

# Babak Modami

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## Employment

- 2017-Present **Milnor Lecturer**, *Institute for Mathematical Sciences*, Stony Brook University, NY.
- 2015-2017 **Gibbs Assistant Professor and Postdoctoral Associate**, *Department of Mathematics*, Yale University, CT.
- 2013-2015 **Visiting Assistant Professor**, *Department of Mathematics*, University of Illinois at Urbana-Champaign, IL.

## Education

### PhD in Mathematics

- 2013 **Yale University**, New Haven, CT.

Title: Prescribing the behavior of Weil-Petersson geodesics

Supervisor: Yair Minsky

### Master of Science: Mathematics

- 2006 **Sharif University of Technology**, Tehran, Iran.

### Bachelor of Science: Mathematics

- 2004 **Sharif University of Technology**, Tehran, Iran.

## Research Interests

Teichmüller theory, geometric topology and geometric analysis.

## Grants and awards

- 2019 **Simons Center for Geometry and Physics and RTG grant, \$20,000.**

## Publications and preprints

- Short curves of Teichmüller geodesics, revised, **preprint**
- Thurston geodesics: no backtracking and active intervals, **preprint** (with Anna Lenzhen, Kasra Rafi and Jing Tao)
- Limit sets of Weil-Petersson geodesics with non-minimal ending laminations, **J. Topol. Anal. 12 (2020), no. 1, 1–28.** (with Jeffrey Brock, Christopher Leininger and Kasra Rafi)
- Bottle-necks for Weil-Petersson geodesics, **Advances in Mathematics, to appear** (with Yair Minsky)

6. Teichmüller geodesics with d-dimensional limit sets, **J. Mod. Dyn.** **12 (2018) 261-283**, (with Anna Lenzhen and Kasra Rafi).
5. Limit sets of Weil-Petersson geodesics, **Int. Math. Res. Not. IMRN** **2019, no. 24, pp. 7604-7658**. (with Jeffrey Brock, Christopher Leininger and Kasra Rafi),
4. Limit sets of Teichmüller geodesics with minimal non-uniquely ergodic vertical foliation II, **J. Reine Angew. Math.** **758 (2020), 1-66** (with Jeffrey Brock, Christopher Leininger and Kasra Rafi)
3. Recurrent Weil-Petersson geodesic rays with non-uniquely ergodic ending laminations, **Geom. Topol.** **19 (2015), no.6, 3565-3601**, (with Jeffrey Brock).
2. Asymptotics of a class of Weil-Petersson geodesics and divergence of WP geodesics, **Algebr. Geom. Topol.** **16 (2016) no.1, 267-323**.
1. Prescribing the behavior of WP geodesics in the moduli space of Riemann surfaces, **J. Topol. Anal.** **7 (2015), no.4, pp.543-676**

## Teaching

### Stony Brook University

- Fall 2021 Several variable calculus, Calculus III
- Spring 2020 Differential Equations with linear algebra
- Fall 2019 Single variable calculus, Calculus II
- Spring 2019 Single variable calculus, Calculus A
- Fall 2018 Single variable calculus, Calculus C
- Spring 2018 Single variable calculus, Calculus C
- Fall 2017 Introduction to linear algebra

### Yale University

- Spring 2017 Linear algebra with applications      Teichmüller geometry (graduate)
- Fall 2016 From Euclid to Einstein (a course for non-majors)
- Spring 2016 Reading seminar about the Weil-Petersson geodesic flow (graduate)
- Fall 2015 Geometry and dynamics of moduli spaces (graduate)

### University of Illinois

- Spring 2015 Discrete Mathematics      Applied linear algebra
- Spring 2014 Applied linear algebra (2 sections)
- Fall 2013 Discrete Mathematics (2 sections)

### Yale University

- Spring 2012 Multivariable calculus
- Spring 2011, Single variable calculus
- Spring 2010,
- Fall 2008

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## Other teaching related activities

- 2020 Collaboration with Stony Brook Math Club
- 2017-2020 Mentoring undergraduate students at Stony Brook University about some advanced topics related to my research
- Fall 2018 Attended in Alda center for communicating science workshop, Stony Brook University.
- Fall 2016 Attended in the scientific teaching course at Department of Physics, Yale University

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## Service

- Referee for the following journals: Advances in Mathematics, Bulletin of the London Mathematical Society, Journal of London Mathematical Society, Journal of Differential Geometry and Proceeding of London Mathematical Society
- Reviewer for Mathematical Reviews
- April 2019: Co-organizer of RTG graduate school: Geometry of Teichmüller spaces at Simons Center for Geometry and Physics, Stony Brook University
- Fall 2016, Spring 2017: Co-organizer of the Geometry and Topology seminar at Department of Mathematics, Yale University

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## Selected Invited Talks

- Sep 2020 Simons Center for Geometry and Physics- Math group meeting, Zoom presentation
- Feb 2020 Tata Institute for Fundamental Research, India, Skype presentation
- Nov 2019 UC Riverside, Topology Seminar
- March 2019 Durham University, UK, Skype presentation
- March 2018 CUNY Graduate Center, Complex Analysis and Dynamics Seminar
- Feb 2018 Stony Brook University, Mini-course at Dynamics Seminar (2 lectures)
- Oct 2017 Stony Brook University, Dynamics Seminar
- Sep 2015 Yale University, Geometry and Topology Seminar
- Nov 2014 California Institute of Technology, Geometry and Topology Seminar
- Oct 2014 Geometry, Groups and Dynamics Seminar
- March 2014 Perdue University, Geometry Seminar
- Jan 2014 Baltimore, Maryland, AMS Joint Mathematics Meeting
- Sep 2013 UIUC, Differential Geometry Seminar
- April 2013 Rutgers University, Geometry and Topology Seminar
- April 2013 Temple University, Geometry and Topology Seminar
- April 2013 University of Maryland College Park, Geometry and Topology Seminar
- Feb 2013 CUNY Graduate Center, Geometry and Topology Seminar
- Jan 2013 San Diego, CA, AMS Joint Mathematics Meetings, Geometric and analytic methods in Teichmüller theory and hyperbolic geometry
- July 2012 University of Illinois at Urbana-Champaign, Junior GEAR Retreat
- March 2012 CUNY Graduate Center, Complex Analysis and Dynamics Seminar
- Dec 2012 Yale University, Geometry and Topology Seminar

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## Workshops attended

- Nov 2019 Holomorphic differentials in mathematics and physics, MSRI, Berkeley, CA
- August 2017 Analysis and Geometry Atelier, University of Maryland
- August 2016 Cycles in moduli spaces, geometric invariant theory and dynamics, ICERM, Providence, RI
- May 2016 Effective and algorithmic methods in hyperbolic geometry and free groups, ICERM, Providence, RI
- August 2014 Dynamics on moduli spaces of geometric structures, MSRI, Berkeley, CA
- June 2012 Dynamics of Weil-Petersson geodesic flow, AIM, PaloAlto, CA
- July 2011 Moduli spaces of Riemann surfaces, PCMI, Park City, Utah