



Nicholas G. Vlamis

Employment

- 2015–Present **RTG Postdoctoral Assistant Professor**, *University of Michigan*, Ann Arbor, MI.
2009–2010 **High School Math Teacher**, *Mystic Valley Regional Charter School*, Malden, MA.
Taught Grades 9-12.

Education

- 2010–2015 **Mathematics, MS 2012, Ph.D 2015**, *Boston College*, Chestnut Hill, MA.
Advisors: Martin Bridgeman and Ian Biringer
Fall 2008 **Semester Abroad**, *Budapest Semesters in Mathematics*, Budapest, Hungary.
2004–2008 **Mathematics and Physics, BS 2008**, *Northeastern University*, Boston, MA.

Research Interests

- low-dimensional topology
- Riemann surfaces
- Teichmüller theory
- mapping class groups
- hyperbolic geometry
- geometric and topological group theory

Papers

Publications

- Graphs of curves on infinite-type surfaces with mapping class group actions.
Ann. Inst. Fourier (Grenoble), to appear. Joint with Matthew Gentry Durham and Federica Fanoni.
- The Bridgeman-Kahn identity for hyperbolic manifolds with cusped boundary.
Geom. Dedicata 194 (2018), 81-97. Joint with Andrew Yarmola.
- *Automorphisms of the compression body graph*.
J. London Math. Soc. (2) 95 (2017), no. 1, 94-114. Joint with Ian Biringer.
- *Basmajian's identity in higher Teichmüller-Thurston theory*.
J. Topology 10 (2017), no. 3, 744-764. Joint with Andrew Yarmola.
- *Moments of a length function on the boundary of a hyperbolic manifold*.
Algebr. Geom. Topol. 15 (2015), no. 4, 1909–1929.
- *Quasiconformal homogeneity and subgroups of the mapping class group*.
Michigan Math. J. 64 (2015), no. 1, 53–75.

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Preprints*

- Thurston norms of tunnel number-one manifolds.
Joint with Natalia Pacheco-Tallaj[†] and Kevin Schreve.
- The first integral cohomology of pure mapping class groups.
Joint with Javier Aramayona and Priyam Patel.
- Algebraic and topological properties of big mapping class groups.
Joint with Priyam Patel.
- Coloring curves on surfaces.
Joint with Jonah Gaster and Joshua Evan Greene.

* All preprints have been submitted for publication and are available on the arXiv.

[†] Undergraduate author.

Awards & Grants

- 2017 Outstanding Postdoctoral Fellow Award
Awarded by University of Michigan Postdoctoral Association.
- 2017-2019 AMS-Simons Travel Grant
- 2017 Juha Heinonen Award for Excellence in Teaching, Mentoring, and Research
Awarded by the University of Michigan Department of Mathematics.
- 2014 Donal J. White Teaching Excellence Award
Awarded by the Boston College Department of Mathematics.

Talks

Conference Talks

- Aug. 2018 (Upcoming) Geodesics on hyperbolic manifolds and related topics
- April 2018 Interaction between geometry, group theory and dynamics, AMS Special Session
- Sept. 2017 Geometric Group Theory, AMS Special Session
- Aug. 2017 13th William Rowan Hamilton Geometry & Topology Workshop
- Dec. 2016 Geometric Group Theory and Topology in Low Dimensions, CMS Special Session
- Sept. 2016 Convex Cocompactness, AMS Special Session
- March 2016 Workshop on Surface Group Representations
- June 2015 Moduli Crossroads Retreat
- May 2015 Graduate Student Conference in Algebra, Geometry, and Topology
- May 2014 GEAR Junior Retreat

Seminar Talks

- March 2018 Brown University: *Geometry/Topology Seminar*
- Jan. 2018 Caltech: *Geometry & Topology Seminar*
- Jan. 2018 University of California, Santa Barbara: *Topology Seminar*
- Oct. 2017 University of Toronto: *Geometry & Topology Seminar*

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- July 2017 Georgia Institute of Technology: *Geometry Topology Seminar*
- April 2017 Graduate Center, City University of New York: *Geometry and Topology Seminar*
- March 2017 Université du Luxembourg: *Geometry and Topology Seminar*
- March 2017 Universidad Autónoma de Madrid: *Group Theory Seminar*
- Jan. 2017 University of Illinois Urbana-Champaign: *Geometry, Groups, and Dynamics Seminar*
- April 2016 Graduate Center, City University of New York: *Hyperbolic Geometry Seminar*
- March 2016 Tufts University: *Geometric Group Theory and Topology Seminar*
- Nov. 2015 Purdue University: *Geometry Seminar*
- Sept. 2015 Michigan State University: *Geometry and Topology Seminar*
- Sept. 2015 University of Michigan: *Topology Seminar*
- Nov. 2014 Cornell University: *Topology and Geometric Group Theory Seminar*
- July 2013 National University of Singapore: *Topology Seminar*

Teaching

University of Michigan

- Fall 2015/16/17 Math 385: Mathematics for Elementary School Teachers
This is an inquiry-based learning (IBL) course.
- Winter 2016 Math 590: Topology
Cross-listed undergraduate/graduate course.

Boston College

- Fall 2014 MATH1004: Finite Probability and Applications
- Spring 2012/13/14 MT101: Calculus II
- Fall 2011/12/13 MT100: Calculus I

Mystic Valley Regional Charter School

- 2009-10 Alebra I, Advanced Math, IB Math Studies, and Technology

Pedagogical Training

- 2016 **IBL Workshop**, *University of Michigan*, Ann Arbor, MI.
A three day workshop focused on observing an IBL classroom.
- 2015 **TeMaCC**, *University of Michigan*, Ann Arbor, MI.
A one day workshop and conference on teaching content courses for future teachers.
- 2015 **Teacher Training**, *University of Michigan*, Ann Arbor, MI.
The training consisted of a week long orientation on implementing active-learning techniques in the classroom and continues throughout the year with weekly seminars and monthly lunches discussing inquiry-based learning.

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- 2015 **IBL Workshop**, *Cal Poly San Luis Obispo*, San Luis Obispo, CA.
A week long workshop developing the skill and practice necessary for successful implementation of inquiry-based learning.
- 2015 **Apprenticeship in College Teaching**, *Boston College*, Chestnut Hill, MA.
The ACT program combines teaching seminars with independent work conducting class observations and developing teaching materials.

Undergraduate Research

University of Michigan REU

- Summer 2017 **Thurston norm of 2-generator, 1-relator groups**, *Natalia M. Pacheco-Tallaj*, Harvard University, Co-advised with Kevin Schreve.
- Summer 2016 **Curve complexes of non-orientable surfaces**, *Alex Pieloch*, Duke University, Co-advised with Matt Durham.
- Summer 2016 **Rigidity of representations of free groups in $PSL(2, \mathbb{C})$** , *Ben Lowe*, University of Chicago, Co-advised with Richard Canary.

Laboratory of Geometry at Michigan, LOG(M)

LOG(M) is a vertically integrated research experience for undergraduates. Each project is proposed and supervised by a faculty mentor and the undergraduates are advised by the faculty mentor and a graduate student. This program was started by Anton Lukyanenko, Caleb Ashley, and myself.

- Winter 2018 **Chromatic numbers of flip graphs**
Faculty Mentor: Nicholas Vlamis (me)
Graduate Mentor: Francesca Gandini
Students: John Paul Koenig, Sanjana Kolisetty, Zihui Qi
- Winter 2017 **Visualizing the Birman-Series set on the punctured torus**
Faculty Mentor: Nicholas Vlamis (me)
Graduate Mentor: Mark Greenfield
Students: Connor Davis, Ben Gould, Luke Kiernan
(The students produced the image – of the Farey tessellation – in the left corner of the first page while learning about Möbius transformations.)

Outreach

- 2015–Present *Wayne County Math Teachers' Circle*
This is a professional development program for teachers in the Detroit area to work on interesting math problems and gain ideas for their own classroom.
- Fall 2016/17 *Wolverine Pathways*
This is a program for underserved middle and high students in the Ypsilanti and Southfield school districts. The goal of the program is to offer a pathway to college. Students who complete the rigorous program and are accepted to UM receive a full-tuition scholarship. The math department runs math circles for the students to introduce them to fun and interesting math.

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Fall 2016/17 *FEMMES Capstone*

This is a program dedicated to closing gender and racial divides in STEM fields. FEMMES hosts a capstone once a semester for girls between 4th and 6th grade from diverse, underserved communities where the students partake in various STEM activities led by volunteers.

2014–15 Taught a high-functioning autistic 9th grader group theory.

Service

2015–Present Organizer of the Topology seminar at the University of Michigan

2016–Present Co-organizer of IBL Lunch at the University of Michigan

2011–15 Mathematics Graduate Association, Boston College
Vice President 2014–2015, Treasurer 2011–2014

2013–15 *Actuary Exam 1/P Review Session*
At Boston College, I co-organized, with Prof. Dan Chambers, weekly sessions consisting of introducing necessary material and solving problems.

2013–15 AMS Graduate Student Chapter, Boston College
Co-founder and Treasurer 2013–2014

2007–08 Math Club, Northeastern University
Co-founder, President

References

Research

- Martin Bridgeman (Boston College)
- Ian Biringer (Boston College)
- Richard Canary (University of Michigan)
- Ara Basmajian (City University of New York)
- Christopher Leininger (University of Illinois Urbana-Champaign)

Teaching

- Alejandro Uribe (University of Michigan)

Miscellaneous

- Member of the AMS
- Citizen of the United States of America

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