Babak Modami

Tata Institute of Fundamental Research, School of Mathematics
Homi Bhabha Rd, Navy Nagar, Colaba
Mumbai, India 400005
✉ *babak.modami@gmail.com*
https://www.math.stonybrook.edu/∼bmodami

Employment

2022-present **Reader**, *School of Mathematics*, Tata Institute of Fundamental Research, Mumbai.

01/2021-09/2021 **Associate Research Scientist**, *Yale University*, CT.

2017-2020 **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: Professor 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

10. Short curves of Teichmüller geodesics, revised, **preprint**
9. Thurston geodesics: no backtracking and active intervals, **preprint** (with Anna Lenzhen, Kasra Rafi and Jing Tao)
8. 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)

7. Bottle-necks for Weil-Petersson geodesics, **Adv. Math. 381 (2021), 49 pp.** (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, **Algeber. 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

Tata Institute

Fall 2023 Algebraic Topology (part of the semester)

Yale University

Spring 2020 Thurston Lipschitz metric

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, Spring 2010, Fall 2008	Singe variable calculus

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

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

Selected Invited Talks

Feb 2022	University of Exeter, Dynamics Seminar, Zoom presentation
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

Research references

- Jeffrey Brock, Yale University — jeffrey.brock@yale.edu
- Yair Minsky, Yale University — yair.minsky@yale.edu
- Christopher Leininger, Rice University — c.j.leininger95@gmail.com
- Howard Masur, University fo Chicago — masur@math.uchicago.edu
- Scott Wolpert, University of Maryland, College Park — saw@math.umd.edu
- Kasra Rafi, University of Toronto — rafi@math.toronto.ca

Teaching References

- Scott Sutherland, Stony Brook University — scott.sutherland@stonybrook.edu
- David Kahn, Stony Brook University — david.kahn@stonybrook.edu

Programming skills

Python, C/C++, Matlab, LaTeX, Algorithms and Data structures

Other

US Permanent Resident