

Fedor Manin

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- RESEARCH INTERESTS** Quantitative, algorithmic, and stochastic aspects of geometry and topology
- EMPLOYMENT**
- University of California, Santa Barbara, CA, USA**
 Assistant Professor (tenure-track) **from September 2019**
- Ohio State University, Columbus, OH, USA**
 Research Visiting Assistant Professor **August 2017–August 2019**
- University of Toronto, ON, Canada**
 Postdoctoral Fellow **July 2015–June 2017**
- EDUCATION**
- University of Chicago, Chicago, IL, USA**
 Ph.D., Mathematics **June 2015**
 • Dissertation: Asymptotic invariants of homotopy groups
 • Advisor: Shmuel Weinberger
 M.S., Mathematics **June 2011**
- California Institute of Technology, Pasadena, CA, USA**
 B.S., Mathematics **June 2009**
- VISITING POSITIONS**
- Israel Institute of Advanced Studies, Jerusalem**
 Visiting Scholar **November–December 2017**
Geometric, Topological and Computational Aspects of High-Dimensional Combinatorics
- Mathematical Sciences Research Institute, Berkeley, CA, USA**
 Research Member, *Geometric & Topological Combinatorics* **September–October 2017**
- PUBLICATIONS & PREPRINTS**
- Topology and local geometry of the Eden model.*
 (with Érika Roldán Roa and Benjamin Schweinhart)
 ArXiv preprint arXiv:2005.12349 (2020), submitted.
 - Scalable spaces.*
 (with Aleksandr Berdnikov)
 ArXiv preprint arXiv:1912.00590 (2019), submitted.
 - A hardness of approximation result in metric geometry.*
 (with Zarathustra Brady and Larry Guth)
 Accepted for publication in *Selecta Mathematica*.

4. *Algorithmic aspects of immersibility and embeddability.*
(with Shmuel Weinberger)
ArXiv preprint arXiv:1812.09413 (2018), submitted.
5. *A zoo of growth functions of mapping class sets.*
Journal of Topology and Analysis, to appear.
6. *Integral and rational mapping classes.*
(with Shmuel Weinberger)
Duke Math. J. **169** (2020), no. 10, 1943–1969.
7. *Plato’s cave and differential forms.*
Geometry & Topology **23** (2019), no. 6, 3141–3202.
8. *Quantitative nullhomotopy and rational homotopy type.*
(with Gregory R. Chambers and Shmuel Weinberger)
Geometric and Functional Analysis (GAFA) **28** (2018), no. 3, 563–588.
9. *Quantitative nullcobordism.*
(with Gregory R. Chambers, Dominic Dotterrer, and Shmuel Weinberger)
Journal of the American Mathematical Society (JAMS) **31** (2018), no. 4, 1165–1203.
 - *Appendix: The Gromov–Guth–Whitney embedding theorem.*
(with Shmuel Weinberger)
10. *Volume distortion in homotopy groups.*
Geometric and Functional Analysis (GAFA) **26** (2016), no. 2, 607–679.
11. *The complexity of nonrepetitive edge coloring of graphs.*
ArXiv preprint arXiv:0709.4497, (2007). 19 pages.

RESEARCH TALKS	<i>Manifolds and Groups</i> , Oberwolfach	February 10–14, 2020
	Seminars: Caltech (online)	2020
	<i>Filling Volumes, Geodesics, and Intrinsic Flat Convergence</i> Yale University	July 29–Aug. 2, 2019
	<i>Dubrovnik IX: Topology and Dynamical Systems</i> Inter-University Centre Dubrovnik	June 24–28, 2019
	<i>LG&TBQ</i> , University of Michigan	June 10–14, 2019
	<i>Workshop on Riemannian and simplicial volume</i> Karlsruhe Institute of Technology	April 8–11, 2019
	<i>Spring Topology & Dynamical Systems Conference</i> University of Alabama at Birmingham	March 14–16, 2019
	Seminars: UCSB (colloquium), Michigan, Purdue, Stony Brook, Chicago (colloquium), Penn, Stanford, Berkeley	2019
	<i>Singularities: Geometric, Topological, and Analytic Aspects</i> MPS Conference, Simons Foundation	Aug. 13–17, 2018
	<i>Algebraic Topology: Methods, Computation and Science (ATMCS8)</i> IST Austria	June 25–29, 2018
	<i>AMS Spring Sectional Meeting</i> , Columbus Special session on Topology and Geometry in Data Analysis	March 17–18, 2018
	Seminars: Wayne State, Max Planck, NYU, Rice, UIC (colloquium), Chicago	2018

	“Quantitative topology” Lectures 3 & 4 of a four-part series at the Israel Institute for Advanced Studies	Nov. 30 & Dec. 14, 2017
	<i>Mathematical Congress of the Americas</i> , Montreal Special session on Quantitative Geometry and Topology	July 23–28, 2017
	<i>Applied Topology Będlewo 2017</i> , Będlewo, Poland	June 20–25, 2017
	Seminars: Chicago, Stanford, Ohio State (topology and geometry in data analysis), Hebrew U. (combinatorics), IST Austria	2017
	<i>Workshop in Geometric Topology</i> , Colorado College	June 9–11, 2016
	Stanford University Topology Seminar	May 17, 2016
	<i>Spring Topology and Dynamics Conference</i> , Baylor University	March 10–13, 2016
	University of Toronto Geometry and Topology Seminar	Nov. 23, 2015
	<i>Workshop in Geometric Topology</i> , Texas Christian University	June 25–27, 2015
	<i>Spring Topology and Dynamics Conference</i> Bowling Green State University	May 14–16, 2015
	IST Austria Geometry and Topology Seminar	April 22, 2015
	Ohio State University Topology Seminar	Jan. 27, 2015
	MIT Geometric Analysis Seminar	Nov. 17, 2014
	<i>Workshop: Metric Geometry, Geometric Topology and Groups</i> Banff International Research Station	Aug. 5, 2013
SELECTED WORKSHOPS ATTENDED	<i>Analysis in Metric Spaces</i> (AMS Mathematics Research Communities) Whispering Pines Conference Center, Rhode Island	June 13–19, 2021 (originally 2020)
	<i>Workshop on High-Dimensional Expanders</i> , Sde Boker, Israel	Oct. 29–Nov. 2, 2017
	<i>Summer School on Surgery and the Classification of Manifolds</i> PIMS/University of Calgary	July 18–22, 2016
	<i>Summer School: Topology and Groups</i> , Freie Universität Berlin	June 18–22, 2012
	<i>Summer School: Filling Invariants and Asymptotic Geometry</i> Indiana University, Bloomington	July 2011
TEACHING EXPERIENCE	<i>Assistant Professor</i> , UCSB MATH 108B, <i>Advanced linear algebra</i> Second quarter of a two-quarter undergraduate sequence.	Spring 2020
	MATH 111B, <i>Abstract algebra</i> Second quarter of a three-quarter undergraduate sequence.	Winter 2020
	MATH 232A, <i>Algebraic topology</i> First quarter of a two-quarter graduate sequence.	Fall 2019
	<i>Instructor</i> , Ohio State University MATH 4507 (<i>Geometry</i>) Classical Euclidean and non-Euclidean geometry, taught in a flipped classroom setting.	Spring 2019
	MATH 2255 (<i>Ordinary differential equations & applications</i>)	Fall 2018
	MATH 2568 (<i>Linear algebra</i>)	Spring 2018
	<i>Instructor</i> , University of Toronto MAT137Y1 (<i>Calculus!</i>)	2015–17

Lecturer in the College, University of Chicago
 Instructor for MATH 131 and 132 (*Elementary functions and calculus I and II*) 2011–12
 Instructor for MATH 195 and 196
 (*Mathematical methods for the social sciences and Linear algebra*) 2012–14
 Instructor for MATH 152 and 153 (*Calculus II and III*) 2014–15

College Fellow, University of Chicago Sep 2010 – June 2011
 Teaching assistant for MATH 161–3 (*Advanced Calculus I, II, and III*),
 Inquiry-Based Learning (Moore method) section.

Mentor, Canada/USA MathCamp July – Aug 2010
 Counselor and teacher on various higher mathematical topics to advanced high school students.

Teaching Assistant, Caltech
 Ma/CS 117a and b (*Computability Theory*) Sep 2008 – March 2009
 CS 21 (*Decidability and Tractability*) Jan – March 2008

MENTORSHIP

Postdoctoral:
 • Geunho Lim (Indiana U. PhD '20) 2020–present

Undergraduate research:
 • Xingzhe Li (UCSB) Winter–Summer 2020
 MATH 199 reading and research, summer research in geometric group theory
 • Transito-Bryan Gonzalez (UCSB) Spring–Summer 2020
 MATH 199 reading and research, summer research in mathematical physics

Directed an individual reading project in point-set topology 2018–19

SERVICE

Conference organization:
 • *Weekend Regional Workshop on Quantitative Topology & Geometry* April 27–28, 2019
 MRI, Ohio State University co-organizer with Hannah Alpert
 • *Spring Topology & Dynamics Conference* March 18–21, 2020
 Murray State University, Kentucky (cancelled) Geometric Topology session organizer

Referee for

- *Algebraic & Geometric Topology*
- *Discrete & Computational Geometry*
- *Duke Math. J.*
- *Foundations of Computational Mathematics*
- *Geometriae Dedicata*
- *Geometric & Functional Analysis (GAFA)*
- *Geometry & Topology*
- *Homology, Homotopy, and Applications*
- *Journal of Applied and Computational Topology*
- *Journal of Topology & Analysis*
- ACM–SIAM Symposium on Discrete Algorithms (SODA)
- *Topology and its Applications*

GRANTS & AWARDS	Individual grant DMS-1906516, National Science Foundation	2019–2022
	<i>AMS–Simons Travel Grant</i> , American Mathematical Society	2018–2019
	<i>McCormick Fellowship</i> , University of Chicago	2009–2011
	<i>Bhansali Prize</i> , Caltech	2008
	Awarded to a Caltech undergraduate student for outstanding research in computer science (research on computational complexity theory with Chris Umans)	
	<i>Barry M. Goldwater Scholarship</i> , US Government	2008
	National merit scholarship given to 300 math, science, and engineering undergraduates, out of 4 nominated by each participating school	
	<i>Upper Class Merit Award</i> , Caltech	2008
	Full tuition scholarship given to Caltech sophomores and juniors	