Angélica M. Osorno   Curriculum Vitae

Personal Information

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Office

Department of Mathematics
Reed College
3203 SE Woodstock Boulevard
Portland, OR 97202

Employment

Chair of the Department of Mathematics
Reed College, August 2021-present.

Associate Professor
Reed College, Aug 2019-present.

Assistant Professor
Reed College, Aug 2013-Aug 2019.

Postdoctoral Fellow.
Mathematical Sciences Research Institute, Jan-May 2014.

L.E. Dickson Instructor.
University of Chicago, Sept 2010-Aug 2013.

Education

Massachusetts Institute of Technology, 2005-2010.
Ph.D. in Mathematics.
Thesis Advisor: Mark Behrens.
Title of thesis: An infinite loop space structure for K-theory of bimonoidal categories.

Massachusetts Institute of Technology, 2001-2005.
B.Sc. in Mathematics.

Research Interest

My area of interest is algebraic topology. I am particularly interested in higher category theory and its connections with higher K-theory, and both nonequivariant and equivariant stable homotopy theory.

Awards and Fellowships

NSF RUI Research grant (joint with Kyle Ormsby), 2017-2020.

Woodrow Wilson Career Enhancement Fellowship for Junior Faculty, 2016.

Simons Collaboration Grant, 2015-2017.

MSRI Postdoctoral Fellowship, 2014.

Simons Travel Grant, 2011.

MIT Housman Award for Excellence in Teaching, 2009.

MIT Collamore Fellowship, 2008.

MIT Presidential Fellowship, 2005.

International Mathematical Olympiad, bronze medal, 2001.

Iberoamerican Mathematical Olympiad, silver medal, 2000.

Publications

(* indicates undergraduate coauthors)

Submitted Preprints

Saturated and linear isometric transfer systems for cyclic groups of order $p^m q^n$, joint with Usman Hafeez*, Peter Marcus*, and Kyle Ormsby.

Model structures on finite total orders, joint with Scott Balchin, Kyle Ormsby, and Constanze Roitzheim.

Multiplicative equivariant K-theory and the Barratt-Priddy-Quillen theorem, joint with Bert Guillou, J. Peter May, and Mona Merling.

Equivariant infinite loop space theory, joint with J. Peter May and Mona Merling.

Research Publications

Self-duality of the lattice of transfer systems via weak factorization systems, joint with Evan Franchere*, Kyle Ormsby, Weihang Qin*, and Riley Waugh*. To appear in Homology Homotopy Appl.

2-Segal objects and the Waldhausen construction, joint with Julia E. Bergner, Viktoriya Ozornova, Martina Rovelli, and Claudia I. Scheimbauer. Algebr. Geom. Topol. 21, no. 3, 1267–1326, 2021.

2-categorical opfibrations, Quillen's Theorem B, and $S^{-1}S$, joint with Nick Gurski and Niles Johnson. New York J. Math. 27, 1009–1059, 2021.

Comparison of Waldhausen constructions, joint with Julia E. Bergner, Viktoriya Ozornova, Martina Rovelli, and Claudia I. Scheimbauer. Ann. K-Theory 6, no. 1, 97–136, 2021.

Biased permutative equivariant categories, joint with Kayleigh Bangs*, Skye Binegar*, Young Kim*, Kyle Ormsby, David Tamas-Parris*, and Livia Xu*. Homology Homotopy Appl. 23, no. 1, 77–100, 2021.

A multiplicative comparison of Waldhausen and Segal K-theory, joint with Anna Marie Bohmann. Math. Z. 295, no. 3–4, 1205–1243, 2020.

Symmetric monoidal G-categories and their strictification, joint with Bert Guillou, J. Peter May and Mona Merling. Q. J. Math. 71, no. 1, 207–246, 2020.

The edgewise subdivision criterion for 2-Segal objects, joint with Julia E. Bergner, Viktoriya Ozornova, Martina Rovelli, and Claudia I. Scheimbauer. Proc. Amer. Math. Soc. 148, no. 1, 71–82, 2020.

The 2-dimensional stable homotopy hypothesis, joint with Nick Gurski and Niles Johnson. J. Pure Appl. Algebra 223(10):4348–4383, 2019.

A symmetric monoidal and equivariant Segal infinite loop space machine, joint with Bert Guillou, J. Peter May and Mona Merling. J. Pure Appl. Algebra 223(6):2425–2454, 2019.

2-Segal sets and the Waldhausen construction, joint with Julia E. Bergner, Viktoriya Ozornova, Martina Rovelli, and Claudia I. Scheimbauer. Topology Appl., 235:445–484, 2018.

Stable Postnikov data of Picard 2-categories, joint with Nick Gurski, Niles Johnson, and Marc Stephan. Algebr. Geom. Topol. 17, no. 5, 2763–2806, 2017.

Extending homotopy theories across adjunctions, joint with Nick Gurski and Niles Johnson. Homology Homotopy Appl. 19 no. 2, 89–110, 2017.

K-theory for 2-categories, joint with Nick Gurski and Niles Johnson. Adv. Math. 322: 378–472, 2017.

Constructing equivariant spectra via categorical Mackey functors, joint with Anna Marie Bohmann. Algebr. Geom. Topol. 15, no. 1, 537–563, 2015.

A model structure on GCat, joint with Anna Marie Bohmann, Kristen Mazur, Viktoriya Ozornova, Kate Ponto and Carolyn Yarnall. Women in Topology: Collaborations in Homotopy Theory, Contemp. Math. 641, 123–134, 2015.

Infinite loop spaces, and coherence for symmetric monoidal bicategories, joint with Nick Gurski. Adv. Math., 246:1–32, 2013.

Modeling stable one-types, joint with Niles Johnson. Theory Appl. Categ., 26:520–537, 2012.

Spectra associated to symmetric monoidal bicategories, Algebr. Geom. Topol. 12, no. 1, 307–342, 2012.

Explicit formulas for 2-characters, Topology Appl., 157(2):369–377, 2010.

Other Publications

Topological Invariants from Higher Categories, joint with Nick Gurski and Niles Johnson. Notices Amer. Math. Soc. 66 (2019), no. 8, 1225–1238.

Invitación a la teoría de homotopía: Grupo fundamental y espacios recubridores (survey paper in Spanish), Lect. Mat. 39, no. 1, 29–48, 2018.

Espacios de lazos infinitos (survey paper in Spanish), Boletín de Matemáticas, 18(2):163–182, 2011.

Invited Lectures

Conferences

AMS Western Section Meeting, hosted online, October 2021.

Congreso Latinoamericano de Matemáticos, hosted online, September 2021.

Higher Homotopical Structures CRM 2021: Opening Workshop, Plenary Speaker, hosted online, February 2021.

Cibercoloquio Latinoamericano de Matemáticas, hosted online, October 2020.

IHES Summer School: Motivic, Equivariant and Non-commutative Homotopy Theory, hosted online, July 2020.

Mayday 2019: Peter May's 80th birthday, Chicago, IL, October 2019.

AWM Research Symposium, Houston, TX, April 2019.

AMS Central and Western Joint Sectional Meeting, Honolulu, HI, March, 2019.

Annual meeting of the French Algebraic Topology Network, Plenary Speaker, Montpellier, France, October 2018.

MAA MathFest, Denver, CO, August 2018.

I Encuentro de Sociedades de Matemáticas de Colombia y México, Plenary Speaker, Barranquilla, Colombia, June 2018.

Latinx in the Mathematical Sciences, Los Angeles, CA, March 2018.

AMS Western Section Meeting, Riverside, CA, November 2017.

AMS Eastern Section Meeting, Buffalo, NY, September 2017.

Escuela de Topología y Geometría no Conmutativa, Summer School Lecturer, Quito, Ecuador, August 2017.

Midwest Topology Seminar, Chicago, IL, May 2017.

AWM Research Symposium, Los Angeles, CA, April 2017.

Young researchers in homotopy theory and categorical structures, Bonn, Germany, February 2017.

Union College Mathematics Conference, Schenectady, NY, December 2016.

Encuentro de Topología, Geometría y Teoría de Representaciones, Medellín, Colombia, July 2016.

Equivariant Derived Algebraic Geometry Workshop, Banff, Canada, February 2016.

AWM Distinguished Speaker Series, University of Oregon, Eugene, OR, November 2015.

Underrepresented Students in Topology and Algebra Research Symposium, Faculty Speaker, Fort Myers, FL, April 2015.

International Category Theory Conference, Plenary Speaker, Cambridge, United Kingdom, July 2014.

Reimagining the Foundations of Algebraic Topology, MSRI, Berkeley, CA, April 2014.

Connections for Women: Algebraic Topology, MSRI, Berkeley, CA, January 2014.

Cascade Topology Seminar, Seattle, WA, November 2013.

Mathematical Congress of the Americas, Guanajuato, México, August 2013.

XIX Congreso Colombiano de Matemáticas, Barranquilla, Colombia, July 2013.

I Encuentro de explímpicos, Bogotá, Colombia, July 2013.

Fourth Arolla Conference in Algebraic Topology, Arolla, Switzerland, August 2012.

Graduate Student Topology Conference, Young Faculty Speaker, Bloomington, IN, April 2012.

Algebraic K-theory and Homotopy theory Workshop, Banff, Canada, February 2012.

AMS-MAA Joint Meetings, Boston, MA, January 2012.

40 Years and Counting: AWM's Celebration of Women in Mathematics, Providence, RI, September 2011.

XVIII Congreso Colombiano de Matemáticas, Bucaramanga, Colombia, July 2011.

UN Encuentro de Matemáticas, Universidad Nacional de Colombia, Bogotá, Colombia, July 2011.

AMS Central Section Meeting, Iowa City, IA, March 2011.

Midwest Topology Seminar, Evanston, IL, April 2010.

AMS Eastern Section Meeting, State College, PA, October 2009.

XVII Congreso Colombiano de Matemáticas, Cali, Colombia, August 2009.

Encuentro de Topología, Universidad de los Andes, Bogotá, Colombia, May 2008.

Departmental Colloquia

CIMAT México (online), September 2021.

Reed College (online), April 2021.

Universidad de los Andes (online), February 2021.

University of Puget Sound (online), December 2020.

University of Louisiana at Lafayette (online), November 2020.

Washington State University, Vancouver, WA, January 2018.

Cornell University, Ithaca, NY, September 2017.

Reed College, Portland, OR, October 2015.

University of Nevada, Reno, NV, April 2015.

Oregon State University, Corvallis, OR, May 2014.

Portland State University, Portland, OR, April 2014.

Lewis & Clark College, Portland, OR, November 2013.

Pacific University, Forest Grove, OR, November 2013.

Reed College, Portland, OR, January 2013.

Lake Forest College, Lake Forest, IL, January 2013.

University of Rochester, Rochester, NY, January 2013.

Purdue University, West Lafayette, IN, January 2013.

Universidad de los Andes, Bogotá, Colombia, April 2012.

Universidad Nacional de Colombia, Bogotá, Colombia, August 2009.

Colby College, Waterville, ME, March 2008.

Seminars

Kentucky/Vanderbilt, *Topology Seminar* (online), February 2021.

University of Western Ontario, *Topology Seminar* (online), February 2021.

University of Pennsylvania, *Geometry and Topology Seminar* (online), October 2020.

Online Algebraic Topology Seminar, October 2020.

University of California Los Angeles, *Topology Seminar*, May 2019.

University of Chicago, *Topology Seminar*, May 2019.

University of Notre Dame, *Topology Seminar*, May 2018.

San Francisco State University, *Geometry and Topology Seminar*, May 2017.

Massachusetts Institute of Technology, *Topology Seminar*, April 2017.

University of Vanderbilt, *Geometry Seminar*, March 2017.

University of Sheffield, *Topology Seminar*, February 2017.

University of California Los Angeles, *Topology Seminar*, February 2017.

University of Illinois, *Topology Seminar*, October 2016.

University of Chicago, *Topology Seminar*, October 2016.

University of British Columbia, *Topology Seminar*, September 2016.

Johns Hopkins University, *Topology Seminar*, October 2015.

University of California, Riverside, *Topology Seminar*, May 2015.

Oregon State University, *Topology Seminar*, May 2014.

Mathematical Sciences Research Institute, *Postdoc Seminar*, March 2014.

University of Chicago, *Topology Seminar*, October 2013.

Stanford University, *Topology Seminar*, May 2013.

Massachusetts Institute of Technology, *Topology Seminar*, November 2012.

University of Sheffield, *Special Seminar*, September 2012.

Johns Hopkins University, *Topology Seminar*, April 2012.

Northwestern University, *Topology Seminar*, April 2012.

Universidad Nacional de Colombia, Bogotá, Colombia, *Special Seminar*, April 2012.

Wayne State University, *Topology Seminar*, March 2012.

University of Minnesota, *Topology Seminar*, November 2011.

University of Illinois, *Topology Seminar*, November 2011.

Purdue University, *Topology Seminar*, November 2011.

University of Georgia, *Topology Seminar*, September 2011.

Massachusetts Institute of Technology, *Summer Topology Seminar*, June 2011.

University of Kentucky, *Topology and Geometry*, Seminar, April 2011.

Massachusetts Institute of Technology, *Topology Seminar*, April 2010.

University of Illinois, *Topology Seminar*, February 2010.

Johns Hopkins University, *Topology Seminar*, February 2010.

Wesleyan University, *Topology Seminar*, January 2010.

University of British Columbia, *Topology Seminar*, January 2010.

Penn State Altoona, *Geometry and Topology Seminar*, November 2009.

University of Chicago, *Topology Seminar*, October 2009.

Universidad de los Andes, Bogotá, Colombia, *Geometry Seminar*, August 2009.

Teaching Experience

Reed College

Lecturer, Calculus (Math 111), Fall 2013, Fall 2014.

Lecturer, Introduction to Analysis (Math 112), Spring 2015.

Lecturer, Discrete Structures (Math 113), Fall 2018.

Lecturer, Linear Algebra (Math 201), Fall 2017, Spring 2018, Spring 2019, Spring 2020, Fall 2021.

Lecturer, Multivariable Calculus I (Math 211), Fall 2014, Fall 2015.

Lecturer, Multivariable Calculus II (Math 212), Spring 2016.

Lecturer, Linear Algebra (Math 331), Fall 2015.

Lecturer, Topics in Geometry - Polytopes (Math 341), Fall 2018.

Lecturer, Topology (Math 342), Spring 2015, Spring 2018.

Lecturer, Topics in Algebra - Representation Theory (Math 412), Fall 2017.

Conference leader, Senior Symposium (Hum 411), Fall 2017.

University of Chicago

Lecturer, Calculus 3 (Math 153), Fall 2011.

Lecturer, Honors Calculus with IBL (Math 161), Fall 2012.

Lecturer, Honors Calculus with IBL (Math 162), Winter 2013.

Lecturer, Honors Calculus with IBL (Math 163), Spring 2013.

Lecturer, Math. Methods for the Social Sciences (Math 195), Fall 2010.

Lecturer, Intro to Analysis and Linear Algebra (Math 199), Winter 2011.

Lecturer, Basic Algebra I (Math 254), Fall 2011.

Lecturer, Basic Algebra II (Math 255), Winter 2012.

Lecturer, Point-set topology (Math 262), Winter 2012.

Lecturer, Basic Theory of ODE's (Math 273), Winter 2011.

Lecturer, Finite Topological Spaces, REU, Summer 2012.

Massachusetts Institute of Technology

Teaching Assistant, Multivariable Calculus (18.02), Fall 2004, Spring 2009.

Teaching Assistant, Differential Equations (18.03), Spring 2005.

Teaching Assistant, Linear Algebra (18.06), Spring 2006, Fall 2006.

Course Administrator and Teaching Assistant, Linear Algebra (18.06), Spring 2007.

Lecturer, Linear Algebra (18.06), Summer 2006.

Undergraduate thesis students

Alex Hsu (2021-2022), *Homotopy Type Theory.*

Tommy Kelleher (2021-2022), *Operads in algebra and topology.*

Jay Kruer (2021), *A Brisk Drift through Categorical Semantics of Lambda Calculi.*

Kyu Yeon Cho (2018-2019), *Integer Programming Methods and the Fleet Assignment Problem.*

Nate MacFadden (2018-2019), *Exact Solutions of Spin Chains.*

Yevgeniya Zhukova (2018-2019), *Cobordism Hypothesis: Macaroni as Mathematics.*

Sam Wronoski (2017-2018), *On the Seventeen Plane Symmetry Groups.*

Sarah Brauner (2015-2016), *A New Order of Things: the Structure of Partial Orders in the Face of Lower Bounds.*

Timoteo Delgado-Esbenshade (2015-2016), *On the Stability of Delayed Oscillatory Systems.*

Julia Hoffman (2015-2016), H_2 *Uh-Oh: A Game Theoretic Analysis of Water Quality Trading.*

Maddie Brandt (2014-2015), *Intersecting Hypergraphs and Decompositions of Complete Uniform Hypergraphs.* Won class of '21 award.

Joseph Rennie (2014-2015), *Toward a Minimal Finite Model for the Real Projective Plane.*

Mark Walth (2013-2014), *Manifolds and Maps: An Introduction to Cobordism.*

Other Activities

Research with undergraduates

Co-organizer and mentor for the Collaborative Mathematics Research Group for Undergraduates at Reed College, July–August 2018, 2019, 2020.

Conference and seminar organizer

Women in Topology Workshop IV, summer 2023.

Special session for Women in Topology at the Joint Mathematics Meetings, January 2022.

Member of the Scientific Committee for the VI Congreso Latinoamericano de Matemáticos, July 2020.

Women in Topology Workshop III, Bonn, Germany, August 2019.

Cascade Topology Seminar organizer, May 2019.

Special session on Homotopy Theory at the AMS Sectional Meeting, March 2019.

Special session on Topics in Algebraic Topology at the AMS Sectional Meeting, April 2018.

USTARS (Underrepresented Students in Topology and Algebra Research Symposium), Reed College, April 2018.

Homotopy Theory in the Ecliptic: Chromatic, Equivariant, and Motivic Mathematics Conference, Reed College, August 2017.

Chair of the Scientific Committee for the Topology Ecuador Conference, August 2017.

Special session on Topics in Homotopy Theory at the AWM Research Symposium, April 2017.

Special session on Algebraic and Geometric Topology at the V Congreso Latinoamericano de Matemáticos, July 2016.

Women in Topology II team leader, April 2016.

Cascade Topology Seminar organizer, November 2015.

Conference on Equivariant and Motivic Homotopy Theory, Reed College, May 2015.

Special session on Homotopy Theory at the AMS Sectional Meeting, October 2014.

MSRI semester in Algebraic Topology Seminar coordinator, Spring 2014.

Women in Topology team leader, August 2013.

Midwest Topology Seminar organizer, April 2011.

University of Chicago Topology Seminar organizer, Winter 2010-Fall 2013.

MIT Summer Topology Seminar organizer, Summer 2010.

MIT Juvitop Seminar organizer, Fall 2008.

MIT Topology Seminar co-organizer, Spring 2008.

MIT Puma Grass (Pure Math Grad Student Seminar) organizer, Fall 2007-Spring 2008.

Referee

Anonymous referee for several publications, including *Advances in Mathematics*, *Algebraic and Geometric Topology*, *Documenta Mathematica*, *Glasgow Mathematical Journal*, *Homology, Homotopy and Applications*, *Journal of Homotopy and Related Structures*, *Journal of Topology*, and *Proceedings of the AMS*.

Member of the thesis committee for Ph.D. theses at the University of Chicago and Universidad Nacional de Colombia.

Member of the orals board for Ph.D. candidates at the University of Chicago and University of Oregon.

Expert reviewer for Ph.D. theses at the Universidad de Granada, Spain and the Universidad del Norte, Colombia.

Reviewer for MathSciNet and Zentralblatt Math.

Served on several NSF panels.

Editor

Guest editor for *Topology and its Applications*.

Math Olympiads

Coordinator (grader), International Mathematical Olympiads, 2013.

Colombian Team Deputy Leader, International Mathematical Olympiads, 2008.

Colombian Team Leader, Iberoamerican Mathematical Olympiads, 2007.

Colombian Team Deputy Leader, Central American Mathematical Olympiads, 2003-2005.