

# Sam Sehayek

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Graduate Teaching Associate  
University of California Santa Barbara

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## Education

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| <b>Doctorate</b> , Mathematics <i>University of California, Santa Barbara</i>   | Candidate |
| Advisor: Jon McCammond  |           |
| <b>Master of Arts</b> , Mathematics <i>San Francisco State University</i>       | June 2018 |
| Advisor: Joseph Gubeladze   |           |
| <b>Bachelor of Science</b> , Mathematics <i>University of California, Davis</i> | June 2014 |
| Minor in Philosophy   |           |

## Teaching Awards

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|---|------|
| <b>Outstanding Teaching Assistant Award</b> <i>Academic Senate</i>      | 2023 |
| <b>Excellence in Teaching Award</b> <i>Graduate Student Association</i> | 2023 |
| <b>Graduate Student Teaching Award</b> <i>Department of Mathematics</i> | 2023 |

## Teaching

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| <b>Research Mentor</b>   | 2019–Present |
| <i>Summer@ICERM</i> , Institute for Computational & Experimental Research Math, RI |              |
| <i>Directed Reading Program</i> , UC Santa Barbara, Department of Mathematics      |              |
| <b>Instructor of Record</b>  | 2017–Present |
| <i>University of California Santa Barbara</i>                                      |              |
| Math 4A Linear Algebra Summer I 2021   |              |
| Math 34A Calculus for Social Sciences Summer I 2020                                |              |
| <i>San Francisco State University</i>  |              |
| Math 199 Precalculus Spring 2018, Spring 2017                                      |              |
| Math 70 Entry Math II Fall 2017  |              |
| <b>Lead Instructor</b>   | 2020–Present |
| <i>Summer Institute in Mathematics &amp; Science (SIMS)</i> , CNSI                 |              |
| Program development, Academic preparation for incoming freshman                    |              |
| <b>Lead Teaching Assistant</b>   | 2020–2021    |
| <i>University of California Santa Barbara</i>                                      |              |
| Training/mentoring 1st year Teaching Assistants                                    |              |
| <b>Teaching Assistant</b>  | 2017–Present |
| <i>University of California Santa Barbara</i>                                      |              |
| Math 34A/B Calculus for Social Sciences W/S20; W/S19; F18                          |              |
| Math 2/3A Calculus I F22; F20; M19; M23  |              |
| Math 4A Linear Algebra F/W21; F19; S22; F23  |              |
| Math 8 Proof Techniques S21  |              |
| Math 108A/B Advanced Linear Algebra W22/23   |              |
| Math 145 Topology S23  |              |
| <i>San Francisco State University</i>  |              |
| Math 226 Calculus I Fall 2017  |              |
| <b>Professional Tutor &amp; Grader</b>   |              |
| <i>Arborbridge</i> Los Angeles, CA   | 2015         |
| Professional tutoring in Geometry, and SAT, ACT, ISEE prep                         |              |
| <i>University of California Davis</i>  | 2012–2014    |
| Grading Algebra, Differential Equations, & Calculus for Biological Sciences        |              |

## Research Mentorship

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| <b>Summer@ICERM</b> , Institute for Computational & Experimental Research Math, RI<br>Mentor for computational combinatorics REU         | 2022 |
| <b>Directed Reading Program</b> , University of California Santa Barbara<br>Mentor for Yanru Liu: Palindromic Parking Function Polytopes | 2023 |
| Primitive Parking Functions  | 2022 |
| Jake Annis: Non-Simplicial Faces of Polytopes  | 2021 |
| Helen Chen: Visualizing 4D Polytopes   | 2020 |
| Colbert Orta: On Toric Varieties   | 2019 |

## Research

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| <i>Dual Garside Structures and Real Polynomials</i>   | In Preparation       |
| <i>Fubini Rankings Polytopes</i><br>Joint with J. Elder, P.E. Harris, J. Kretschmann, C. Martinez Mori                                      | In Preparation       |
| <i>Symmetric and Palindromic Noncrossing Partitions</i>   | In Preparation       |
| <i>Unit-Interval Parking Functions and the Permutahedron</i><br>Joint with L. Chavez-Meyles, P.E. Harris, G. Kirby, R. Jordaan, E. Spingarn | Accepted             |
| <i>Parking Functions of Fixed Displacement</i><br>Joint with L. Chavez-Meyles, G. Kirby, R. Jordaan, E. Spingarn                            | Preprint             |
| Master's Thesis: <i>Geometric Extensions and the <math>1/3</math>–<math>2/3</math> Conjecture</i><br>Advisor: Joseph Gubeladze              | Defended Spring 2018 |
| Expository: <i>On the Containment Problem</i><br>Supervisor: Dustin Ross  | Spring 2017          |

## Conference and Workshop Presentations

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| <b>Graduate Student Toplogy and Geometry Conference</b> Harvard University<br><i>Braids and Real Polynomials</i>   | Summer 2023 |
| <b>Topics in Topology</b> University of California Santa Barbara<br>Guest Lecturer <i>The Dual Braid Complex</i>   | Spring 2023 |
| <b>Graduate Student Combinatorics Conference</b> St. Louis, Missouri<br><i>Permutohedral Structure of Unit-Interval Parking Functions</i>                              | Winter 2023 |
| <b>Summer@ICERM</b> Providence, Rhode Island<br><i>Braids, Real Polynomials, and Symmetric Noncrossing Partitions</i><br><i>On Hyperplane Arrangements</i>             | Summer 2022 |
| <b>ARCS Symposium</b> Stanford University<br>Poster: <i>Geometric Extensions and the <math>1/3</math> – <math>2/3</math> Conjecture</i>                                | Spring 2018 |
| <b>COSE Student Showcase</b> San Fracisco State University<br>Poster: <i>Geometric Extensions and the <math>1/3</math> – <math>2/3</math> Conjecture]</i>              | Spring 2018 |
| <b>Graduate Student Research Showcase</b> San Francisco State University<br>Poster: <i>Geometric Extensions and the <math>1/3</math> – <math>2/3</math> Conjecture</i> | Spring 2018 |

## Seminar Presentations

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| <b>Polymath Seminar</b> University of California Santa Barbara                |                  |
| <i>Parking Function Polytopes: 3 Ways</i>                                     | Winter 2024      |
| <i>Multiplex Juggling Sequences and Kostant's Partition Function</i>          | Spring 2023      |
| <b>Topology Seminar</b> University of California Santa Barbara                |                  |
| <i>Braids and the Space of Complex Polynomials</i>                            | Spring 2021      |
| <b>Graduate Topology Seminar</b> University of California Santa Barbara       |                  |
| <i>Two Classifying Spaces for Braids and the Geometry of Real Polynomials</i> | Fall 2023        |
| <i>Real Polynomials and Noncrossing Partitions under Dihedral Action</i>      | Fall 2022        |
| <i>Dual Braids and Polynomials</i>  | Winter 2021      |
| <b>Hypatian Seminar</b> University of California Santa Barbara                |                  |
| <i>How to Give a Talk</i>   | Fall 2021        |
| <i>Equity in Math Classrooms</i>  | Spring 2020      |
| <i>Hypatia: Modern Woman of Antiquity</i>                                     | Fall 2018 & 2019 |
| <b>Directed Reading Program</b> University of California Santa Barbara        | Spring 2019      |
| <i>Communicating Mathematics</i>  |                  |
| <i>Graduate School in Mathematics</i>   |                  |
| <b>Algebraic Topology Seminar</b> San Francisco State University              | Fall 2017        |
| <i>Fundamental Group of <math>S^n</math></i>                                  |                  |
| <i>Classification of Surfaces</i>   |                  |
| <b>Mathematics of Global Change Seminar</b> University of California, Davis   | Spring 2013      |
| <i>Copernican Revolution, Kepler, and the Mars Year</i>                       |                  |

## Service & Community Engagement

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| <i>Academic Senate</i> Outstanding Teaching Assistant Search Committee Member               | 2024         |
| <i>Graduate Student Association</i> Excellence in Teaching Search Committee Member          | 2024         |
| <i>Directed Reading Program</i> Treasurer & Grant Writer                                    | 2022–Present |
| <i>Hypatian Seminar: Voices of Under-represented Mathematicians</i> ; Lead Organizer        | 2018–Present |
| <i>Mathematistas: For the advancement of Women &amp; Gender Minorities in Math</i> ; Member | 2016–Present |
| <i>American Mathematical Society</i> (AMS) Member   | 2016–Present |
| <i>Planet Hope</i> Volunteer  | 2002–2015    |
| <i>California Scholarship Foundation</i> Tutor  | 2008–2010    |

## Scholarships, Grants, & Honors

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|---|------------|
| <i>Departmental Research Fellowship, Mathematics</i> Recipient          | 2024       |
| <i>Graduate Student Research Travel Grant</i> Recipient                 | 2023       |
| <i>Individualized Professional Skills Grant</i> Recipient               | 2023       |
| <i>Achievement Rewards for College Scientists</i> (ARCS) Scholar        | 2017–2018  |
| <i>College of Sciences and Engineering Student Showcase</i> — 3rd Place | 2018       |
| <i>Dean's Honor List</i>  | 2011, 2014 |
| <i>National Society for Leadership and Success</i> — Inducted Member    | 2013       |
| <i>Judy Zadeh Memorial Scholarship</i>                                  | 2010       |

## Computer Skills

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Proficient in Mathematica ; Macauluy2 ; SAGE ; Python ; MATLab ; Gameplan

## **Extracurricular**

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*EFR and CPR Certified; Advanced SCUBA PADI Certified; Awarded Homebrewer; Guitarist; Martial Artist Tae Kwon Do (2nd Degree Black Belt); Hapkido (Green Belt); Hwa Rang Do (Green Belt)*