecturer Dr Panagiotis Papazoglou, Tutor Dawid Kielak.
- Teaching Assistant at the Mathematical Institute, Oxford (Michaelmas Term 2011): Topology and Groups, Lecturer Dr Panagiotis Papazoglou, Tutors Prof Marc Lackenby and Dr Panagiotis Papazoglou.

Other Professional Service

- Founding Co-organizer, Junior Mathematics Colloquium, Georg-August Universität Göttingen
- Project Assistant at the Arizona Winter School 2016: Analytic Methods in Arithmetic Geometry (March 2016).