Ian Biringer
Department of Mathematics
Boston College
140 Commonwealth Ave.
Chestnut Hill, MA
02467-3806
(773) 954-5523
ian.biringer@bc.edu

Positions held

Sept 2018 – present Boston College
     Associate Professor

July 2012 – Aug 2018 Boston College
     Assistant Professor

August 2009 – June 2012 Yale University
     Gibbs Assistant Professor, NSF Postdoctoral Fellow

Degrees and Academic Experience

June 2009 University of Chicago
     PhD - Mathematics
     Thesis: *Algebra vs. geometry in hyperbolic 3-manifolds*

June 2005 University of Chicago
     Master of Sciences - Mathematics

May 2004 Oberlin College
     Bachelor of Arts - Mathematics with Highest Honors

May 2004 Oberlin College
     Bachelor of Arts - Computer Science

June-July 2003 Oregon State University
     Research Experiences for Undergraduates

Honors

September 2017 NSF CAREER Award
     Rank, genus and Betti numbers of large-volume manifolds.
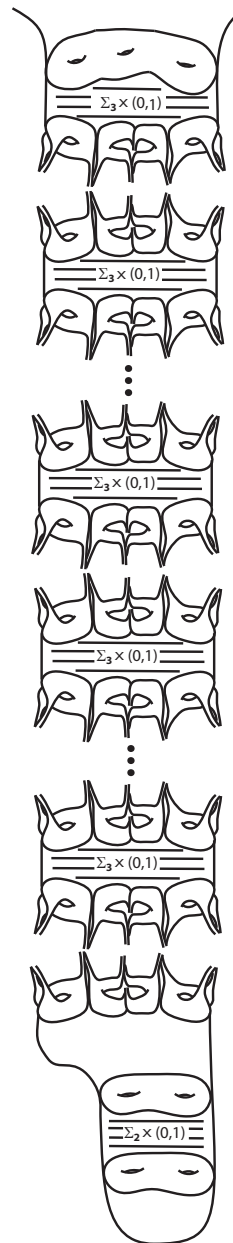
September 2016 NSF Grant - Topology

September 2012 NSF Grant - Topology

January 2009 NSF Postdoctoral Fellowship

March 2008 Graves Teaching Prize, University of Chicago

May 2004 Orr Memorial Prize in Mathematics, Oberlin College

2003-2004 Barry M. Goldwater Scholarship

Colloquia and Seminar Talks

2022 UW-Milwaukee Colloquium

2021 CUNY, The Technion

2020 UT Austin, Columbia.

2019 Université Paul Sabatier, Dartmouth College

2018 Harvard University

2017 Brown University, Caltech, Yale University.

2016 University of Pittsburgh, Temple University, Yale University

2015 MIT, CUNY, Tufts.

2014 Colby College (Colloquium), Yale University

2013 Brown University, California Institute of Technology.

2012 Pennsylvania State University, University of Pennsylvania, Boston College, University of Iowa, University of Wisconsin, University of California - Berkeley.

2011 Yale University, University of Michigan, Purdue University, Tufts University, Harvard University, Université Paul Sabatier, UT-Austin, Rice University.

2010 Temple University, Pennsylvania State University, University of Maryland, California Institute of Technology, City University of New York, Brown University.

2009 University of Texas at Austin, University of Utah, Ohio State University, University of Illinois at Chicago, Université Paul Sabatier, College International of Budapest.

2008 University of Chicago, Yale University, Princeton University, Brown University, University of Michigan.

Conference Talks

2024 Talk at the workshop *Volume and Complexity in Non-Positive Curvature* at the Erdös Center, Budapest.

2023 Minicourse at *Dynamics, Rigidity and Arithmeticity in Hyperbolic Geometry*, ICERM, May 2023.

2023 Minicourse at *Groups around 3-manifolds*, Centre de Recherches Mathématiques, Montréal, June 2023.

2022 Cornell Topology Festival, AMS Spring Special Session at Tufts

2021 Plenary lecture at the *Nearly Carbon Neutral Geometric Topology* conference.

2021 Minicourse on unimodular random manifolds at the conference *Probabilistic methods in negative curvature*, ICTS.

2020 Minicourse on hyperbolic 3-manifolds as part of the MSRI semester *Random and Arithmetic Structures in Topology*.

2020 Two lectures at Haverford College's PATCH, March 2020.

2019 LG&TBQ Conference at the University of Michigan

2018 Agira Project: Workshop on IRSs in Sete, France

2018 Boston Graduate Student Topology Conference

2017 Virginia Topology Conference

2017 32nd Summer Conference on Topology and its Applications, Dayton, OH.

2016 Southern California Topology Conference

2015 Workshop on *Asymptotic Invariants of Groups* at Oxford

2015 Workshop on *Geometric Structures on 3-Manifolds* at IAS

2014 AMS Sectional on *Low-dimensional Topology and Group Theory* at UMBC

2013 *2nd Young Geometric Group Theorist Meeting* in Haifa, Israel

2013 AMS Sectional on *Hyperbolicity in manifolds and groups* at Temple University

2013 CMS Winter Meeting, Ottawa. Two talks: one in *Random Walks and Geometry* and one in *Geometric Group Theory and Low-Dimensional Topology*

2012 *Geometric Group Theory on the Gulf*

2012 *Kerckhoff 60th Birthday Conference*

2012 GEAR Senior Retreat at UIUC

2012 AMS sectional meeting on *Hyperbolic Geometry* at the University of Arizona

2012 CMS sectional meeting in Montreal, Québec

2011 *Filling invariants and asymptotic geometry* at the University of Indiana

2011 FRG Workshop organized by Colding, Minicozzi and Gabai at Princeton University

2011 AIM Workshop on L^2-*invariants and their relatives for finitely generated groups*

2011 *Wasatch Topology Conference*

2010 *Geometry and Topology of Character Varieties* at National University of Singapore

2010 AMS sectional meeting at the University of Albuquerque

2010 *Character varieties in the geometry and topology of low dimensional manifolds* at Banff International Research Station

2009 *Wasatch Topology Conference*

2009 AMS sectional meeting at San Francisco State University

2008 *Ahlfors-Bers Colloquium* at Rutgers University, Newark

Conferences Co-organized

2023 Research group on *Covers of Surfaces*, August 2023 at Boston College.

2022 Workshop *Big Mapping Class Groups at BC*.

2019 Workshop on *Groups, Graphs and Measures* at Boston College.

2018 Research group on the topology of Gromov-Hausdorff space, Boston College.

2018 The 13th William Rowan Hamilton Workshop, Trinity College Dublin.

2017 The 13th William Rowan Hamilton Workshop, Trinity College Dublin.

2017 Dynamics on Representation Varieties, in Rennes, France.

2014 The 10th William Rowan Hamilton Workshop, Trinity College Dublin.

2013 Special Session at the Spring 2013 AMS Sectional Meeting at Boston College

2013 GEAR Workshop on Higher Teichmuller Theory, Summer 2013

Submitted Papers

- *Subgroups of bounded rank in hyperbolic* 3*-manifold groups.*
  (submitted)
  preprint at https://arxiv.org/abs/2401.01328.

- *On the Chabauty space of PSL(2,R), I: lattices and grafting.*
  with Nir Lazarovich and Arielle Leitner.
  (submitted)
  preprint at https://arxiv.org/abs/2110.14401.

- *Convergence of normalized Betti numbers in nonpositive curvature,*
  with Miklos Abert, Nicolas Bergeron and Tsachik Gelander.
  Duke Math Journal (2023).
  preprint at https://arxiv.org/abs/1811.02520

- *Thick hyperbolic* 3*-manifolds with bounded rank,*
  with Juan Souto.
  (finals revisions just sent to Memoirs of the AMS, with recommendation on 4/1[1] by the
  handling editor to accept, but final decision by the board not made yet)
  preprint at https://arxiv.org/abs/1708.01774

- *Unimodular measures on the space of all Riemannian manifolds,*
  with Miklos Abert.
  Geometry and Topology (2022).
  preprint at https://arxiv.org/abs/1606.03360.

- *Invariant random subgroups of semidirect products,*
  with Lewis Bowen and Omer Tamuz.
  Ergodic Theory and Dynamical Systems (2018).
  preprint at https://arxiv.org/abs/1703.01282.

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[1]not a joke, I think

- *On the growth of L2-invariants of locally symmetric spaces, II: exotic invariant random subgroups in rank one,*

  with M. Abert, N. Bergeron, T. Gelander, N. Nikolov, J. Raimbault and I. Samet.
  IMRN (2018).
  preprint at https://arxiv.org/abs/1612.09510.

- *Determining the finite subgraphs of the curve graph,*

  with Tarik Aougab and Jonah Gaster.
  Groups, Geometry and Dynamics (2018).
  preprint at https://arxiv.org/abs/1702.04757.

- *Packing curves on surfaces with few intersections,*

  with Tarik Aougab and Jonah Gaster.
  IMRN (2017).
  preprint at https://arxiv.org/abs/1610.06514.

- *Metrizing the Chabauty topology,*

  Geometriae Dedicata (2017).
  preprint at https://arxiv.org/abs/1610.07396.

- *Nielsen equivalence in mapping tori over the torus,*
  Conformal Geometry and Dynamics (2017).
  preprint at https://arxiv.org/abs/1610.07528.

- *Ends of unimodular random manifolds,*

  with Jean Raimbault.
  PAMS (2017).
  preprint at http://arxiv.org/abs/1411.0561.

- *On the growth of L^2-invariants for sequences of lattices in Lie groups,*

  with M. Abert, N. Bergeron, T. Gelander, N. Nikolov, J. Raimbault and I. Samet.
  Annals of Mathematics (2017)
  preprint at http://arxiv.org/abs/1210.2961.

- *Automorphisms of the compression body graph,*

  with Nick Vlamis.
  JLMS (2017).
  preprint at http://arxiv.org/abs/1508.02993.

- *Intersection growth in groups,*

  with Khalid Bou-Rabee, Martin Kassabov and Francesco Matucci.
  TAMS (2016)
  preprint at http://arxiv.org/abs/1309.7993.

- *Unimodularity of invariant random subgroups,*

  with Omer Tamuz.
  TAMS (2016).
  preprint at http://arxiv.org/abs/1402.1042.

- *Ranks of mapping tori via the curve complex,*

with Juan Souto.
Crelle's Journal (2015).
preprint at http://arxiv.org/abs/1409.1878.

- *Extending pseudo-Anosov maps to compression bodies,*

  with Jesse Johnson and Yair Minsky.
  Journal of Topology (2013).
  preprint at http://arxiv.org/abs/1011.0021.

- *On the growth of Betti numbers of locally symmetric spaces,*

  with M. Abert, N. Bergeron, T. Gelander, N. Nikolov, J. Raimbault and I. Samet.
  Comptes Rendus Mathematique (2011).
  preprint at http://arxiv.org/abs/1104.5559.

- *Algebraic and geometric convergence of discrete representations into* $\mathrm{PSL}_2\,\mathbb{C}$*,*

  with Juan Souto.
  Geometry and Topology (2010).
  preprint at http://arxiv.org/abs/1010.0459.

- *A finiteness theorem for hyperbolic* 3*-manifolds,*

  with Juan Souto.
  Journal of the London Mathematical Society (2011).
  preprint at http://arxiv.org/abs/0901.0300.

- *The three gap theorem and Riemannian geometry,*

  with Benjamin Schmidt.
  Geometriae Dedicata (2008).
  preprint at http://arxiv.org/abs/0803.1250.

- *Geometry and rank of fibered hyperbolic* 3*-manifolds,*

  Algebr. Geom. Topol. (2009).
  preprint at http://arxiv.org/abs/0803.1253.

- *Algebra versus geometry in hyperbolic* 3*-manifolds,*

  Ph.D. Thesis - The University of Chicago (2009).

Teaching experience

Jul 2012 – present   Assistant/Associate Professor at Boston College

Intro to Abstract Math, Linear Algebra (Honors), Analysis 1, Euclidean and Non-Euclidean geometry, Lie Groups, Differential Geometry, Introduction to Analysis, Differential Topology, Multivariable Calculus, Random Methods in Geometry, Teichmuller theory, Hodge Theory, All about Mapping Tori, Hyperbolic 3-manifolds, Geometric Group Theory

Aug 2009 – Jun 2012   Gibbs Assistant Professor at Yale University

Honors linear algebra and multivariable calculus, Graduate algebraic topology

Sep 2006 – June 2009   Instructor at the University of Chicago

IBL honors calculus, Multivariable calculus and linear algebra, IBL geometric group theory

Sep 2006 – Dec 2008   Mentor, University of Chicago DRP

Directed reading program for undergraduates in mathematics

Summers 2006 – 2008   Mentor, University of Chicago REU
Research experiences for undergraduates in mathematics

June 2008 – Aug 2008   Instructor, CAAP
Chicago Academic Achievement Program – Precalculus

Oct 2005 – June 2006   College Fellow at the University of Chicago
Teaching assistant for IBL honors calculus

Personal information

My birthdate is September 16, 1982. I am a US citizen.

June, 2024