Mauricio E. Gómez López

Curriculum Vitae

Lafayette College
Department of Mathematics
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Academic Positions

2020-2025 **Visiting Assistant Professor**, *Lafayette College*, United States.

2017-2020 **Paul Olum Postdoctoral Scholar**, *University of Oregon*, United States.

2015-2017 **Scientific Assistant**, *University of Southern Denmark*, Denmark.

Education

2011- 2015 **Ph.D. in Mathematics**, *University of Copenhagen*, Denmark.
Dissertation: *Spaces of piecewise linear manifolds.*

2009-2011 **M.S. in Mathematics**, *University of Copenhagen*, Denmark.

2005-2009 **B.S. in Mathematics**, *Universidad Nacional de Colombia*, Colombia.

Research Interests

General Matroid Theory, Algebraic Topology, Theory of PL and Topological Manifolds.

Specific Cut-and-Paste K-Theory, Matroid Invariants (e.g., the Tutte Polynomial), Cobordism Categories, Spaces of Manifolds, Topological Data Analysis.

Publications and Preprints

1. **The homotopy type of the topological cobordism category,** with Alexander Kupers. *Documenta Mathematica* 27, 2107-2182 (2022). arXiv:1810.0527.

2. **The homotopy type of the PL cobordism category. I.** To appear in *Algebraic and Geometric Topology.* arXiv:1608.06236.

3. **The homotopy type of the PL cobordism category. II.** To appear in *Algebraic and Geometric Topology.* arXiv:2308.04612.

4. **Realizing the Tutte polynomial as a cut-and-paste K-theoretic invariant.** Submitted to *Annals of K-Theory.* arXiv:2501.12250.

Papers in Preparation

1. **The magnitude of a matroid.**
2. **Symmetric monoidal categories of matroids and cut-and-paste K-theory.**

Supervised Undergraduate Research Projects

1. **Matroids from tilings.** Student: Nitan Avivi (University of Oregon, Fall 2019).
2. **Cohomology theory.**   Student: Søren Eriksen (U. of Southern Denmark, Spring 2016).

Teaching Experience (as Instructor of Record)

Lafayette College

Spring 2025	**Vector Spaces (Advanced Undergraduate Course)**
Spring 2025	**Statistical Concepts (Two Sections)**
Fall 2024	**Applied Statistics (Two Sections)**
Fall 2024	**Statistical Concepts**
Spring 2024	**Linear Algebra with Applications (Two Sections)**
Spring 2024	**Applied Statistics**
Fall 2023	**Modeling and Differential Calculus**
Fall 2023	**Calculus II (Two Sections)**
Spring 2023	**Modeling and Differential Calculus**
Spring 2023	**Calculus II (Two Sections)**
Fall 2022	**Calculus I (Two Sections)**
Fall 2022	**Complex Analysis (Advanced Undergraduate Course)**
Spring 2022	**Applied Statistics**
Spring 2022	**Calculus III (Two Sections)**
Fall 2021	**Calculus III**
Fall 2021	**Calculus I (Two Sections)**
Spring 2021	**Linear Algebra with Applications**
Spring 2021	**Calculus II (Two Sections)**
Fall 2020	**Calculus I (Three Sections)**

University of Oregon

Spring 2020	**Fundamentals of Analysis II**
Spring 2020	**Fundamentals of Analysis I**
Winter 2020	**Fundamentals of Analysis II**
Fall 2019	**Fundamentals of Analysis I**
Spring 2019	**Elements of Discrete Mathematics II**
Winter 2019	**Fundamentals of Analysis I**
Winter 2019	**Elementary Linear Algebra I**
Fall 2018	**Morse Theory (Graduate-Level Course)**
Spring 2018	**Elements of Discrete Mathematics I**
Winter 2018	**Introduction to Differential Equations**
Fall 2017	**Calculus I**

University of Southern Denmark

Spring 2017	**Generalized Linear Models**
Spring 2016	**Algebraic Topology (Undergraduate Reading Course)**
Spring 2016	**Algebra II: Introduction to Rings and Groups**
Spring 2016	**Vector Calculus**
Fall 2015	**Probability and Statistics**
Spring 2015	**Algebra II: Introduction to Rings and Groups**

Presentations

24 February 2020	**Matroid theory: A unified theory of independence,** *Undergraduate Mathematics Colloquium at The College of Wooster.* Wooster, Ohio.
8 October 2019	**Matroid theory: A unified theory of independence,** *Algebra and Combinatorics Seminar at the Claremont Center for the Mathematical Sciences.* Claremont, California.
8 October 2019	**Cobordism categories and spaces of manifolds,** *Topology Seminar at the Claremont Center for the Mathematical Sciences.* Claremont, California.
14 April 2018	**The homotopy type of the topological cobordism category,** *AMS Western Sectional Meeting.* Portland, Oregon.
21 November 2017	**The homotopy type of the PL cobordism category,** *Topology Seminar at the University of Oregon.* Eugene, Oregon.
7 September 2015	**The homotopy type of the PL cobordism category,** *Third Congress of Young Researchers of the Royal Spanish Mathematical Society.* Murcia, Spain.
6 June 2015	**Spaces of piecewise linear manifolds,** *Topology Seminar at the University of Münster.* Münster, Germany.
7 November 2014	**Spaces of piecewise linear manifolds,** *Topology Seminar at the University of Copenhagen.* Copenhagen, Denmark.

Scholarships and Awards

1. **Danish Governmental Scholarship.** Scholarship consisting of a tuition waiver and financial support to cover living expenses throughout my graduate studies.
2. **Colfuturo Scholarship.** Merit-based scholarship granted to Colombian academics admitted to a graduate program abroad.

Conferences Attended

January 2024	**Joint Mathematics Meetings 2024**, San Francisco, California.
January 2020	**Joint Mathematics Meetings 2020**, Denver, Colorado.
May 2019	**62nd Cascade Topology Seminar**, *Portland State University*, Portland, Oregon.
April 2018	**AMS Western Sectional Meeting**, *Portland State University*, Portland, Oregon.
June 2016	**Topology of Manifolds: A conference in honor of Michael Weiss's 60th birthday**, *University of Lisbon*, Lisbon, Portugal.
September 2015	**Third Congress of Young Researchers of the Royal Spanish Mathematical Society**, *University of Murcia*, Murcia, Spain.
July 2014	**Young Topologists Meeting 2014**, *University of Copenhagen*, Copenhagen, Denmark.
June 2014	**Manifolds, K-theory, and related topics**, *Inter-University Center*, Dubrovnik, Croatia.
July 2013	**Young Topologists Meeting 2013**, *EPFL*, Lausanne, Switzerland.
August 2013	**Masterclass on Homological Stability**, *University of Copenhagen*, Copenhagen, Denmark.
April 2013	**Masterclass on String Topology**, *University of Copenhagen*, Copenhagen, Denmark.
August 2012	**Fourth Arolla Conference on Algebraic Topology**, Arolla, Switzerland.
July 2012	**Young Topologists Meeting 2012**, *University of Copenhagen*, Copenhagen, Denmark.
June 2012	**Topology and Groups**, *Freie Universität Berlin*, Berlin,Germany.

Outreach and Service

2020-2022 **Mathematics Colloquium**, Lafayette College (Organizer).

2019-2020 **McNair Scholars Program**, University of Oregon (Mentor).

Conferences Organized

July 2014 **Young Topologists Meeting 2014**, *University of Copenhagen*, Copenhagen, Denmark.

Professional Development

Spring 2024 **International Faculty Community of Practice**, Lafayette College.

Fall 2021 **Inclusive Instructors Academy**, *semester-long program on inclusive teaching strategies and methodologies*, Lafayette College.

2020-2021 **New Faculty Learning Community**, *year-long orientation for new faculty at Lafayette College*, Lafayette College.

July 2019 **Summer Institute on Scientific Teaching**, *week-long workshop focused on strategies for fostering diversity, equity, and inclusion in scientific teaching*, University of Oregon.

April 2019 **Engaging Students and Making Classrooms Fair and Inclusive: Cross-Disciplinary Strategies and Language to Promote Student Success**, *workshop led by Professor Kimberly Tanner*, University of Oregon.

Academic Visits

Spring 2013 **University of Cambridge.** Cambridge, United Kingdom.

(3 weeks) Host: Oscar Randal-Williams.

Fall 2013 **University of Cambridge.** Cambridge, United Kingdom.

(6 weeks) Host: Oscar Randal-Williams.

Spring 2014 **University of Cambridge.** Cambridge, United Kingdom.

(6 weeks) Host: Oscar Randal-Williams.

Language Skills

Spanish Native

English Fluent

Norwegian Proficient

References

Daniel Dugger, University of Oregon ddugger@uoregon.edu

Robert Root, Lafayette College robroot@lafayette.edu

Martin Svensson, U. of Southern Denmark svensson@imada.sdu.dk