

# PETER KAGEY

(Last updated 2024-05-17)

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503.810.6537

## WORK

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**California State Polytechnic University, Pomona**

*August 2024-present*

Assistant Professor of Mathematics

**Harvey Mudd College**

*July 2022–June 2024*

Visiting Assistant Professor of Mathematics

**University of Southern California**

*August 2017–July 2022*

Assistant Lecturer and Teaching Assistant

**Dexcom**

*December 2014–August 2017*

Backend software engineer

## EDUCATION

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**University of Southern California**

*August 2017–July 2022*

Ph.D. in Mathematics under Sami Assaf

Dissertation Title: *Permutations, Statistics, and Switches*

**University of Southern California**

*August 2017–May 2020*

M.A. in Mathematics

**Oregon State University**

*September 2011–June 2014*

B.S. in Mathematics

## TEACHING

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**MATH106: Combinatorics**

*Spring 2024, HMC*

**MATH189: Making Mathematics**

*Spring 2024, HMC*

**MATH197: Senior Thesis in Mathematics**

*Spring 2024, HMC*

**MATH198: Math Forum**

*Spring 2024, HMC*

**MATH019: Single and Multivariable Calculus**

*Fall 2023, HMC*

**MATH196: Independent Study (Information and Complexity Theory)**

*Fall 2023, HMC*

**MATH197: Senior Thesis in Mathematics**

*Fall 2023, HMC*

**MATH198: Math Forum**

*Fall 2023, HMC*

**MATH062: Probability and Statistics**

*Spring 2023, HMC*

**MATH197: Senior Thesis in Mathematics**

*Spring 2023, HMC*

**MATH198: Math Forum**

*Spring 2023, HMC*

**MATH019: Single and Multivariable Calculus**

*Fall 2022, HMC*

**MATH197: Senior Thesis in Mathematics**

*Fall 2022, HMC*

**MATH198: Math Forum**

*Fall 2022, HMC*

**MATH 408: Mathematical Statistics**

*Spring 2022, USC*

**MATH 407: Probability Theory**

*Fall 2021, USC*

**MATH 432: Applied Combinatorics**

*Spring 2021, USC*

**MATH 226: Calculus III**

*Fall 2020, USC*

**MATH 040: Basic Mathematical Skills (Instructor of Record)**

*Spring 2020, USC*

**MATH 225: Linear Algebra and Linear Differential Equations**

*Fall 2019, USC*

**MATH 229: Calculus III for Engineers and Scientists**

*Fall 2018, USC*

**MATH 126: Calculus II**

*Spring 2018, USC*

## RESEARCH

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**Spinning Switches on a Wreath Product**

*Journal of Combinatorial Theory, Series A, Volume 200, 2023.*

**Counting tilings of the  $n \times m$  grid, cylinder, and torus**

Submitted, arXiv:2311.13072.

**Ranking and Unranking Restricted Permutations**

Submitted, preprint arXiv:2210.17021.

## A Proof Without Words: Triangles in a Triangular Grid

Submitted, preprint arXiv:2211.00186.

## Permutations with a given number of $k$ -cycles

Submitted, preprint arXiv:2112.05281.

## COMMUNITY

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<b>Prison Mathematics Project</b>	<i>October 2022–present</i>
Mentor	
<b>HMC's Recreational Math Research Collective</b>	<i>September 2022–present</i>
Founder/advisor	
<b>Bridge to Enter Advanced Mathematics</b>	<i>May 2020–present</i>
Volunteer Tutor	
<b>On-Line Encyclopedia of Integer Sequences</b>	<i>May 2019–present</i>
Associate Editor with over 750 contributions	
<b>Claremont Colleges Women's Association for Computing Machinery</b>	<i>November 2023</i>
Invited to lead a workshop on drawing with vector files	
<b>Gateway to Exploring Mathematical Sciences</b>	<i>November 2023</i>
Designed and led workshop for eighth, ninth and tenth grade students	
<b>USC's Directed Reading for Undergraduates Program</b>	<i>Spring 2022</i>
Graduate student mentor	
<b>USC Mathematics Graduate Student Association</b>	<i>August 2018–June 2021</i>
President	
<b>USC Graduate Student Colloquium</b>	<i>Fall 2021</i>
Co-organizer	
<b>USC Graduate Geometry Seminar</b>	<i>Spring 2020</i>
Co-organizer	
<b>USC Graduate Algebra Seminar</b>	<i>Fall 2019</i>
Co-organizer	
<b>Venice Math Circle</b>	<i>Fall 2018</i>
Volunteer	

## TALKS

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<b>MathFest</b>	<i>August 2024</i>
<i>MAA Invited Paper Session on Mathematics and Art</i>	
Enumerating Truchet Tilings and Afghan Squares	
<b>Algebra/Number Theory/Combinatorics Seminar of the Claremont Colleges</b>	<i>April 2024</i>
Building TOWARD Geometry: Truncated Octahedra Work As Rhombic Dodecahedra	
<b>Guest lecture at the University of Pennsylvania</b>	<i>March 2024</i>
The Art and Mathematics of Story-centered Research	
<b>Gathering 4 Gardner</b>	<i>February 2024</i>
Spinning Switches on a Wreath Product	
<b>Whittier College (Invited)</b>	<i>February 2024</i>
Recreational Math and Combinatorial Algorithms	
<b>Cal Poly Pomona (Invited)</b>	<i>February 2024</i>
Mathematical Art and Recreation	
<b>Claremont Colleges Mathematical Sciences Colloquium (Invited)</b>	<i>January 2024</i>
Math as Art and Recreation	
<b>Joint Mathematics Meeting</b>	<i>January 2024</i>
<i>AMS Special Session: Using 3D-Printed [...] Objects in the Mathematics Classroom</i>	
Illustrating Multivariable Calculus Concepts In The Makerspace	
<b>Joint Mathematics Meeting</b>	<i>January 2024</i>
<i>AMS Contributed Paper Session on Combinatorics</i>	
Counting Arbitrary Tilings of the $n \times m$ Square Grid, Cylinder, and Torus	
<b>USC Probability/Statistics Seminar (Invited)</b>	<i>November 2023</i>
Permutations with a given number of $k$ -cycles	
<b>Southern California Discrete Math Conference</b>	<i>November 2023</i>
Ranking and Unranking Restricted Words	

<b>Guest lecture at Cal State LA</b>	<i>October 2023</i>
Math is for People: A Conversation About Math Anxiety	
<b>MAA SoCal/Nevada meeting</b>	<i>October 2023</i>
Counting arbitrary tilings of the $n \times m$ grid under topological identifications	
<b>Rutgers Virtual Seminar for Open Problems</b>	<i>November 2022</i>
A Collection of Open Problems	
<b>Cal Poly Pomona Math and Stats Colloquium</b>	<i>October 2022</i>
Spinning switches on a wreath product	
<b>Algebra/Number Theory/Combinatorics Seminar of the Claremont Colleges</b>	<i>September 2022</i>
Spinning switches on a wreath product	
<b>Joint Mathematics Meetings</b>	<i>April 2022</i>
The expected value of letters in permutations with a given number of $k$ -cycles	
<b>USC's Graduate Student Colloquium</b>	<i>September 2021</i>
Convex Polyhedra with Regular Polygonal Faces and Vertices in $\mathbb{Z}^n$	
<b>Graduate Student Combinatorics Conference</b>	<i>April 2021</i>
A Generalized Spinning Switches Puzzle	
<b>24-hour Maths Magic Show</b>	<i>October 2020</i>
Communicating the Card: An Example of Hall's Theorem	
<b>USC's Graduate Geometry Seminar</b>	<i>February 2020</i>
Polytopes and Tilings of the Hyperbolic Plane: Schläfli symbols and Conway notation	
<b>USC's Graduate Algebra Seminar</b>	<i>October 2019</i>
Enumerating States in the Tile Game "Palago" with Burnside's Lemma	
<b>Graduate Student Combinatorics Conference</b>	<i>April 2019</i>
Counting Subgraph Structures of the $n \times k$ Grid Graph	
<b>Graduate Student Combinatorics Conference</b>	<i>April 2018</i>
Extending Ron Graham's Sequence and Other Explorations in the OEIS	

## AWARDS AND MENTIONS

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<b>Sundeman Scholar Award</b>	<i>February 2024</i>
Harvey Mudd College	
<b>Joint Mathematics Meeting: Bridges Art Exhibition</b>	<i>January 2024</i>
Triangle Center Fractals	
<b>Finalist for Faculty Leadership Award</b>	<i>Spring 2023</i>
Harvey Mudd College, (1 of 4 finalists)	
<b>Dennis Ray Estes Teaching Prize</b>	<i>Spring 2022</i>
University of Southern California Math Department	
<b>Mentioned in <i>Pour La Science</i></b>	<i>March 2021</i>
"Addition et multiplication, des tables qui intriguent"	
<b>Graduate School Fellowship</b>	<i>Fall 2017 and Spring 2019</i>
USC Dornsife College of Letters, Arts and Sciences	
<b>US National Collegiate Mathematics Championship</b>	<i>July 2014</i>
Fifth place winner	
<b>Botand Gabor Eross Scholarship for Outstanding Work in Mathematics</b>	<i>2014</i>
Oregon State University	
<b>William Lowell Putnam Mathematical Competition</b>	<i>2013</i>
Oregon State University top scorer award	