Benjamin Schweinhart

CONTACT INFORMATION

Ohio State University
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RESEARCH INTERESTS

Random and computational topology and geometry, and applications to materials science and physics.

POSITIONS

Ohio State University

NSF Postdoctoral Fellow, September 2016 -
Zassenhaus Assistant Professor, September 2017 -

Harvard University

Postdoctoral Fellow, Center of Mathematical Sciences and Applications
September 2015 - August 2016

EDUCATION

Princeton University

Ph.D., Mathematics, August 2015

- Dissertation Topic: Statistical Topology of Embedded Graphs
- Advisor: Robert MacPherson, Institute for Advanced Study

M.A. in Mathematics, May 2011

Swarthmore College

B.A. in Mathematics with Highest Honors, May 2009

PUBLICATIONS

B. Schweinhart, *Universality Conjectures for Curvature Flow on Graphs,* in preparation (preprint available upon request).

B. Schweinhart, J. K. Mason, and R. D. MacPherson, *Topological Similarity of Random Cell Complexes and Applications,* Physical Review E **93** (2016).

K. Emmett, B. Schweinhart, and R. Rabadan, *Multiscale Topology of Chromatin Folding,* to appear in Proceedings of the 9th International Conference on Bio-inspired Information and Communications Technologies (October 2015).

R. D. MacPherson and B. Schweinhart, *Measuring Shape with Topology,* Journal of Mathematical Physics **53** (2012), doi: 10.1063/1.4737391.

TALKS

Statistical Topology of Random Cell Complexes, and Applications, TGDA Seminar, OSU (January 2017)

Statistical Topology of Random Cell Complexes, and Applications, Stochastic Topology Seminar, ICERM, Brown University (November 2016)

Statistical Topology of Random Cell Complexes, and Applications, Topology, Geometry, and Data Analysis Conference, Ohio State University (May 2016)

Universality Conjectures for Curvature Flow on Graphs, Center of Mathematical Sciences and Applications Members' Seminar, Harvard University (March 2016)

Statistical Topology of Random Cell Complexes, and Applications , Applied Algebraic Topology Research Network Seminar (March 2016)

Universality Conjectures for Curvature Flow on Graphs, Mathematical Physics Seminar, Harvard University, (October 2015)

Topological Similarity of Random Cell Complexes, Kavli Seminar, Harvard University School of Engineering and Applied Sciences, (September 2015)

Topological Similarity of Random Cell Complexes, AIMR Tohoku University, (June 2015)

Topological Similarity of Random Cell Complexes, Workshop on Topology: Identifying Order in Complex Systems, Institute for Advanced Study, (December 2014)

Topological Similarity of Random Cell Complexes, Center for Nonlinear Analysis Seminar, Carnegie Mellon University, (October 2014)

Topological Similarity of Random Cell Complexes, Applied Interdisciplinary Mathematics Seminar, University of Michigan, (October 2014)

Topological Similarity of Random Cell Complexes, Special Session on Random Spaces (45 minutes), AMS Central Sectional Meeting, University of Wisconsin - Eau Claire, (September 2014)

Measuring Shape with Topology, Rabadan Lab Seminar, Columbia University, (06/2013)

Measuring Shape with Topology, MacPherson Informal Seminar, Institute for Advanced Study, (December 2012)

Persistent Homology of Polymers, Swarthmore College Mathematics Colloquium, (October 2010)

Teaching Experience

Spring 2013 Lecturer, Linear Algebra

Honors and Awards

2016–2019 NSF Mathematical Sciences Postdoctoral Research Fellowship
2012–2015 National Science Foundation Graduate Research Fellowship
2010-2013 Centennial Fellowship, Princeton University

Computer Skills

C++, Python, Matlab, Mathematica

References

Matthew Kahle, Associate Professor, Department of Mathematics, The Ohio State University, Columbus, OH `kahle.70@osu.edu`

Robert MacPherson, Herman Weyl Professor, School of Mathematics, Institute for Advanced Study, Princeton, NJ `rdm@ias.edu`

Jeremy Mason, Visiting Assistant Professor, Department of Mathematics, The Ohio State University, Columbus, OH `jeremy.mason@boun.edu.tr`

Mark McConnell (Teaching Reference), Senior Lecturer, Department of Mathematics, Princeton University, Princeton, NJ markwm@princeton.edu