

## Curriculum Vitae

### Personal information

Surname, Given Names

**Kropholler, Robert Peter**

Address

The Mansion, Court Place Gardens, Iffley, Oxford, OX4 4EW

Telephone

0784 667 4275 (*mobile*)

Email

kropholler@maths.ox.ac.uk

Nationality

British

Date of Birth

5 October 1989

### Education

Ongoing Postgraduate Studies

2012 - Present

DPhil. in Mathematics, St Edmund Hall, University of Oxford

Advisor

Prof. Martin Bridson

Research Topic

*“Constructions in  $CAT(0)$  Geometry”*

Support

EPSRC DTA Award

Undergraduate Studies

2008 - 2012

MMath, First Class, University of Nottingham

Dissertation

*“Cyclically Presented Groups”*

### Academic Interests

Current Interests

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

### Teaching experience

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 - Present

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.

## Lecturing and Seminar Work at Oxford

11/2013 Topic	6 Seminars in “ <i>Topology Advanced Class</i> ” Bing Topology and Casson Handles
2012-2015 Titles	6 Seminars in “ <i>Kinderseminar</i> ” 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 Titles	10 Seminars in “ <i>Junior Topology and Group Theory</i> ” 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 Topics	12 Seminars on a range of topics in the “ <i>Poincaré Seminar</i> ” Smooth 4-Manifolds. The Virtual Haken Conjecture. The Rips Construction. Sigma Invariants. Limit Groups.

## Organisational Duties

As well as speaking in the local seminars, I have also been organiser for the following conferences and seminars.

2015	“ <i>Young Researchers in Mathematics</i> ”, Oxford
2015	“ <i>Kinderseminar</i> ”, Oxford
2014-2015	“ <i>Poincaré Seminar</i> ”, Oxford
2013-2014	“ <i>Junior Topology and Group Theory</i> ”, Oxford
2013	“ <i>Topology Advanced Class</i> ”, Oxford

## Invited External Lectures

9/12/2015 Title	“ <i>5th meeting of Groups and Geometry</i> ”, Birkbeck, London Almost Finitely Presented Subgroups of Hyperbolic Groups
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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

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	“ <i>Young Topology Meeting UK 2013</i> ”, Imperial College London
2013	“ <i>British Mathematical Colloquium</i> ”, Sheffield

### Publications

2015	Hyperbolic Groups with Non-hyperbolic subgroups <b>In Preparation</b>
2015	CAT(0) Groups with Almost Finitely Presented Subgroups <b>In Preparation</b>
2015	Special Cube Complexes <b>To appear in</b> <i>Proceeding of Durham Symposium</i>
2015	Non Hyperbolic Free-By-Cyclic and One-Relator Groups (Joint with Jack Button) <b>arXiv:1503.01989</b>

### 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