

Curriculum Vitae

Personal information

Surname, Given Names	Kropholler, Robert Peter
Address	7 Harrington Road, Cambridge, MA, 02140
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Email	robert.kropholler@tufts.edu
Nationality	British
Date of Birth	5 October 1989

Employment History

	2017 - Present
Title	Norbert Weiner Assistant Professor
Employer	Department of Mathematics, Tufts University
	2016 - 2017
Title	Postdoctoral Researcher
Employer	Mathematical Sciences Research Institute

Education

Postgraduate Studies	2012 - 2016
	DPhil. in Mathematics, St Edmund Hall, University of Oxford
Advisor	Prof. Martin Bridson
Research Topic	<i>“Finiteness Properties and $CAT(0)$ Groups”</i>
Support	EPSRC DTA Award
Undergraduate Studies	2008 - 2012
	MMath, First Class, University of Nottingham
Dissertation	<i>“Cyclically Presented Groups”</i>

Academic Interests

Current Interests	Hyperbolic groups and their subgroups, $CAT(0)$ geometry, Decision problems in group theory, 4-manifolds.
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Teaching experience

Period	2017 - Present
Employer	Tufts University
Description	Spring 2017: Lecturer for Calculus 1 and Algebraic Topology. Fall 2017: Lecturer for Graduate Algebra I and recitation leader for Calculus 1. Spring 2018: Lecturer for Graduate Algebra II and Algebraic Topology.
Period	2014 - 2015
Employer	Stipendiary Lecturer, Keble College

Description	Tutor for first year courses: Groups and Group Actions, Complex Numbers, Linear Algebra, Introduction to University Mathematics, and Optimization. Tutor for second year courses: Algebra I: Linear Algebra and Algebra III: Group Theory.
Period	2013 - 2016
Employer	Mathematics Tutor at University College, St Catherine's College, Somerville College, St Edmund Hall and Keble College
Description	Tutoring Prelims and Part A Mathematics at the above colleges as well as one to one classes with visiting students.
Period	2013 - 2015
Employer	Class Tutor, University of Oxford
Description	Topology and Groups for Part B student classes
Period	2012 - 2015
Employer	Teaching assistant, University of Oxford
Description	Marking coursework in Part B Topology and Groups, Group Theory and Introduction to Character Theory, and Part C Geometric Group Theory, and Infinite Groups.

Publications

- 2017 R. Kropholler, F. Vigolo
A new construction of $CAT(0)$ cube complexes
In Preparation
- 2017 B. Gilman, R. Kropholler, S. Schleimer
Groups whose word problem are not semilinear
In Preparation
- 2017 R. Kropholler, I. Leary, I. Soroko
Uncountably many quasi isometry classes of FP groups
<https://arxiv.org/abs/1712.05826>
- 2017 A. Bar-Natan, M. Duchin, R. Kropholler
Medium-scale curvature for Cayley graphs
<https://arxiv.org/abs/1712.02484>
- 2017 R. Kropholler, D. Spriano
Closure properties in the class of multiple context free groups
<https://arxiv.org/abs/1709.02478>
- 2017 R. Kropholler
Special Cube Complexes
Proceeding of Durham Symposium
- 2016 R. Kropholler, G. Wilkes
Profinite properties of RAAGs and special groups
Bull. Lond. Math. Soc. 48 (2016), no. 6, 1001–1007
- 2016 J. Button, R. Kropholler
Non Hyperbolic Free-By-Cyclic and One-Relator Groups
New York J. Math. 22 (2016), 755–774

Invited External Lectures

13/01/2018	“ <i>Joint Math Meetings</i> ”, San Diego
Title	Dimensions of discrete groups
12/10/2017	Binghampton University
Title	Uncountably many QI classes of groups of type FP
19/09/2017	Brandeis University
Title	Uncountably many QI classes of groups of type FP
21/06/2017	ETH Zurich
Title	An arbitrary cubical dimension gap
11/04/2017	Tufts University
Title	Subgroups of Hyperbolic Groups
08/03/2017	“ <i>Spring Topology and Dynamics</i> ” New Jersey City University
Title	Some constructions of hyperbolic groups
10/01/2017	“ <i>Non-positive curvature, group actions and cohomology</i> ” Isaac Newton Institute, Cambridge
Title	Hyperbolic groups and their subgroups
22/11/2016	University of California Santa Barbara
Title	Finiteness properties and free abelian subgroups
25/04/2016	Oxford University
Title	Finiteness properties and free abelian subgroups
9/12/2015	“ <i>5th meeting of Groups and Geometry</i> ”, Birkbeck, London
Title	Almost Finitely Presented Subgroups of Hyperbolic Groups
14/07/2015	Freie Universität Berlin
Title	Free-by-Cyclic groups and $CAT(0)$ spaces
11/06/2015	“ <i>ECSTATIC</i> ”, Imperial College, London
Title	Free-by-Cyclic Groups
30/06/2014	“ <i>Young Researcher in Mathematics</i> ”, Warwick
Title	$CAT(0)$ structures on Free-by-Cyclic Groups

Conference Participation

2017	“ <i>Homological Algebra and Topological Groups</i> ”, Southampton
2017	“ <i>Geometric Structures in Group Theory</i> ”, Oberwolfach
2017	“ <i>GAGTA</i> ”, Bilbao
2017	“ <i>Young Geometric Group Theory VI</i> ”, Oxford
2016	“ <i>Beyond Hyperbolicity</i> ”, Cambridge
2016	“ <i>Boundaries of $CAT(0)$ cube complexes</i> ”, Nice
2016	“ <i>Topological and Homological Methods in Group Theory</i> ”, Bielefeld
2015	“ <i>Geometric Topology</i> ”, Oberwolfach
2014	“ <i>Cube Complexes and Groups</i> ”, Copenhagen
2013	“ <i>Geometry and Group after Thurston</i> ”, Dublin
2013	“ <i>Geometric and Cohomological Group Theory</i> ”, Durham
2013	“ <i>Young Researchers in Mathematics</i> ”, Edinburgh
2013	“ <i>Summer School on Geometry of Outer Space</i> ”, Marseille

2013 “*Young Topology Meeting UK 2013*”, Imperial College London
 2013 “*British Mathematical Colloquim*”, Sheffield

Organisational Duties

2017 - Present “*Geometric Group Theory and Topology Seminar*”, Tufts
 2015 “*Young Researchers in Mathematics*”, Oxford
 2015 “*Kinderseminar*”, Oxford
 2014-2015 “*Poincaré Seminar*”, Oxford
 2013-2014 “*Junior Topology and Group Theory*”, Oxford
 2013 “*Topology Advanced Class*”, Oxford

Junior Seminars and Reading Groups

11/2013 6 Seminars in “*Topology Advanced Class*”
 Topic Bing Topology and Casson Handles
 2012-2015 6 Seminars in “*Kinderseminar*”
 Titles Properties of Random Groups.
 Voting Systems and Arrow’s Impossibility Theorem.
 The Number 6.
 CAT(0) Structures for Free-by-Cyclic Groups.
 Straight Edge and Compass to Origami.
 Non Constant Functions of Derivative 0.
 2012-2015 10 Seminars in “*Junior Topology and Group Theory*”
 Titles Homological Filling Functions,
 Subgroups of $\text{Aut}(F_n)$ and Actions on CAT(0) spaces.
 There is Only One Gap in the Isoperimetric Spectrum.
 Simple Homotopy Theory and the Poincaré Conjecture
 Bestvina-Brady Morse Theory and some Conjectures in Low dimensional Topology.
 Subgroups of Hyperbolic Groups and Finiteness Properties.
 Aperiodic Tiling and Groups.
 A Gentle Introduction to Kirby Calculus
 Some Decision Problems in Groups.
 Relations between some Topological and Group Theoretic Conjectures.
 2013-2015 12 Seminars on a range of topics in the “*Poincaré Seminar*”
 Topics Smooth 4-Manifolds.
 The Virtual Haken Conjecture.
 The Rips Construction.
 Sigma Invariants.
 Limit Groups.

Work Experience

Period 2011-2012
 Employer Nottingham Housing Advice
 Description Giving housing advice to general members of the public, dealing with debt claims from major companies, reception duties.

Extracurricular Activities

Period	2013-2014
Activity	Chairman of the Oxford University Contract Bridge Association