

Curriculum Vita

Justin Malestein

Degrees and Academic Experience

September 2015 - Present Assistant Professor at the University of Oklahoma

September 2014 - August 2015 Postdoc at Mathematical Institute of Universität Bonn

September 2012 - August 2014 Postdoctoral Fellow at Hebrew University of Jerusalem

July 2009 - June 2012 Research Assistant Professor at Temple University (postdoc)

June 2009 University of Chicago
PhD - Mathematics (PhD advisor: Benson Farb)

June 2006 University of Chicago
Master of Sciences - Mathematics

April 2004 University of Michigan
Bachelor of Science - Honors Mathematics with High Distinction

Research Interests

mapping class groups, discrete geometry, low-dimensional geometry/topology, geometric group theory, rigidity of structures

Publications

Simple closed curves, finite covers of surfaces, and power subgroups of $\text{Out}(F_n)$, with Andrew Putman, published in *Duke Math. Journal* **168** (2019), no. 14, 2701–2726.

Pseudo-Anosov dilatations and the Johnson filtration, with Andrew Putman, published in *Groups Geom. Dyn.* **10** (2016), no. 2, 771–793.

Arithmetic quotients of the mapping class group, with Fritz Grunewald, Michael Larsen, and Alexander Lubotzky, published in *Geom. Funct. Anal.*, Vol. **25** (2015), 1493–1542.

Generic rigidity with forced symmetry I: Reflections and rotations, with Louis Theran, published in *Discrete and Computational Geometry*, **54** (2015), no. 2, 339–367.

Frameworks with forced symmetry II: orientation-preserving crystallographic groups, with Louis Theran, published in *Geometriae Dedicata*, **170** (2014), 219–262.

Generic rigidity with forced symmetry and sparse colored graphs, with Louis Theran, chapter in *Rigidity and Symmetry*, Fields Institute Communications Volume 70, 2014.

Topological designs, with Igor Rivin and Louis Theran, published in *Geometriae Dedicata*, **168** (2014), 221–233.

Generic combinatorial rigidity of periodic frameworks, with Louis Theran, published in *Advances in Mathematics*, **233** (2013), 291–331.

On genericity of pseudo-Anosovs in the Torelli group, with Juan Souto, published in *IMRN*, (2013), no. 6, 1434–1449.

On the self-intersections of curves deep in the lower central series of a surface group, with Andrew Putman, published in *Geom. Dedicata*, **149** (2010), 73–84.

Pseudo-Anosov homeomorphisms and the lower central series of a surface group. *Algebraic & Geometric Topology*, **7** (2007) 1921–1948.

Preprints

Ultrarigid periodic frameworks, preprint with Louis Theran.

Arithmetic quotients of the automorphism groups of a Right-Angled Artin Group, preprint.

Rationality of the stable commutator length of non-filling curves on a surface, preprint with Max Forester (available on my webpage).

Talks

Homology of finite covers of surfaces and simple closed curves.

Seminar talk in a special session of Spring AMS Spring Central and Western Joint Sectional Meeting (March 22, 2019)

Rigid structures with symmetry

Pure Maths Colloquium at the University of St Andrews (November 8, 2018)

Finite covers of surfaces and simple closed curves

Oberseminar Differentialgeometrie at Max Planck Institute for Mathematics in Bonn, Germany (October 25, 2018)

Finite covers of surfaces and simple closed curves

Fall Redbud Topology Conference (November 18, 2017)

Arithmetic Quotients

No Boundaries: Groups in Algebra, Geometry, and Topology Conference (October 29, 2017)

Intersections of curves and large dilatations from algebraic complexity

Spring Topology and Dynamical Systems Conference (March 12, 2016)

Arithmetic quotients of the mapping class group

Fall Redbud Topology Conference, University of Arkansas (October 3, 2015)

Oberwolfach workshop on “New perspectives on the interplay between discrete groups in low-dimensional topology and arithmetic lattices.” (June 2015)

Purdue University (October 17, 2014)

Indiana University, Bloomington Algebra Seminar (October 13, 2014)

University of Illinois at Urbana-Champaign Geometry/Topology Seminar (October 9, 2014)

Temple University Geometry/Topology Seminar (October 7, 2014)

University of Maryland Geometry/Topology Seminar (October 6, 2014)

Boston College Geometry/Topology Seminar (October 2, 2014)

CUNY Graduate Center Geometry/Topology Seminar (September 30, 2014)

Mapping class groups and Teichmüller Theory conference (in Israel, May 2014)

Combinatorial rigidity and symmetry

Northeastern University (October 1, 2014)

Pseudo-Anosov density and dilatations in the Torelli groups

Yale University (January 2013)

Temple University (January 2013)

Generic rigidity for frameworks with symmetry

Joint Mathematics Meetings 2013, AMS Special Session on Discrete and Computational Geometry, II

Intersection of Curves and the Lower Central Series

Stony Brook University (March 2012)

Generic combinatorial rigidity of periodic frameworks.

Fields Institute workshop on rigidity and symmetry (October 2011)

Rice University (October 2011)

On genericity of pseudo-Anosovs in the Torelli group.

Joint Mathematics Meeting 2012, AMS Special Session on Hyperbolicity in Manifolds and Groups, I

OSU workshop on the Torelli group, mapping class group, and $\text{Out}(F_n)$. (May 2011)

Generic Periodic Rigidity.

Geometry Seminar at the Courant Institute of Mathematical Sciences at New York University (NYU). (March 2011)

Length, self-intersection number, and the lower central series of a surface group.

California Institute of Technology (Caltech) Geometry and Topology Seminar.

Temple University Geometry and Topology Seminar.

University of Pennsylvania (UPenn) Geometry and Topology Seminar.

City University of New York (CUNY) Complex Analysis Seminar.

Yale University Geometry and Topology Seminar.

Pseudo-Anosov homeomorphisms and the lower central series of a surface group.

University of Chicago Torelli Group Workshop.

Refereed Conference Abstracts

Rigid components in fixed-lattice and cone frameworks.

(with Matthew Berardi, Brent Heeringa, and Louis Theran, accepted at Canadian Conference on Computational Geometry, 2011)

Awards

Sep 2020 - Collaboration Grant

Simons Foundation

Honors

2013-2014 Lady Davis postdoctoral fellowship (Emily Erskine Fund)

Hebrew University of Jerusalem

2004-2005 McCormick Scholarship

University of Chicago

Teaching Experience

October 2005 - December 2005 College Fellow at the University of Chicago

(Basic Algebra 1, under Juan Souto)

January 2006 - March 2006 College Fellow at the University of Chicago

(Basic Algebra 2, under Vadim Vologodsky)

- March 2006 - June 2006** College Fellow at the University of Chicago
(Algebraic Number Theory, under Spencer Bloch)
- October 2006 - June 2007** Instructor at the University of Chicago
(Elementary Functions And Calculus)
- October 2007 - March 2008** Instructor at the University of Chicago
(Mathematical Methods for Social Science, Linear Algebra)
- October 2008 - March 2009** Instructor at the University of Chicago
(Elementary Functions and Calculus)
- September 2009 - May 2010** Research Assistant Professor at Temple University
(Concepts of Analysis Parts I and II, Linear Algebra)
- September 2010 - May 2011** Research Assistant Professor at Temple University
(Calculus I)
- January 2012 - July 2012** Research Assistant Professor at Temple University
(Calculus I , Differential Geometry)
- September 2014 - December 2014** Teaching assistant for the 3-manifolds reading seminar at University of Bonn, working under Professor Hamenstädt
- September 2015 - December 2015** Assistant Professor at University of Oklahoma
(Linear Algebra I)
- Spring 2016** Assistant Professor at University of Oklahoma
(Calculus and Analytic Geometry IV)
- Fall 2016** Assistant Professor at University of Oklahoma
(Differential and Integral Calculus III, Algebraic Topology I)
- Spring 2017** Assistant Professor at University of Oklahoma
(Differential and Integral Calculus III, Algebraic Topology II)
- Fall 2017** Assistant Professor at University of Oklahoma
(Differential and Integral Calculus I, Topology I)

Spring 2018 Assistant Professor at University of Oklahoma
(Calculus and Analytic Geometry I, Topics in Topology)

Fall 2018 Assistant Professor at University of Oklahoma
(Differential and Integral Calculus III)

Spring 2019 Assistant Professor at University of Oklahoma
(Discrete Math Structures, Topics in Topology)

Fall 2019 Assistant Professor at University of Oklahoma
(Differential and Integral Calculus III, Topology I)

Summer 2007 Mentor, University of Chicago - REU
(Research experiences for undergraduates in mathematics)