

Benjamin Schweinhart

CONTACT INFORMATION	Ohio State University Mathematics Tower 231 W 18th Ave Columbus, OH 43210	(301) 367-4492 schweinhart.2@osu.edu https://people.math.osu.edu/schweinhart.2/
RESEARCH INTERESTS	Stochastic 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 <ul style="list-style-type: none">• 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	
PAPERS	B. Schweinhart, <i>Persistent Homology of Random Geometric Complexes on Fractals</i> , submitted (October 2018). arXiv:1808.02196 B. Schweinhart, <i>Weighted Persistent Homology Sums of Random Čech Complexes</i> . arXiv:1807.07054. B. Schweinhart, <i>Persistent Homology and the Upper Box Dimension</i> , submitted (May 2018). arXiv:1802.00533. B. Schweinhart, <i>Limits of Embedded Graphs, and Universality Conjectures for The Network Flow</i> , arXiv:1605.09063. B. Schweinhart, J. K. Mason, and R. D. MacPherson, <i>Topological Similarity of Random Cell Complexes and Applications</i> , Physical Review E 93 (2016). K. Emmett, B. Schweinhart, and R. Rabadan, <i>Multiscale Topology of Chromatin Folding</i> , Proceedings of the 9th International Conference on Bio-inspired Information and Communications Technologies (2015). R. D. MacPherson and B. Schweinhart, <i>Measuring Shape with Topology</i> , Journal of Mathematical Physics 53 (2012), doi: 10.1063/1.4737391.	

IN PREPARATION J.K. Mason and B. Schweinhart, *Feature Classification in Microstructures via the Local Wasserstein Distance*. Expected submission date: December 2018.

 J. Jaquette and B. Schweinhart, *Estimation of Persistent Homology Dimension*. Expected submission date: December 2018.

 B. Schweinhart, *Coarser Topological Equivalences, and Applications to Amorphous Silica*.

TEACHING Fall 2018 Linear Algebra (Ohio State University)

EXPERIENCE Spring 2018 Introductory Analysis I (Ohio State University)

 Fall 2017 Linear Algebra (Ohio State University)

 Spring 2013 Linear Algebra (Princeton University)

HONORS, AWARDS, 2016–2019 NSF Mathematical Sciences Postdoctoral Research Fellowship

AND GRANTS 2012–2015 National Science Foundation Graduate Research Fellowship

 2010–2013 Centennial Fellowship, Princeton University

TALKS *The Persistent Homology of Random Geometric Complexes on Fractals*, Conference on Geometric Data Analysis, University of Chicago (05/2019)

The Persistent Homology of Random Geometric Complexes on Fractals, JMM Special Session on Topological Data Analysis, Joint Mathematics Meetings, Baltimore (01/2019)

Local Feature Classification in Microstructures using the Euclidean Wasserstein Metric, Mini-symposium on on Statistical Descriptors of Materials at Multiple Length Scales, SIAM Conference on Mathematical Aspects of Materials Science, Portland (07/2018)

Persistent Homology and the Upper Box Dimension, ATMCS8, Vienna (06/2018)

Persistent Homology and the Upper Box Dimension, JMM Special Session on Topological Data Analysis, Joint Mathematics Meetings, San Diego (01/2018)

Topological Similarity of Cell Complexes, Minisymposium on Statistics and Applied Algebraic Topology, SIAM Conference on Applied Algebraic Geometry, Atlanta (07/2017)

Limits of Embedded Graphs, Computational Topology and Geometry Workshop, Foundations of Computational Mathematics Conference, Barcelona (07/2017)

Statistical Topology of Random Cell Complexes, and Applications, TGDA Seminar, OSU (01/2017)

Statistical Topology of Random Cell Complexes, and Applications, Stochastic Topology Seminar, ICERM, Brown University (11/2016)

Statistical Topology of Random Cell Complexes, and Applications, Topology, Geometry, and Data Analysis Conference, Ohio State University (05/2016)

Universality Conjectures for Curvature Flow on Graphs, Center of Mathematical Sciences and Applications Members' Seminar, Harvard University (03/2016)

Statistical Topology of Random Cell Complexes, and Applications, Applied Algebraic Topology Research Network Seminar (03/2016)

Universality Conjectures for Curvature Flow on Graphs, Mathematical Physics Seminar, Harvard University, (10/2015)

Topological Similarity of Random Cell Complexes, Kavli Seminar, Harvard University School of Engineering and Applied Sciences, (10/2015)

Topological Similarity of Random Cell Complexes, AIMR Tohoku University, (06/2015)

Topological Similarity of Random Cell Complexes, Workshop on Topology: Identifying Order in Complex Systems, Institute for Advanced Study, (12/2014)

Topological Similarity of Random Cell Complexes, Center for Nonlinear Analysis Seminar, Carnegie Mellon University, (10/2014)

Topological Similarity of Random Cell Complexes, Applied Interdisciplinary Mathematics Seminar, University of Michigan, (10/2014)

Topological Similarity of Random Cell Complexes, Special Session on Random Spaces, AMS Central Sectional Meeting, University of Wisconsin - Eau Claire, (09/2014)

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

Measuring Shape with Topology, MacPherson Informal Seminar, Institute for Advanced Study, (12/2012)

REFERENCES

Herbert Edelsbrunner, Professor, Institute of Science and Technology Austria, Klosterneuburg, Austria herbert.edelsbrunner@ist.ac.at

Matthew Kahle, 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, Assistant Professor Department of Materials Science and Engineering, University of California, Davis. Davis, CA. jkmason@ucdavis.edu