J. Carlos Martínez Mori, Ph.D.

Department of Mathematical and Statistical Sciences
University of Colorado Denver
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RESEARCH INTERESTS

- Mathematical optimization and its interface with cooperative game theory
- Applications in transportation and public decision-making, in particular public transit
- Enumerative and algebraic combinatorics, in particular parking functions

ACADEMIC EMPLOYMENT

University of Colorado Denver
Department of Mathematical and Statistical Sciences
Assistant Professor, Fall 2025 – Present

Georgia Institute of Technology
H. Milton Stewart School of Industrial and Systems Engineering
Schmidt Science Fellow and *President's Postdoctoral Fellow*, Spring 2024 – Summer 2025
Mentor: Alejandro Toriello

Simons Laufer Mathematical Sciences Institute (SLMath, formerly MSRI)
Postdoctoral Fellow (semester program), Fall 2023

EDUCATION

Cornell University
Center for Applied Mathematics
Ph.D. in Applied Mathematics, Fall 2017 – Spring 2023
Thesis: Designing Networks, Routing Fleets, and Trying to Find Parking
Committee: Samitha Samaranayake (chair), Pamela Harris, Bobby Kleinberg, David Shmoys
Areas: Discrete optimization, transportation, combinatorics

University of Illinois at Urbana-Champaign
B.Sc. in Civil Engineering, Fall 2013 – Spring 2017
Minor in Computer Science
Highest Honors at Graduation
Advisor: Daniel B. Work
Areas: Transportation, infrastructure systems

RESEARCH VISITS

Institute for Computational and Experimental Research in Mathematics (ICERM)
Discrete Optimization: Mathematics, Algorithms, and Computation
Participant (semester program), Spring 2023

Institute for Computational and Experimental Research in Mathematics (ICERM)
Summer@ICERM 2022: Computational Combinatorics
Teaching Assistant (summer REU program), Summer 2022
Faculty Leads: Susanna Fishel, Pamela E. Harris, Gordon Rojas Kirby

Mathematical Sciences Research Institute (MSRI)
MSRI-UP 2021: Parking Functions: Choose Your Own Adventure
Teaching Assistant (summer REU program), Summer 2021
Faculty Leads: Rebecca Garcia, Pamela E. Harris

Institute for Pure and Applied Mathematics (IPAM)
Mathematical Challenges and Opportunities for Autonomous Vehicles
Participant (semester program), Fall 2020

Amazon.com
Consumables Special Projects
Research Science Intern, Summer 2020
Manager: Elcin Cetinkaya

Bosch North America
Bosch Energy Research Network
Research Intern, Summer 2017
Manager: Shyam Jade

AWARDS

Senior Fellow with Schmidt Science Fellows (SSF)	Fall 2024 - Life
Modern Math Workshop and NDiSTEM Travel Scholarship (IPAM)	Fall 2024
Future Faculty Career Exploration Program (RIT)	Fall 2024
Inclusive STEM Teaching Fellow (Georgia Tech)	Spring 2024
Schmidt Science Fellow with Schmidt Science Fellows (SSF)	Fall 2023 - Summer 2025
President's Postdoctoral Fellow (Georgia Tech ISyE)	Spring 2024 - Summer 2025
Postdoctoral Fellow (SLMath)	Fall 2023
PRISM Postdoctoral Recruitment Travel Scholarship (OPA at Stanford)	Fall 2022
Dwight David Eisenhower Transportation Fellowship (FHWA)	2017, 2018, 2020
Graduate Fellowship (Systems at Cornell)	Fall 2017
Edmund J. James Scholar (at graduation from Illinois)	Spring 2017
Melih T. Dural Undergraduate Research Prize (CEE at Illinois)	Spring 2017
Illinois Association of County Engineers Scholarship Award (CEE at Illinois)	Spring 2016
Summer Student Research Program Grant (ICT/IDOT)	Summer 2015
Grant W. Shaw Memorial Scholarship (CEE at Illinois)	Spring 2015
"Universidades de Excelencia" Scholarship (Govt. of Ecuador)	Fall 2013 - Spring 2017

RESEARCH

The symbol (a) denotes alphabetical authorship ordering.

Publications

[1] [(a)] Ari Cruz, Bruce Fang, Pamela E. Harris, and **J. Carlos Martínez Mori**, "Parking Towards $\sqrt{2}$, One Fraction at a Time." *Math Horizons*, 33(1), pp. 5–9, 2025.

[2] [(a)] **J. Carlos Martínez Mori** and Alejandro Toriello, "Cooperation and the Design of Public Goods." In *Proceedings of the 26th ACM Conference on Economics and Computation (EC '25)*, extended abstract, pp. 511, 2025.

[3] [(a)] Ben Adenbaum, Jennifer Elder, Pamela E. Harris, and **J. Carlos Martínez Mori**, "Counting Boolean intervals in the weak Bruhat order of a finite Coxeter group." *Discrete Mathematics Letters*, 15, pp. 52–59, 2025.

[4] [(a)] Jennifer Elder, Pamela E. Harris, Jan Kretschmann, and **J. Carlos Martínez Mori**, "Parking Functions, Fubini Rankings, and Boolean Intervals in the Weak Order of $\mathfrak{S}_n$." *Journal of Combinatorics*, 16(1), pp. 65–89, 2025.

[5] [(a)] Jennifer Elder, Pamela E. Harris, Jan Kretschmann, and **J. Carlos Martínez Mori**, "Cost-sharing in Parking Games." *Discrete Mathematics and Theoretical Computer Science*, 26(3), Paper No. 5, 2024.

[6] [(a)] Hessa Al-Thani, Catherine Babecki, and **J. Carlos Martínez Mori**, "Sparse Graphical Designs via Linear Programming." *Operations Research Letters*, 56, Paper No. 107145, 2024.

[7] **J. Carlos Martínez Mori**, "What is a Parking Function?" *Notices of the American Mathematical Society*, 71(8), pp. 1062–1065, 2024.

[8] [(a)] Pamela E. Harris, Jan Kretschmann, and **J. Carlos Martínez Mori**, "Lucky Cars and the Quicksort Algorithm." *The American Mathematical Monthly*, 131(5), pp. 417–423, 2024.

[9] [(a)] Tomás Aguilar-Fraga, Jennifer Elder, Rebecca E. Garcia, Kimberly P. Hadaway, Pamela E. Harris, Kimberly J. Harry, Imhotep B. Hogan, Jakeyl Johnson, Jan Kretschmann, Kobe Lawson-Chavanu, **J. Carlos Martínez Mori**, Casandra D. Monroe, Daniel Quiñonez, Dirk Tolson III, and Dwight Anderson Williams II, "Interval and ℓ-interval Rational Parking Functions." *Discrete Mathematics and Theoretical Computer Science*, 26(1) *Permutation Patterns 2023*, Paper No. 10, 2024.

[10] [(a)] Douglas Chen, Pamela E. Harris, **J. Carlos Martínez Mori**, Eric Pabón-Cancel, and Gabriel Sargent, "Permutation Invariant Parking Assortments." *Enumerative Combinatorics and Applications*, 4:1, Article #S2R4, 2024.

[11] **J. Carlos Martínez Mori**, M. Grazia Speranza, and Samitha Samaranayake, "On the Value of Dynamism in Transit Networks." *Transportation Science*, 57:3, pp. 578–593, 2023.

[12] [(a)] Yasmin Aguillon, Dylan Alvarenga, Pamela E. Harris, Surya Kotapati, **J. Carlos Martínez Mori**, Casandra D. Monroe, Zia Saylor, Camelle Tieu, Dwight Anderson Williams II, "On Parking Functions and the Tower of Hanoi." *The American Mathematical Monthly*, 130:7, pp. 618–624, 2023.

[13] [(a)] Pamela E. Harris, Brian Kamau, **J. Carlos Martínez Mori**, and Roger Tian, "On the Outcome Map of MVP Parking Functions: Permutations Avoiding 321 and 3412, and Motzkin Paths." *Enumerative Combinatorics and Applications*, 3:2, Article #S2R11, 2023.

[14] **J. Carlos Martínez Mori** and Samitha Samaranayake, "Permutatorial Optimization via the Permutahedron." *Operations Research Letters*, 50:5, pp. 441–445, 2022.

[15] **J. Carlos Martínez Mori** and Samitha Samaranayake, "On the Request-Trip-Vehicle Assignment Problem." In *Proceedings of the 1st SIAM Conference on Applied and Computational Discrete Algorithms (ACDA21)*, pp. 228–239, 2021.

[16] **J. Carlos Martínez Mori** and Samitha Samaranayake, "Bounded Asymmetry in Road Networks." *Scientific Reports*, 9, 11951, 2019.

[17] William Barbour, **J. Carlos Martínez Mori**, Shankara Kuppa, and Daniel Work, "Prediction of arrival times of freight traffic on US railroads using support vector regression." *Transportation Research Part C: Emerging Technologies*, 93, pp. 211–227, 2018.

[18] Yanning Li, **J. Carlos Martínez Mori**, and Daniel Work, "Estimating traffic conditions from smart work zone systems." *Journal of Intelligent Transportation Systems*, 22:6, pp. 490–502, 2018.

[19] **J. Carlos Martínez Mori**, William Barbour, Shankara Kuppa, and Daniel Work, "Predicting Delay Occurrence at Freight Rail Sidings." In *Proceedings of the 97th Transportation Research Board Annual Meeting*, 2018.

[20] Yanning Li, **J. Carlos Martínez Mori**, and Daniel Work, "Improving the effectiveness of smart work zone technologies." Tech. Report FHWA-ICT-16-021, *Illinois Center for Transportation*, 2016.

Talks and Posters

[1] "Cooperation and the Design of Public Goods." Talk at the *Fearless Fridays Seminar Series*, Department of Mathematics and Computer Science, Colorado College, Colorado Springs, CO, November 7, 2025. (Invited).

[2] "Cooperation and the Design of Public Goods." Talk at the *INFORMS Annual Meeting*, Atlanta, GA, October 28, 2025.

[3] "Parking Cascades: From the Simplest Sequence to Motzkin and Catalan." Talk at the *Fall Western Sectional Meeting of the American Mathematical Society*, Denver, CO, Aug 23, 2025. (Invited).

[4] "Cooperation and the Design of Public Goods." Talk at the *26th ACM Conference on Economics and Computation (EC '25)*, Stanford, CA, July 7, 2025. (Peer-reviewed selection).

[5] "Cooperation and the Design of Public Goods." Talk at the *IISE Annual Conference & Expo*, Atlanta, GA, June 1, 2025.

[6] "How to Divvy Up the Total Displacement of a Parking Function." Talk at the *Spring Central Sectional Meeting of the American Mathematical Society*, Lawrence, KS, March 29, 2025. (Invited).

[7] "Cooperation and the Design of Public Goods." Talk at the *INFORMS Computing Society (ICS) Conference*, Toronto, ON, Canada, March 15, 2025.

[8] "Cooperation and the Design of Public Infrastructure." Talk at the *SPREE Seminar Series*, Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL, February 26, 2025. (Invited).

[9] "Cooperation and the Design of Public Goods." Talk at the *Department Seminar*, Department of Mathematical and Statistical Sciences, University of Colorado Denver, Denver, CO, February 10, 2025. (Invited).

[10] "Cooperation and the Design of Public Goods." Talk at the *ISyE Seminar*, H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, GA, January 28, 2025. (Invited).

[11] "On the Mathematics of Transportation: Concepts, Models, and a Couple Tenets." Talk at the *SIAM Conference on Mathematics of Data Science*, Atlanta, GA, October 25, 2024.

[12] "Who's the GOAT? Sports Rankings and Data-Driven Random Walks on the Symmetric Group." Talk at the *INFORMS Annual Meeting*, Seattle, WA, October 22, 2024.

[13] "Who's the GOAT? Sports Rankings and Data-Driven Random Walks on the Symmetric Group." Talk at the *Discrete Math Seminar, Kennesaw State University*, Marietta, GA, October 9, 2024. (Invited).

[14] "Who's the GOAT? Sports Rankings and Data-Driven Random Walks on the Symmetric Group." Talk at the *Mathematical Modeling Seminar, Department of Mathematics, Rochester Institute of Technology*, Rochester, NY, September 26, 2024. (Invited).

[15] "Finding Needles in a Haystack: Parking Functions, Fubini Rankings, and Boolean Intervals in the Weak Order of $\mathfrak{S}_n$." Talk at the *Algorithms, Combinatorics, and Optimization (ACO) Student Seminar*, Georgia Institute of Technology, Atlanta, GA, March 15, 2024.

[16] "Finding Needles in a Haystack: Parking Functions, Fubini Rankings, and Boolean Intervals in the Weak Order of $\mathfrak{S}_n$." Poster at the *Conference on Enumerative and Algebraic Combinatorics*, University of Florida, Gainesville, FL, February 26, 2024.

[17] "Modelos Matemáticos de Cambio en el Vecindario: Densidad Poblacional, Transporte Público, y Procesos de Gentrificación." Talk at *Universidad Estatal del Sur de Manabí*, online, February 19, 2024. (Invited).

[18] "Modeling Processes of Neighborhood Change." Talk at the *Institute for Pure and Applied Mathematics*, Los Angeles, CA, January 22-26, 2024. (Invited).

[19] "Cost-sharing in Parking Games." Talk at the *Algebra, Geometry, and Combinatorics Seminar, Department of Mathematics, San Francisco State University*, San Francisco, CA, November 8, 2023. (Invited).

[20] "A Friendly Introduction to the Shapley Value and the Combinatorics of Parking." Talk at the *Social Choice Seminar, Simons Laufer Mathematical Sciences Institute*, Berkeley, CA, September 27, 2023.

[21] "Parking Long Cars: Consider Being an Early Bird." Talk at the *Algebra Seminar, Department of Mathematical Sciences, University of Wisconsin-Milwaukee*, Milwaukee, WI, January 31, 2023. (Invited).

[22] "On the Value of Dynamism in Transit Networks." Talk at the *11th Triennial Symposium on Transportation Analysis (TRISTAN XI)*, Balaclava, Mauritius, June 21, 2022. (Peer-reviewed selection).

[23] "On the Value of Dynamism in Transit Networks." Talk at the *Institute for Pure and Applied Mathematics Mathematical Challenges and Opportunities for Autonomous Vehicles Reunion Conference I*, Lake Arrowhead, CA, June 5-10, 2022. (Invited).

[24] "On the Request-Trip-Vehicle Assignment Problem: How Ridesharing Works." Talk at the *Joint Mathematics Meetings*, online, April 6-9, 2022.

[25] "Permutatorial Optimization via the Permutahedron." Talk at the *Joint Mathematics Meetings*, online, April 6-9, 2022.

[26] "On the Value of Demand-Responsiveness in Transit Systems." Poster at the *Google Workshop on Urban Mobility Simulation and Optimization*, online, November 16-17, 2021.

[27] "On the Value of Demand-Responsiveness in Transit Systems." Talk at the *INFORMS Annual Meeting*, online, October 24-27, 2021.

[28] "On the Request-Trip-Vehicle Assignment Problem." Talk at the *1st SIAM Conference on Applied and Computational Discrete Algorithms*, online, July 21, 2021. (Peer-reviewed selection).

[29] "On the Request-Trip-Vehicle Assignment Problem." Talk at the *Institute for Pure and Applied Mathematics*, online, October 13, 2020.

[30] "Algorithmic Challenges In Enabling High-capacity Ride Pooling Services." Talk at the *INFORMS Annual Meeting*, Seattle, WA, October 20-23, 2019.

[31] "Predicting Delay Occurrence at Freight Rail Sidings." Talk at the *97th Transportation Research Board Annual Meeting*, Washington, D.C., January 7-11, 2018. (Peer-reviewed selection).

[32] "Improving traffic estimation in smart work zone systems." Poster at the *65th Illinois Traffic Engineering and Safety Conference*, Champaign, IL, October 19-20, 2016.

TEACHING EXPERIENCE

University of Colorado Denver
MATH 3191: Applied Linear Algebra
Instructor, Fall 2025
Upper-division course on linear algebra and its applications.

Georgia Institute of Technology
STEM Teaching Fellows Institute
STEM Teaching Fellow (training program), Spring 2024

Cornell University
CS 4820: Introduction to Analysis of Algorithms
Head Teaching Assistant, Fall 2022
Instructor: Anke van Zuylen

Designed rubrics for and graded upper-level undergraduate coursework on the design and analysis of algorithms. Held regular office hours. Led over a dozen of staff teaching assistants (over 300 students enrolled).

Cornell University
ORIE 6334: Combinatorial Optimization
Grader, Spring 2022
Instructor: David B. Shmoys
Designed rubrics for and graded graduate-level coursework on the design and analysis of approximation algorithms.

University of Illinois at Urbana-Champaign
ENG 100: Engineering Orientation
Engineering Learning Assistant, Fall 2015, Fall 2016
Introduced first-year students to the engineering profession, including the variety of studies and career paths.

University of Illinois at Urbana-Champaign
GE 101: Engineering Graphics & Design
Laboratory Assistant, Fall 2014, Spring 2015
Introduced students to computer-aided building design using Autodesk Revit.

SERVICE

Review Contributions

The American Mathematical Monthly
American Journal of Combinatorics
Public Transport
Discrete Mathematics
Enumerative Combinatorics and Applications (ECA)
Integer Programming and Combinatorial Optimization (IPCO)
Transportation Science
INFORMS Journal on Computing
Innovations in Theoretical Computer Science (ITCS)
Transportation Research Part C: Emerging Technologies
IEEE Transactions on Vehicular Technology
Transactions in GIS
TRB Annual Meeting (Transportation Network Modeling, AEP40)

Leadership

2025 AMS Fall Central Sectional Meeting
Special Session on Parking Functions and their Generalizations
Co-organizer, Fall 2025

INFORMS Ambassadors Program
Leveraging the INFORMS Annual Meeting Host City Rotation to Improve the Visibility of Operations Research and Management Science Among Students at Primarily Undergraduate Institutions
Co-organizer, Spring 2025 - Fall 2025

Lathisms
2024 Scholarship Selection Committee
Committee member, Spring 2024

Institute for Pure and Applied Mathematics (IPAM)
Collaborative Workshop Week
Co-organizer, Spring 2024

Memberships in Professional Societies

Institute for Operations Research and Management Science (INFORMS)
American Mathematical Society (AMS)
Sociedad Ecuatoriana de Matemática (SEdeM)

REFERENCES

[1] Alejandro Toriello
Professor, Georgia Institute of Technology
atoriello@isye.gatech.edu

[2] Samitha Samaranayake
Associate Professor, Cornell University
samitha@cornell.edu

[3] Pamela E. Harris
Professor, University of Wisconsin-Milwaukee
peharris@uwm.edu