

Max Hlavacek

Curriculum Vitæ
Current as of October 27, 2025

2339 Estella Laboratory, Pomona College
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Research Interests

Enumerative, geometric, and algebraic combinatorics, including lattice point enumeration problems for polyhedra.

Appointments

- 2023- **Pomona College**
Visiting Assistant Professor of Mathematics and Statistics

Education

- 2023 **University of California, Berkeley**
Ph.D., Mathematics
Advisor: Matthias Beck and Mark Haiman
Title: Ehrhart Theory of Combinatorially Defined Polytopes
- 2017 **Harvey Mudd College**
B.S., Mathematics

Publications

Articles

- 2025 **The poset of maximal tubings of the cycle graph is a lattice**
B. Adenbaum, E. Barnard, M. Hlavacek, B. Kagy, N. Lesevich, G. Nasr, K. Waddle, Arxiv Preprint
- 2025 **Out of the Parking Lot and into the Forest: Parking Functions, Bond Lattices, and Unimodal Forests**
J. Brooks, S. Fishel, M. Hlavacek; S. Rubenfeld, B. C. Teves, *Discrete Mathematics*, Vol. 348 Iss. 12, pp. 1-16
- 2024 **Polyhedral geometry of refined q,t -Catalan numbers**
M. Beck, M. Hanada, M. Hlavacek, J. Lentfer, A. R. Vindas-Meléndez, K. Waddle, to appear in *Journal of Combinatorics*, pp. 1-27
- 2023 **Inequalities for f^* -vectors for lattice polytopes**
M. Beck, D. Deligeorgaki, M. Hlavacek, J. Valencia-Porras, *Advances in Geometry*, 24(2), pp.141-150.
- 2022 **Subdivisions of Shellable Complexes**
M. Hlavacek, L. Solus. *Journal of Combinatorial Theory, Series A* Vol. 186, pp.1-45
- 2018 **Random matrix ensembles with split limiting behavior**
P. Burkhardt-Guim, P. Cohen, J. Dewitt, M. Hlavacek, S.J. Miller, C. Sprunger, Y. N. Truong Vu, R. Van Peski, K. Yang, and an appendix joint with M. Fernandez and N. Sieger. *Random Matrices: Theory and Applications* Vol. 7 No. 3., pp. 1-32

- 2018 **Summand minimality and asymptotic convergence of generalized Zeckendorf decompositions**
 K. Cordwell, M. Hlavacek, C. Huynh, S.J. Miller, C. Peterson, Y. N. Truong Vu. *Research in number theory*, Vol. 4, No. 43, pp. 1-27
- 2016 **A decomposition of parking functions by undesired spaces**
 M. Dougherty, M. Bruce, M. Hlavacek, R. Kudo, and I. Nicolas. *Electronic journal of combinatorics*, Vol. 23, Iss. 3, pp. 1-22

Conference Proceedings

- 2023 **Inequalities for f^* -vectors for lattice polytopes**
 M. Beck, D. Deligeorgaki, M. Hlavacek, J. Valencia-Porras, *Séminaire Lotharingien de Combinatoire* 89B.43 Article 43 (Proceedings of FPSAC 2023)
- 2022 **Subdivisions of Shellable Complexes**
 M. Hlavacek, L. Solus. *Séminaire Lotharingien de Combinatoire* 85B, Article 29 (Proceedings of FPSAC 2021)
- 2019 **Cubical Dehn-Sommerville equations and self-reciprocal cubical complexes**
 M. Hlavacek, *Proceedings of the 2018 Summer Workshop on Lattice Polytopes*, World Scientific.

Theses

- 2023 **Ehrhart Theory of Combinatorially Defined Polytopes**
 M. Hlavacek, *University of California, Berkeley ProQuest Dissertations & Theses*, pp. 1-104

Presentations

Invited Talks

- 2025 **A Polyhedral View of q,t -Catalan numbers**
 AMS Spring 2025 Eastern Sectional, Special Session on Recent Developments in Algebraic and Combinatorial Aspects of Polytopes
- 2025 Discrete Math Seminar, Arizona State University
- 2024 Claremont Colleges Mathematics Colloquium
- 2024 **f^* -vectors of lattice polytopes**
 AMS Fall 2024 Western Sectional, Special Session on GEMS in Combinatorics, Riverside
- 2023 Claremont Colleges Algebra, Number Theory, and Combinatorics Seminar

An Invitation to Ehrhart Theory

- 2024 Practicum for Undergraduate Mathematicians in Combinatorics, IPAM
- 2023 Carleton College Math Colloquium
- 2023 Gettysburg College Math Colloquium
- 2022 Stanislaus State: A Speaker Series for the Quantitatively Curious

Parking Functions, Bond Lattices, and Unimodal Forests

- 2023 JMM AWM Special Session on Women in Graph Theory
- 2022 UC Berkeley Combinatorics Seminar

Signed Poset Polytopes

- 2022 UC Davis Algebra and Discrete Math Seminar
- 2022 Algebra, Combinatorics, and Geometry Seminar SFSU
- 2022 JMM, AMS Session: Geom. and Top. Combinatorics
- 2021 Gems of Combinatorics
- 2021 Graduate Online Combinatorics Colloquium, Online
- 2020 Combinatorics Seminar, Otto von Guericke University Magdeburg
- 2019 Commutative Algebra and Lattice Polytopes, RIMS, Kyoto University

	Subdivisions of Shellable Complexes
2023	Characteristic Polynomials of Hyperplane Arrangements and Ehrhart Polynomials of Convex Polytopes, RIMS, Kyoto University
2022	NY Combinatorics Seminar (online)
2022	University of Washington Combinatorics and Geometry Seminar
2022	Online Combinatorics Seminar, Washington University
2021	AMS Session: Geom. and Top. Comb. and their Applications, Online
2020	Combinatorics Seminar, Freie Universität Berlin
2019	Commutative Algebra and Lattice Polytopes, RIMS, Kyoto University

	Cubical Dehn-Sommerville equations
2019	Lattice polytopes, with a view towards Geometry and Applications, Edinburgh
2019	UC Berkeley Combinatorics Seminar
2019	San Francisco State University AGC Seminar

Contributed Talks and Posters

	Maximal tubings of the cycle graph
2025	MAA Socal and Nevada Section Meeting, CSU Fullerton
	f^*-vectors of lattice polytopes
2025	Poster presentation at IPAM Workshop on Computational Interactions between Algebra, Combinatorics, and Discrete Geometry
	Subdivisions of Shellable Complexes
2022	Poster presentation at Formal Power Series and Algebraic Combinatorics, online
2021	Poster presentation at an Algebraic Combinatorics Virtual Expedition, online
	Signed Poset Polytopes
2021	Queer and Trans Mathematicians in Combinatorics Conference, Fields Institute
	Cubical Dehn-Sommerville equations
2018	Summer Workshop on Lattice Polytopes, Osaka
2018	Poster presentation at Einstein Workshop on Geometric and Topological Combinatorics, Berlin

Teaching

Pomona College

Fall 2025	Math 101: Introduction to Real Analysis
Fall 2024	Math 103: Combinatorics
2024-2025	Math 60: Linear Algebra
2023-2025	Math 30: Calculus 1

UC Berkeley Lead Instructor

2022	Lead Instructor for Math 32: Precalculus
2019	Summer Instructor for Math 55: Discrete Mathematics

UC Berkeley Graduate Student Assistant

2022	Head GSI for Math 10B: Methods of Mathematics: Calculus, Statistics and Combinatorics
2021	GSI for Math 74: Transition to Upper Division Mathematics
2021	GSI for Math 10B: Methods of Mathematics: Calculus, Statistics and Combinatorics
2020	GSI for Math 10A: Methods of Mathematics: Calculus, Statistics and Combinatorics
2018-2019	GSI for Math 54: Linear Algebra and Differential Equations

Mentoring and Advising

Undergraduate Summer Research

- 2025 Summer Research at Pomona, Research Advisor for Anya Lin and Cris Ovalle,
 Total order signed chain polytopes
2022 Summer @ ICERM: Computational Combinatorics, research TA under Susanna Fishel
 for Josephine Brooks, Sophie Rubenfeld, and Bianca Carmelita Teves

Undergraduate Theses

- 2025-2026 Kellie Au, *in progress*
2025-2026 Philip Belin, *in progress*
2025-2026 Jake Sugawara, *in progress*
2024-2025 Zoe Piccirillo, Agent-based modeling of climate policy: methods and applications
2024-2025 Clara Caspard, Graph optimization and related topics in algebraic geometry
2023-2024 Louis Burns, Ehrhart theory of some signed poset polytopes

Other

- 2021 Combinatorial Polynomials at REACT Online Conference (teaching assistant)
2020 Directed Reading Program Mentor at UC Berkeley
2018 Counselor at Summer MATHematics Research Training, Texas AM University
2017 Counselor at PROMYS, Boston University

Workshops and Professional Development

Activities Organized

- 2025 Co-organized Pizza and Progress Summer Research Seminar, Pomona College
2025 Co-organized AMS Special Session on MRC Algebraic Combinatorics at JMM 2025, Seattle
2021 Co-organized 41st Bay Area Discrete Math Day, Online
2021 Co-organized Talking about Combinatorial Objects Student Seminar, UC Berkeley

Activities Attended

- 2025 IPAM Workshop on Computational Interactions between Algebra, Combinatorics, and Discrete Geometry
2024 Mathematics Research Community in Combinatorics: Algebraic Combinatorics, Java Center NY
2023 Project NExT at 2023 MathFest, Tampa
2023 GEMs of Combinatorics at AIM, San Jose
2022 Ehrhart polynomials: inequalities and extremal constructions at AIM, San Jose
2020 Combinatorial Coworkspace - A session in algebraic and geometric combinatorics, Kleinwalsertal, Austria
2019 AG+ Research Retreat, Dollnsee, Germany
2019 Facets of Complexity Annual Workshop, Dollnsee, Germany
2018 Summer Workshop on Lattice Polytopes, Osaka, Japan

Awards and Certificates

- 2025 Summer Undergraduate Research Program Grant, Pomona College
2024 Green'23 Project NExT Fellow

2020	Certificate of Remote Instruction, UC Berkeley GRI Fellows Program
2019	Outstanding GSI Award, UC Berkeley
2017	Chancellor's Fellowship, UC Berkeley
2017	Greever Mathematical Research Prize, Harvey Mudd College Mathematics Department

Service

2023-2025	Organized events for Professional Development Network for Gender Minorities in Math and Computing at the Claremont Colleges
2016-2025	Refereed papers for Forum of Mathematics, Sigma, Proceedings of the 2018 Summer Workshop on Lattice Polytopes at Osaka University, and Fibonacci Quarterly
2024	Invited speaker at Practicum for Undergraduate Mathematicians in Combinatorics
2022	Invited Speaker at OURFA ² M ² '22
2021-2023	Core Member of Lavender Phoenix
2020-2023	Healing Justice Committee Member at Lavendar Phoenix
2019 - 2020	Equity and Inclusion Committee member at UC Berkeley Math Department
2018-2021	Unbounded Representation (URep) Member at UC Berkeley
2017-2018	Volunteer with Youth Support Program at Willard Middle School
2017-	Member of Noetherian Ring