



# Nicholas G. Vlamis

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## Employment & Education

- 2015–Present **RTG Postdoctoral Assistant Professor**, *University of Michigan*, Ann Arbor, MI.  
2010–2015 **Mathematics, MS 2012, Ph.D 2015**, *Boston College*, Chestnut Hill, MA.  
Advisors: Martin Bridgeman and Ian Biringer  
2009–2010 **High School Math Teacher**, *Mystic Valley Regional Charter School*, Malden, MA.  
Taught Grades 9-12.  
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
- hyperbolic Riemann surfaces
- (higher-)Teichmüller theory
- (big) mapping class groups
- hyperbolic geometry
- geometric group theory

## Papers

- *Algebraic and topological properties of big mapping class groups.*  
*Submitted.* (Joint with Priyam Patel.)
- *Graphs of curves on infinite-type surfaces with mapping class group actions.*  
*Submitted.* (Joint with Matthew Gentry Durham and Federica Fanoni.)
- *Coloring curves on surfaces.*  
*Submitted.* (Joint with Jonah Gaster and Joshua Evan Greene.)
- *The Bridgeman-Kahn identity for hyperbolic manifolds with cusped boundary.*  
*Geom. Dedicata* (2017). (Joint with Andrew Yarmola.)
- *Automorphisms of the compression body graph.*  
*J. London Math. Soc.* (2) 95 (2017) 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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## 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.
- 2016/17 GEAR Short Term Visit Grants:
- Prof. Ara Basmajian, City University of New York (18 April 2017 - 2 May 2017)
  - Prof. Hugo Parlier, University of Luxembourg (19 March 2017 - 26 March 2017)
  - Prof. Javier Aramayona, Universidad Autónoma de Madrid (12 March 2017 - 18 March 2017)
  - Prof. Ser Peow Tan, National University of Singapore (9 Aug. 2016 - 20 Aug. 2016)
  - Prof. Hugo Parlier, University of Fribourg (15 May 2016 - 22 May 2016)
- 2014 Donal J. White Teaching Excellence Award  
Awarded by the Boston College Department of Mathematics.
- 2013 GEAR Summer REGS  
Title: Identities and moments on hyperbolic manifolds.  
A grant to work with Prof. Ser Peow Tan at the National University of Singapore.

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## Talks

### Conference Talks

- Sept. 2017 Geometric Group Theory, AMS Special Session
- Aug. 2017 13<sup>th</sup> 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

- 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*

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- 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 Algebra 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.
- 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.

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- 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 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 tessalation – 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 *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.

### Fall 2016 *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 9<sup>th</sup> 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.

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- 2013–15 AMS Graduate Student Chapter, Boston College  
Co-founder and Treasurer 2013–2014
- 2007–08 Math Club, Northeastern University  
Co-founder, President

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## 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)

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## Miscellaneous

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

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