

Wouter Van Limbeek

Research Interests

Geometric topology, Lie groups and their discrete subgroups, dynamics, geometric group theory.

Employment

- 2018–present **Assistant Professor**, *University of Illinois – Chicago*.
2015–2018 **Donald J. Lewis Research Assistant Professor**, *University of Michigan – Ann Arbor*.

Education

- 2010–2015 **Ph.D.**, *University of Chicago*, Advisor: Benson Farb.
2011 **M.S.**, *University of Chicago*.
2007–2010 **B.Sc. Mathematics, B.Sc. Physics**, *Utrecht University*, The Netherlands.
Cum laude

Honors and Awards

- 2022–25 **NSF Research Grant**, *DMS–2203867*, \$175,048.
08–12/2020 **Research Member**, *Mathematical Sciences Research Institute*, Berkeley, California.
01–04/2020 **Visiting Researcher**, *Max Planck Institute for Mathematics*, Bonn, Germany.
2018–23 **NSF Research Grant**, *DMS–1855371*, \$141,586.
2017–19 **AMS-Simons Travel Grant**.
2015 **AMS Travel Grant for Graduate Students**.
2014 **GEAR Graduate Internship**.
2010 **Huygens Talent Scholarship**.
2008 **Young Talent Encouragement Award**.

Publications

- 14 **Greenberg-Shalom’s commensurator hypothesis and applications.**
With Nic Brody, David Fisher and Mahan Mj
2023, 32 pages
- 13 **Co-spectral radius of intersections.**
With Mikołaj Fraczyk
accepted to *Ergodic Theory and Dynamical Systems*, 2023, 15 pages
- 12 **Commensurators of normal subgroups of lattices.**
With David Fisher and Mahan Mj (submitted, 2022, 20 pages)
- 11 **Cantor dynamics of renormalizable groups.**
With Olga Lukina and Steve Hurder
Groups, Geometry, and Dynamics, vol. 15 (2021), no. 4, 1449-1487

- 10 **Heat kernels are not uniform expanders.**
With *Mikołaj Fraczyk* (submitted, 2019, 17 pages)
- 9 **Rigidity of warped cones and coarse geometry of expanders.**
With *David Fisher and Thang Nguyen*
Advances in Mathematics, vol. 346 (2019), 665–718
- 8 **Structure of normally and finitely non-co-Hopfian groups.**
Groups, Geometry, and Dynamics, vol. 15 (2021), no. 2, 465–489
- 7 **The fundamental theorem of affine geometry for tori.**
With *Jacob Shulkin*
New York Journal of Mathematics, vol. 23 (2017), 631–654
- 6 **Towers of regular self-covers and linear endomorphisms of tori.**
Geometry and Topology, vol. 22 (2018), no. 4, 2427–2464
- 5 **Rigidity of convex divisible domains in flag manifolds.**
With *Andrew Zimmer*.
Geometry and Topology, vol. 23 (2019), no. 1, 171–240
- 4 **Quasicircle boundaries and exotic almost-isometries.**
With *Jean-François Lafont and Benjamin Schmidt*
Annales de l'Institut Fourier, vol. 67, no. 2 (2017), 863–877
- 3 **Symmetry gaps in Riemannian geometry and minimal orbifolds.**
Journal of Differential Geometry (2017), vol. 105, no. 3, 487–517
- 2 **Isometry types of frame bundles.**
Pacific Journal of Mathematics (2016), vol. 285, no. 2, 393–426
- 1 **Riemannian manifolds with local symmetry.**
Journal of Topology and Analysis (2014), vol. 6, no. 2, 211–236

Invited Talks

Colloquia and conferences

- 09/2023 **Groups and Rigidity Around the Zimmer Program, Ventotene, Italy.**
In memoriam of Robert J. Zimmer.
- 06/2022 **Ergodic Geometry and Margulis' Legacy: the Next Generation, University of Chicago, Chicago, IL.**
In honor of Gregory Margulis' 75th birthday.
- 01/2020 **Max Planck Institute for Mathematics, Bonn, Germany, MPI-Oberseminar.**
- 10/2019 **AMS East Sectional Meetings, Binghamton, NY.**
Special session: 'Group actions on manifolds and related spaces'
- 05/2018 **Workshop 'Approximation Properties in Operator Algebras and Ergodic Theory', IPAM, Los Angeles, CA.**
- 01/2018 **University of Cambridge, Cambridge, UK, Department talk.**
- 01/2018 **ETH Zürich, Zurich, Switzerland, Postdoc talk.**
- 01/2018 **Pennsylvania State University, State College, PA, Colloquium.**
- 12/2017 **University of Illinois at Chicago, Chicago, IL, Colloquium.**
- 11/2017 **Hyperbolic 3-Manifolds and Beyond, Virginia Topology Conference, Charlottesville, CA.**
- 10/2017 **No Boundaries: Groups in Algebra, Geometry, and Topology, University of Chicago, Chicago, IL.**
Lightning talk in honor of Benson Farb's 50th birthday.

- 05/2017 **Workshop ‘Approximation, Deformation, Quasification’,** *Newton Institute, Cambridge, UK.*
- 04/2017 **Graduate Student Geometry and Topology Conference,** *East Lansing, MI, Young Faculty Speaker.*
- 08/2016 **Reflections on Global Riemannian Geometry,** *Smoky Great Plains Geometry Conference, Townsend, TN.*
In honor of Karsten Grove’s 70th birthday.
- 05/2016 **Midwest Topology Seminar,** *Ohio State University, Columbus, OH.*
- 04/2016 **Bloomington Geometry Workshop,** *Indiana University, Bloomington, IN.*
- 03/2016 **Spring Topology and Dynamics Conference,** *Waco, TX.*
Special session: ‘*Geometric Topology*’
- 06/2015 **Workshop on Diffeomorphism Groups,** *University of California, Berkeley, CA.*
- 03/2015 **AMS Central Sectional Meetings,** *East Lansing, MI.*
Special session: ‘*Geometry of manifolds, singular spaces, and groups*’
- 06/2013 **Workshop on Geometric Topology,** *Grand Rapids, MI.*
- 10/2012 **AMS Central Sectional Meetings,** *Akron, OH.*
Special session: ‘*Interactions between Geometry and Topology*’

Seminars

- 2/2024 **University of Chicago,** *Dynamics Seminar.*
- 9/2023 **University of Maryland,** *Geometry/Topology Seminar.*
- 4/2023 **Rice University,** *Geometry Seminar.*
- 2/2023 **University of Wisconsin – Milwaukee,** *Topology Seminar.*
- 11/2022 **University of Texas – Austin,** *Topology Seminar.*
- 2/2022 **Tata Institute for Fundamental Research, India,** *Random Geometry Colloquium.*
- 11/2021 **University of California at Berkeley,** *Topology Seminar.*
- 11/2020 **University of Toronto, Canada,** *Hyperbolic Geometry Seminar.*
- 09/2020 **IU-NU-UIC-UofC-UofM,** *Midwest Dynamics and Group Actions Seminar.*
- 02/2020 **École Polytechnique Fédérale de Lausanne, Switzerland,** *Ergodic and Geometric Group Theory Seminar.*
- 02/2020 **University of Vienna, Austria,** *Ergodic Theory Seminar.*
- 02/2019 **Purdue University,** *Geometry and Topology Seminar.*
- 10/2018 **University of Minnesota,** *Topology Seminar.*
- 10/2018 **Rice University,** *Geometry/Analysis Seminar.*
- 04/2018 **Temple University,** *Geometry and Topology Seminar.*
- 03/2018 **University of Notre Dame, USA,** *Felix Klein Seminar.*
- 02/2018 **University of Texas – Austin,** *Topology Seminar.*
- 02/2018 **City University of New York,** *Group Theory Seminar.*
- 02/2018 **Courant Institute, NYU,** *Geometric Analysis and Topology Seminar.*
- 12/2017 **University of Chicago,** *Geometry and Topology Seminar.*
- 06/2017 **Seoul National University, South Korea,** *Geometry and Topology Seminar.*
- 06/2017 **KAIST, South Korea,** *Topology Seminar.*
- 02/2017 **University of California – Berkeley,** *Topology Seminar.*

- 10/2016 **Penn State University**, *Dynamical Systems Seminar*.
- 03/2016 **University of Chicago**, *Geometry and Topology Seminar*.
- 12/2015 **Ohio State University**, *Geometric Group Theory Seminar*.
- 11/2015 **University of Michigan**, *Geometry Seminar*.
- 03/2015 **Rice University**, *Topology Seminar*.
- 11/2014 **Michigan State University**, *Geometry Seminar*.
- 09/2014 **University of Michigan**, *Geometry Seminar*.
- 09/2014 **Purdue University**, *Geometry and Topology Seminar*.
- 10/2013 **Ohio State University**, *Topology Seminar*.
- 09/2013 **University of Maryland**, *Geometry and Topology Seminar*.

University Service

University of Illinois at Chicago, *College of Liberal Arts and Sciences*.

- 2023–2024: LAS DEI Committee

Department Service

University of Illinois at Chicago, *Department of Mathematics, Statistics, and Computer Science*.

- 2023–2024: DEI Committee (Secretary), Mathematics Club Organizers, Graduate Studies Committee, Graduate Admissions Committee
- 2022–2023: Graduate Admissions Committee
- 2021–2022: Graduate Admissions Committee, Visitors Committee
- 2020–2021: Graduate Admissions Committee
- 2019–2020: Visitors Committee
- 2018–2019: Research Assistant Professor Search Committee

Professional Service

- 2023 **Midwest Dynamical Systems Conference**, Co-organizer.
- 2023 **'Action Now' Chicago Dynamics Day**, Co-organizer.
- 2023 **NSF Fellowship Panel**.
- 2022 **QED Chicago Youth Math Symposium**, Judge.
- 2022 **Panel 'Someone like you: Mathematical Careers'**, Co-organizer.
An industry panel on career challenges for underrepresented minority students in mathematics
- 2020 **Midwest Dynamics and Group Actions Online Seminar**, Co-organizer.
- 2019 **Midwest Dynamical Systems Conference**, Co-organizer.
- 2019 **NSF Research Grant Panel**.
- 2019– **Graduate Groups and Dynamics Seminar**, Co-organizer, University of Illinois at Chicago.
- 2016–2018 **Topology Seminar**, Co-organizer, University of Michigan.
- 2016–2018 **RTG Geometry/Topology/Dynamics Seminar**, Co-organizer, University of Michigan.

Advising

Ph.D. students advised, at *UIC*, Amelia Pompilio (current), Nicholas Spear (current), Zihan Xia (current), Patrick Walsh (current).

Thesis defense committee, at *UIC*, Ethan Fricker (2022), Mengxue Yan (2022), Robert Kozma (2021), Christopher Perez (2020), Jake Herndon (2019).

2021–present **First Generation Student Mentor**, 4 students.

FGS gives academic and career support to first generation college students.

2021–2022 **Undergraduate Research Mentor**, 7 students, Mentor for 2 undergraduate research projects.

2016–2018 **Research Experience for Undergraduates Mentor**, University of Michigan.

Mentor for 3 undergraduate research projects.

2014 **Leadership Alliance Research Program Mentor**, University of Chicago.

Co-mentor for an undergraduate research project

2012–2013 **Directed Reading Program Mentor**, University of Chicago, 6 students.

2011–2013 **Research Experience for Undergraduates Mentor**, University of Chicago, 17 students.

Teaching Experience

2018–present **University of Illinois at Chicago.**

- Fall 2023: Introduction to Advanced Mathematics (Math 215), Topology (Math 445)
- Spring 2023: Introduction to Advanced Mathematics (Math 215)
- Fall 2022: Calculus 2 (Math 181), Topology (Math 445)
- Spring 2022: Manifolds I (Math 549)
- Fall 2021: Calculus 2 (Math 181)
- Spring 2021: Introduction to Advanced Mathematics (Math 215), Manifolds II (Math 550)
- Fall 2019: Riemannian Geometry (Math 551)
- Fall 2019: Applied Linear Algebra (Math 310)
- Spring 2019: Algebraic Topology (Math 547)
- Fall 2018: Introduction to Advanced Mathematics (Math 215)

2015–2017 **University of Michigan – Ann Arbor.**

- Fall 2017: Linear Algebra (Math 217)
- Winter 2017: Differential geometry (Math 635)
- Fall 2016: Linear Algebra (Math 217)
- Winter 2016: Differential geometry (Math 635)
- Fall 2015: Calculus in one variable (Math 115)

2012–2015 **University of Chicago.**

- 2014–2015: Multivariable Calculus and Linear Algebra (Math 195 and 196)
- 2013–2014: Calculus in one variable (Math 153, 131, 132)
- 2012–2013: Calculus in one variable (Math 131, 132, 133)

Referee for

Duke Mathematics Journal, Geometry and Topology, Transactions of the American Mathematical Society, International Mathematics Research Notices, Communications in Analysis and Geometry, Journal of Topology, Algebraic and Geometric Topology, Geometriae Dedicata, Annales de l'Institut Fourier, Journal of Topology and Analysis, New York Journal of Mathematics, Pacific Journal of Mathematics, Mathematical Reviews, and others.