Satyan Linus Devadoss

Curriculum Vitae

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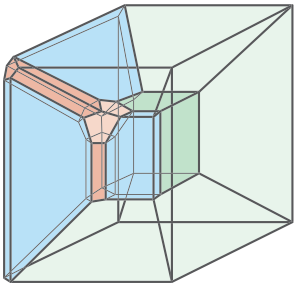

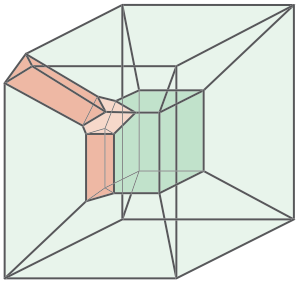

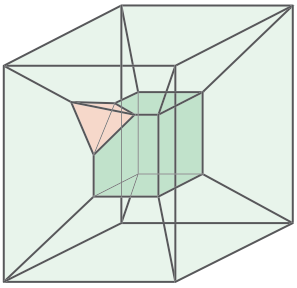

Appointments

Fletcher Jones Chair of Applied Mathematics, *University of San Diego*, 2016

Professor of Computer Science, *University of San Diego*, 2017

Visiting Faculty, *University of California San Diego*, 2022 – 2023.

Assistant/Associate/Full Professor, *Williams College*, 2002 – 2016.

Visiting Faculty, *Harvey Mudd College*, 2015 – 2016.

Visiting Faculty, *Stanford University*, 2013 – 2014.

Visiting Faculty, *Université Nice Sophia Antipolis*, Summer 2010.

Visiting Faculty, *University of California Berkeley*, 2009 – 2010.

Visiting Faculty, *Ohio State University*, 2005 – 2006.

Research Member, *Mathematical Sciences Research Institute*, Fall 2009.

Arnold Ross Assistant Professor, *Ohio State University*, 1999 – 2002.

Professional Preparation

Johns Hopkins University, *Mathematics*, Ph.D. 1999 (advisor: Jack Morava).

North Central College, *Mathematics*, B.S. 1993 (valedictorian).

Shorter Philosophy

Joy comes from making mathematics attractive and accessible for learners of all backgrounds. A visual style is employed to make the complex understandable, from its great jewels to its unknown mysteries. Speaking, writing, and breaking bread together are the means to this end, where conveying mathematics with clarity, accuracy, and simplicity is as important as the discovery itself.

I strive to empower those in the humanities and the arts to have an equal seat at the table in our science-obsessed culture. This is why I am drawn to the applications of mathematics to these disciplines, such as makerspace designs, origami structures, computational cartography, foldable architecture, sonnet linguistics, and beer genetics. Much of this endeavor revolves around shapes and the ways they can deform and evolve.

Underneath this framework lies a strong desire for physical creations, from collaborative paintings that have toured international galleries to a two-ton sculpture showcased at Burning Man. These works point to the larger belief that mathematics should be made incarnate and tangible, for the physical world matters. To this end, my studio serves as an incubator and promoter of an embodied experience in mathematics.

National Honors

Fellow of the American Mathematical Society (2013) : members who have made outstanding contributions to the creation, exposition, advancement, communication, and utilization of math.

Haimo National Teaching Award (2016) : given by the *Mathematical Association of America* to honor college or university teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has had influence beyond their own institutions.

Alder National Teaching Award (2007) : given by the *Mathematical Association of America* to honor beginning college or university faculty whose teaching has been extraordinarily successful and whose effectiveness is shown to have influence beyond their own classrooms.

Books and Media

Mage Merlin's Unsolved Mathematical Mysteries : Coauthored with Matt Harvey, this richly illustrated, story-driven book presents sixteen of today's greatest unsolved mathematical puzzles, all understandable with elementary math skills. Published by MIT Press (2020) and distributed by Penguin Random House.

Discrete and Computational Geometry : Coauthored with Joe O'Rourke, a visually rich textbook on discrete geometry for the 21st century, published by Princeton University Press (2011), showcasing connections to real-world applications along with numerous exercises and unsolved problems.

The Shape of Nature : Recruited and produced by *The Great Courses* (2010), this 36-lecture course provides a pointed introduction to the language mathematicians use to study shapes and dimensions, covering some of the most beautiful ideas in geometry and topology, and aimed at the general public.

Massolit Media : Recruited and produced three distinct courses, providing introductions to 2D polygons, 3D polyhedra, and unsolved mathematics (2022), all aimed at middle school and high school students.

Opinion Editorials:

The Chicago Tribune (September 2023) : With the rise of AI, mathematicians are finding ourselves ill-prepared for the heavy price and heartbreaking consequences of this dangerous partnership.

The Los Angeles Times (August 2021) : Showcasing the usefulness of mathematics is dangerous, and there is great in education to push against utility and push into wonder.

The Washington Post (March 2018) : Today's dominant narrative casts mathematics as stewards of difficult ideas. This assumption is not only flawed but also completely backward, This oped was chosen by the editors of the Washington Post as one their favorites of 2018.

Artworks and Installations

Unfolding Humanity : Collaboration with Diane Hoffoss, students, faculty, and community members in the design and construction of a two-ton interactive sculpture, showcased at *Burning Man* (2018), the *San Diego Maker Faire* (2018), and honorarium Burning Man showcase (2023).

Cartography of Tree Space : Collaborative series of paintings and sketches with Owen Schuh (artist) based on the topology of phylogenetic trees. Flaten Art Museum permanent collection, and showcased in *Satellite Berlin* gallery (Spring 2015), *Williamson* gallery (Fall 2016), and *Wriston* gallery (Summer 2019).

Folding Borders, Making Unfoldings : Working with Perla Myers, Odesma Dalrymple, Daniel Lopez-Perez, the San Diego and Tijuana communities were engaged in live-streamed stations with *Knapp Scholars* Marty and Erik Demaine, culminating in an exhibition (2018).

Design Projects

Math Studio : The centerpiece of a $1M funding from the *Fletcher Jones Foundation*, it serves as an incubator and promoter of a physical experience in mathematics research. Based around the ideals of design thinking, artist workshops, and holy sites, the Studio eschews digital technology in favor of the human senses.

Vizzies Award Best Visualization : awarded by *Popular Science* and the *National Science Foundation* (2018) for the interactive work (with Zivvy Epstein and Dima Smirnov) on scissors congruence.

Hen Barn : Collaboration with Shannon Starkey (architect) on the design and build of a chicken coop inspired by Frank Gehry hay barn design (1967). This barn features a 12-foot chicken run above which the hen house floats, accessed by a grooved ramp, with edge-to-edge ribbon windows and a rear hatch (2017).

CereusData : Cofounded a data visualization company (2013–2017), revolved around producing beautiful images of relationships in academic data sets, in innovative and comprehensible ways. Partnered with colleges and universities, in complete confidentiality, to better understand their strengths and market potential.

Reimagining the Course Catalog : Led the redesign of the Williams College (2015–2016) course catalog, removing departmental orderings and highlighting what really matters: the courses. Appearing in three distinctive formats: a newspaper version (mimicking job ads), a printed book, and an online Course Explorer.

National Grants

National Science Foundation :

TAPDINTO-STEM (2022 – 2025) : Contracting with San Diego State University for $110,000 funding, supporting for students with disabilities pursuing STEM degrees.

SMALL Research Experience for Undergraduates (2009 – 2014) : Senior personnel with $630,216 funding for the Williams summer REU site (DMS-0850577).

SMALL Research Experience for Undergraduates (2004 – 2009) : Senior personnel with $446,312 funding for the Williams summer REU site (DMS-0850577).

Department of Defense :

Geodetic Surfaces: Understanding their geometry and topology (2003 –2007) : PI with joint venture between DARPA and NSF, with funding of $145,478 for the exploration of computational surface reconstruction of noisy data (DMS-0310354).

Fletcher Jones Foundation :

Reimagining Mathematics : Spearheaded the grant of $1,000,000, to transform the math department at USD from its current space into a dynamic, state-of-the-art environment, construction summer 2018.

John Templeton Foundation :

Mathematics, Dualism, and the Renaissance Revival (2015 – 2017) : For exploring the foundations of mathematics and the liberal arts, with $79,592 funding.

Publications

52. S. Starkey and S. Devadoss. Flexing on topology, or, contrapposto architecture, submitted.
51. S. Devadoss, Mathematics and the machines (editorial), *The Chicago Tribune*, September 2023.
50. E. Demaine, M. Demaine, S. Devadoss, P. Myers, A. Rubio. 2.5D signage from sheet material with orthogonal cuts and folds, *Proceedings of the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (2023).
49. S. Devadoss and M. Harvey. Unfolding nets of regular polytopes, *Computational Geometry: Theory and Applications* **111** (2023) 1–10.
48. S. Devadoss and M. Smith. Colorful graph associahedra, *Journal of Combinatorics* **14** (2023) 369–398.
47. S. Devadoss. Curating mathematics for the 21st century, *Notices of the American Mathematical Society* **69** (2022) 1004–1007.
46. S. Devadoss, M. Harvey, S. Zhang. Visualizing and unfolding nets of 4-polytopes, *Symposium on Computational Geometry: Multimedia* (2022).
45. S. Devadoss and M. Harvey. Unfolding the simplex and orthoplex, *Proceedings of the European Conference on Computational Geometry* (2022).
44. S. Devadoss, A vacation from useful math (editorial), *The Los Angeles Times*, August 2021.
43. S. Starkey and S. Devadoss. Flexing on topology, or, contrapposto architecture, *Proceedings of the Association of Collegiate Schools of Architecture* **109** Spring 2021.
42. K. DeSplinter, S. Devadoss, J. Readyhough, B. Wimberly. Unfolding cubes: nets, packings, partitions, chords, *Electronic Journal of Combinatorics* **27** (2020) P4.41.
41. S. Babka, S. Devadoss, D. Hoffoss. At the intersection of unsolved mathematics, visual art, and religious thought, *preprint.*
40. G. Hoople, J. Mejia, D. Hoffoss, S. Devadoss. Makerspaces on the Continuum: Examining Undergraduate Student Learning in Formal and Informal Settings, *International Journal of Engineering Education* **36** (2020) 1184–1195.
39. K. DeSplinter, S. Devadoss, J. Readyhough, B. Wimberly. Nets of higher-dimensional cubes, *Proceedings of the* 32^{nd} *Canadian Conference on Computational Geometry* (2020).
38. S. Devadoss and M. Harvey. *Mage Merlin's Unsolved Mathematical Mysteries* (2020/2021 paperback), MIT Press and Penguin Press Distribution.

37. S. Devadoss. Giving good talks, *Notices of the American Mathematical Society* **66** (2019) 1647–1650.
36. S. Devadoss, C. Durell, S. Forcey. Split network polytopes and network spaces, *DMTCS Proceedings Formal Power Series and Algebraic Combinatorics* **31** (2019).
35. S. Devadoss, D. Hoffoss. Unfolding Humanity: Mathematics at Burning Man, *Notices of the American Mathematical Society* **66** (2019) 572–575.
34. S. Devadoss, L. Hebert, S. Raglione. Phylogenetics of beer, *Math Horizons* **26** (2019) 10–13.
33. S. Devadoss and O. Schuh. Cartography of tree space, *Leonardo Journal* **52** (2019) 279–283.
32. S. Devadoss, A math problem for pi day (editorial), *The Washington Post*, March 14, 2018.
31. S. Devadoss, Y-X. Hong, D. Demas. Star unfolding of boxes, *Symposium on Computational Geometry: Multimedia* (2018) 76:1–4.
30. S. Devadoss, D. Johnson, J. Lee, J. Warley, Geometric realizations of the associahedron, *Symposium on Computational Geometry: Multimedia* (2018) 75:1–4.
29. S. Devadoss and S. Petti. A space of phylogenetic networks, *SIAM Journal on Applied Algebra and Geometry* **1** (2017) 683–705.
28. S. Devadoss, Z. Epstein, D. Smirnov. Visualizing scissors congruence, *Symposium on Computational Geometry: Multimedia* (2016) 66:1–3.
27. S. Devadoss and J. Morava. Navigation in tree spaces, *Advances in Applied Mathematics* **67** (2015) 75–95.
26. S. Devadoss, S. Forcey, S. Reisdorf, P. Showers. Convex polytopes from nested posets, *European Journal of Combinatorics* **43** (2015) 229–248.
25. S. Devadoss, D. Huang, D. Spadacene. Polyhedral coverings of tree spaces, *SIAM Journal on Discrete Mathematics* **28** (2014) 1508–1514.
24. H. Cheng, S. Devadoss, B. Li, A. Risteski. Skeletal configurations of ribbon trees, *Discrete Applied Mathematics* **170** (2014) 46–54.
23. S. Devadoss and J. Morava. Diagonalizing the genome II: quadratic forms, at **arxiv:1209.5465**.
22. O. Aichholzer, H. Cheng, S. Devadoss, T. Hackl, S. Huber, B. Li, A. Risteski. What makes a tree a straight skeleton, *Proceedings of the* 24^{th} *Canadian Conference on Computational Geometry* (2012).
21. S. Devadoss. The shape of associativity, *Canadian Mathematical Society Notes* **44** (2012) 12–14.
20. O. Aichholzer, H. Cheng, S. Devadoss, T. Hackl, S. Huber, B. Li, A. Risteski. What makes a tree a straight skeleton, *Proceedings of the European Conference on Computational Geometry* (2012).
19. S. Devadoss, R. Shah, Z. Shao, E. Winston. Visibility graphs and deformations of associahedra, *Contributions to Discrete Mathematics* **7** (2012) 68–81.
18. S. Devadoss, B. Fehrman, T. Heath, A. Vashist. Moduli spaces of punctured Poincaré disks, *Algebra, Combinatorics and Geometry: Tamari Memorial Festschrift* (2012) 99–117.
17. A. Shotz, S. Devadoss, P. Natarajan. Triple Infinity, *Esopus Magazine*, Fall 2011.

16. M. Carr, S. Devadoss, S. Forcey. Pseudograph associahedra, *Journal of Combinatorial Theory, Series A* **118** (2011) 2035–2055.
15. S. Devadoss, T. Heath, W. Vipismakul. Deformations of bordered Riemann surfaces and associahedral polytopes, *Notices of the American Mathematical Society* **58** (2011) 530–541.
14. S. Devadoss and J. O'Rourke. *Discrete and Computational Geometry* (2011), Princeton University.
13. S. Devadoss. *The Shape of Nature* (2010), a 36-lecture video series, The Great Courses.
12. S. Armstrong, M. Carr, S. Devadoss, E. Engler, A. Leininger, M. Manapat. Particle configurations and Coxeter operads, *Journal of Homotopy and Related Structures*, **4** (2009) 83–109.
11. J. Danciger, S. Devadoss, J. Mugno, D. Sheehy, R. Ward. Shape deformation in continuous map generalization, *GeoInformatica* 13 (2009) 203–221.
10. S. Devadoss. A realization of graph associahedra, *Discrete Mathematics* **309** (2009) 271–276.
9. S. Devadoss and S. Forcey. Marked tubes and the graph multiplihedron, *Algebraic and Geometric Topology* **8** (2008) 2081–2108.
8. S. Devadoss and J. Mugno. Juggling braids and links, *Mathematical Intelligencer* **29** (2007) 15–22.
7. M. Carr and S. Devadoss. Coxeter complexes and graph associahedra, *Topology and its Applications* **153** (2006) 2155–2168.
6. J. Danciger, S. Devadoss, D. Sheehy. Compatible triangulations and series-triangular graphs, *Computational Geometry: Theory and Applications* **34** (2006) 195–202.
5. S. Devadoss. Combinatorial equivalence of real moduli spaces, *Notices of the American Mathematical Society* **51** (2004) 620–628.
4. E. Demaine, S. Devadoss, J.S. Mitchell, J. O'Rourke. Continuous foldability of polygonal paper, *Proceedings of the* 16^{th} *Canadian Conference on Computational Geometry* (2004) 64–67.
3. S. Devadoss. A space of cyclohedra, *Discrete and Computational Geometry* **29** (2003) 61–75.
2. S. Devadoss and R. Read. Cellular structures determined by polygons and trees, *Annals of Combinatorics* **5** (2001) 71–98.
1. S. Devadoss. Tessellations of moduli spaces and the mosaic operad, in *Homotopy Invariant Algebraic Structures,* Contemporary Mathematics **239** (1999) 91–114.

Student Theses Advised

18. Alexandra Fant (USD): "*Studio Designs*" (2023).
17. Payton Asch (USD): "*Quadrangulations and Polytopes*" (2021).
16. Timothy Holdsworth (USD): "*A Phonemic Analysis of Shakespeare's Sonnets*" (2019).
15. Danielle Latimore, Xiaoye Yang (USD): "*Reimagining Mathematics*" (2017).
14. Lia Hebert, Sophia Raglione (USD): "*Phylogenetics of Beer*" (2017).
13. Mia Smith (Williams): "*Colored graph associahedra*" (2016).

12. Patrick Tierney (Harvey Mudd): "*Quilted polytopes in symplectic topology*" (2016).
11. Samantha Petti (Williams): "*Phylogenetic split network spaces*" (2015).
10. Brian Li (Williams): "*Spaces of planar polygons*" (2012).
9. Rahul Shah (Williams): "*Compactifications of singular varieties*" (2009).
8. Ezra Winston (Bard): "*Stress analysis, origami folds, and curvature*" (2009).
7. Trubee Davison (Williams): "*Sol LeWitt and Coxeter complexes*" (2008).
6. Katie Baldiga (Williams): "*Slicing polyhedra and convex cross-sections*" (2007).
5. Colin Carroll (Williams): "*Weighted blow-ups of the braid arrangement*" (2007).
4. Tomio Ueda (Williams): "*Thick origami*" (2006).
3. John Mugno (Williams): "*Juggling braids, links, and Artin groups*" (2005).
2. Eric Engler (Williams): "*Blow-ups of spherical Coxeter complexes*" (2004).
1. Jacob Tawney (Ohio State): "*Jugglinks*" (2001).

Journal Referee

ACM Transactions on Algorithms, Advances in Mathematics, Australasian Journal of Combinatorics, American Math Monthly, Combinatoria, Discrete and Computational Geometry, Documenta Mathematica, Duke Mathematical Journal, Electronic Journal of Combinatorics, Experimental Mathematics, Graphs and Combinatorics, Homology, Homotopy and Applications, Information Journal, International Mathematics Research Notices, Inventiones, Involve, Journal of Algebraic Combinatorics, Journal of Algebraic Geometry, Journal of Algebraic and Geometric Topology, Journal of the American Mathematical Society, Journal of Combinatorial Theory (series A), Journal of Digital Earth, Journal of Mathematical Biology, Leonardo Journal, Mathematical Intelligencer, Notices of the American Mathematical Society, Proceedings of the London Mathematical Society, Selecta Mathematica, SIAM Journal on Discrete Mathematics, Symposium on Computational Geometry, Topology and its Applications.

Selected Invited Addresses

203. Serious Recreational Mathematics, Joint Meetings, San Francisco CA January 2024.
202. Mathematics Variety Show, Joint Meetings, San Francisco CA January 2024.
201. Mathematics and the Arts, Joint Meetings, San Francisco CA January 2024.
200. Theory Seminar, SALK Institute for Biological Studies, November 2023.
199. Colloquium, University of Tennessee Chattanooga, November 2023.
198. STEMposium Plenary, San Diego Children's Discovery Museum, November 2023.
197. The Architectural Forest, Humanities Center, San Diego CA, October 2023.
196. Algebra Seminar, Western Michigan University, October 2023.

195. Theory Seminar, SALK Institute for Biological Studies, September 2023.
194. Marion Cook Athenaeum Lecture, Claremont McKenna College, September 2023.
193. Changing Face of Humanity, Humanities Center, San Diego CA, July 2023.
192. Commencement Address, Lewis Middle School, June 2023.
191. MathPath Plenaries, University of Portland, June 2023.
190. Computational Social Sciences Colloquium, UC San Diego, May 2023.
189. Founders Dinner Address, University of San Diego, April 2023.
188. Combinatorics Seminar, UC San Diego, April 2023.
187. Culture Care Podcast (host Mako Fujimura), April 2023.
186. Spotlight on the Community Podcast (host Drew Schlosberg), December 2022.
185. STEMposium Plenary, San Diego Children's Discovery Museum, December 2022.
184. Math across the Cannon Lecture Series, Carleton and St. Olaf Colleges, October 2022.
183. Faith, Work, and Rest Podcast (host Teena Dare), October 2022.
182. Honors Convocation, University of San Diego, September 2022.
181. Speaking Truth to Power, Humanities Center, San Diego CA, July 2022.
180. Combinatorial Approaches to Topological Structures, Joint Meetings, Seattle WA, April 2022.
179. Research Mathematics Through Visual Storytelling, Joint Meetings, Seattle WA, April 2022.
178. Speaker, 38th European Workshop on Computational Geometry, Italy, March 2022.
177. Computing Colloquium, Boise State University, March 2022.
176. Lattices and Geometries, Joint Meetings, Seattle WA, April 2022.
175. Faith, Work, and Rest Podcast (host Teena Dare), February 2022.
174. Unfolding Dimensions, Fulcrum Arts and Dublab (with Na Mira), January 2022.
173. Deformation Theory Seminar, University of Pennsylvania, December 2021.
172. San Diego Festival of Books Podcast, August 2021.
171. Beyond the Forum Podcast (host Bethany Jenkins), July 2021.
170. Plenary Speaker, MathPath Colloquium Series, July 2021.
169. Invitation to Reconfigurations, CanaDAM Conference, May 2021.
168. Plenary Speaker, MAA Indiana Sectional Meeting, March 2021.
167. Architectural History Session, ACSA Annual Meeting, March 2021.
166. CBC Radio Canada, "Tai Asks Why" Interview Series, March 2021.
165. Keynote Speaker, Associated Colleges of the Chicago Area, February 2021.
164. Nerd Nite Keynote, San Diego, December 2020.
163. Colloquium, Claremont Center for Mathematical Sciences, October 2020.

162. Colloquium, Juanita College, October 2020.
161. Catholic Identity Seminar, University of San Diego, September 2020.
160. New Books Network Podcast (host Jim Stein), August 2021.
159. Canadian Conference on Computational Geometry, Saskatchewan, August 2020.
158. Combinatorics Seminar, UCSD, November 2019.
157. Undergraduate Colloquium, UCLA, October 2019.
156. Combinatorics Seminar, Harvard/MIT/Microsoft Research, October 2019.
155. Colloquium, Brandeis University, October 2019.
154. Colloquium, Colorado State University, April 2019.
153. Kempner Lecture, University of Colorado, Boulder, April 2019.
152. Bridges Conference Plenary Speaker, University of San Diego, April 2019.
151. Library Saloon Plenary Speaker, University of San Diego, April 2019.
150. Colloquium, Occidental College, April 2019.
149. Math Seminar, University of San Diego, April 2019.
148. Keynote Speaker, Annual Prayer Breakfast, University of San Diego, April 2019.
147. Algebraic and Geometric Combinatorics, AMS Meeting, Honolulu HI, March 2019.
146. Joint Topology and Combinatorics Seminar, University of Washington, March 2019.
145. Research Symposium Plenary Speaker, CalBaptist University, February 2019.
144. Honors Colloquium Plenary Speaker, Point Loma Nazarene University, February 2019.
143. Keynote Speaker, Brehm Center, Pasadena, February 2019.
142. Geometric and Topological Combinatorics Keynote, Joint Meetings, Baltimore MD, January 2019.
141. Mathematics and the Arts, Joint Meetings, Baltimore MD, January 2019.
140. Special Session in Memory of T. S. Michael, Joint Meetings, Baltimore MD, January 2019.
139. Family Weekend Lecture, University of San Diego, October 2018.
138. Colloquium, University of California, Irvine, May 2018.
137. Creativity and the Arts Forum, Reality LA, May 2018.
136. Architecture Pecha Kucha, University of San Diego, April 2018.
135. Illume Lecture Series, University of San Diego, April 2018.
134. MAA Gehman Lecture, Seaway Section Meeting, April 2018.
133. Pascal Lectures, Topology and Geometry, March 2018.
132. Pascal Lectures, Biology and Combinatorics, March 2018.
131. Culture Care Plenary Speaker, Fuller Theological Seminary Studio, February 2018.
130. Topological Data Analysis, Joint Meetings, San Diego CA, January 2018.

129. Cambridge School Colloquium, San Diego, January 2018.
128. Interview with Astronaut Scott Kelly, November 2017
127. Architecture Seminar, University of San Diego, October 2017.
126. Geometric and Topological Combinatorics, MSRI Invited Speaker, September 2017.
125. Keynote Speaker, University of the Third Age, June 2017.
124. Biology Seminar, University of San Diego, March 2017.
123. USD2U Speaker, Seattle, Washington, March 2017.
122. Lecture Series Speaker, Chulalongkorn University, Bangkok, Thailand, February 2017.
121. ACMS Speaker, Joint Meetings, Atlanta GA, January 2017.
120. Algebraic and Topological Methods in Combinatorics, Joint Meetings, Atlanta GA, January 2017.
119. Conversations with the College, University of San Diego, October 2016.
118. Williams Association Speaker, Ernie Wolfe Gallery, May 2016.
117. Keynote Speaker, MAA Southern California - Nevada Sectional Conference, April 2016.
116. Colloquium, University of Texas, Austin, March 2016.
115. Geometry Seminar, University of Texas, Austin, March 2016.
114. Mathematics Colloquium, University of San Diego, February 2016.
113. Algebraic and Topological Methods in Combinatorics, Joint Meetings, Seattle WA, January 2016.
112. MAA Teaching Award Presentations, Joint Meetings, Seattle WA, January 2016.
111. Applied and Computational Topology, Joint Meetings, Seattle WA, January 2016.
110. Colloquium, Westmont College, January 2016.
109. Keynote Speaker, Institute of Environmental Sciences and Technology Meeting, December 2015.
108. Colloquium, Cal State Fullerton, December 2015.
107. Atul Vyas Memorial Lecture, Claremont McKenna College, November 2015.
106. Colloquium, Occidental College, November 2015.
105. Family Weekend Lecture, Williams College, October 2015.
104. Biology Colloquium, Harvey Mudd College, October 2015.
103. Teach It Forward Williams Campaign, New York Public Library, October 2015.
102. Algebra-Number Theory-Combinatorics Seminar, Claremont Colleges, October 2015.
101. Colloquium, Loyola Marymount University, October 2015.
100. Topology Seminar, Claremont Colleges, September 2015.
99. Michael Moody Lecture, Harvey Mudd College, September 2015.
98. Plenary Speaker, New American Colleges and Universities Conference, June 2015.
97. Pi Mu Epsilon Convocation Speaker, Williams College, May 2015.

96. X-STEM Speaker, Washington DC, April 2015.
95. Prakesh Laboratory Seminar, Stanford, February 2015.
94. Combinatorics Seminar, UCLA, February 2015.
93. Convocation Speaker, Gordon College, January 2015.
92. Plenary Speaker, Renaissance Weekend, Charleston, SC, January 2015.
91. Keynote Speaker, MAA Northeastern Sectional Conference, November 2014.
90. Plenary Speaker, Fall Workshop on Discrete and Computational Geometry, November 2014.
89. Undergraduate Colloquium, Yale University, October 2014.
88. Colloquium, Taipei National University, July 2014.
87. Minicourse, Prakesh Stanford Research Labs, June 2014.
86. Rall Honors Symposium Keynote Speaker, North Central College, May 2014.
85. Geometry and Topology Seminar, UC Davis, April 2014.
84. Colloquium, Claremont Colleges, April 2014.
83. Colloquium, San Diego State University, April 2014.
82. Plenary Speaker, Bay Area Discrete Math Day, April 2014.
81. Geometry and Topology Seminar, Northwestern University, April 2014.
80. Topology Seminar, University of Chicago, April 2014.
79. LucasFilm with Industrial Lights and Magic, March 2014.
78. Algebra and Geometry Seminar, San Francisco State University, March 2014.
77. Combinatorics Seminar, UC Berkeley, March 2014.
76. VIGRE Student Lectures, Louisiana State University, February 2014.
75. Colloquium, Louisiana State University, February 2014.
74. Kaori Kitao Lecture, Swarthmore College, February 2014.
73. Algebra Seminar, University of Southern California, January 2014.
72. Topology Seminar, Stanford University, October 2013.
71. SUMO Seminar, Stanford University, October 2013.
70. Plenary Speaker, ACMS, Bethel University, June 2014.
69. Discrete Geometry of Polytopes, AMS Meeting, Boston MA, April 2013.
68. Daring Change Conference, Williams College, April 2013.
67. Moduli Spaces in Algebraic Geometry, AMS Meeting, Boston MA, April 2013.
66. Computer Science Seminar, University of Utah, March 2013.
65. Martha Davenport Heard Lecture, Wellesley College, October 2012.
64. Keynote Speaker, Undergraduate Research conference, Mt.Holyoke College, August 2012.

63. Invited Speaker, MBI program on Combinatorics of Stratified Spaces, May 2012.
62. Colloquium, Vassar College, April 2012.
61. Plenary Speaker, Renaissance Weekend, Santa Monica, CA, February 2012.
60. Geometry-Topology-Combinatorics Seminar, Georgia Tech, January 2012.
59. Combinatorial Geometry of Polytopes, Joint Meetings, Boston MA, January 2012.
58. Plenary Speaker, Discrete Math Days, June 2011.
57. Keynote Speaker, Pi-Mu-Epsilon induction ceremony, Siena College, April 2011.
56. Martin Lecture Series, Johns Hopkins University, March 2011.
55. Algebra-Number Theory-Combinatorics Seminar, Claremont Colleges, February 2011.
54. Invited Speaker, Renaissance Weekend, Laguna Niguel, CA, February 2011.
53. Colloquium, Central Connecticut State University, October 2010.
52. Topology and Combinatorics, AMS Meeting, Syracuse NY, October 2010.
51. Topology Minicourse, Université Nice Sophia Antipolis, June 2010.
50. Google Research Seminar, Mountain View, CA, April 2010.
49. Geometry Seminar, San Francisco State University, April 2010.
48. Algebra Seminar, Colorado State University, April 2010.
47. Colloquium, Claremont Colleges, March 2010.
46. Invited Speaker, Banff BIRS program on Volume Inequalities, March 2010.
45. Pixar Animation Studios, January 2010.
44. Geometry Seminar, National Taiwan University, Taipei, January 2010.
43. Colloquium, San Jose State University, November 2009.
42. Western Algebraic Geometry Seminar, UCLA, October 2009.
41. Computational Biology Group, UC Berkeley, September 2009.
40. Tropical Geometry Seminar, MSRI, September 2009.
39. Combinatorics Seminar, MIT, April 2009.
38. Homotopical Algebra with Applications to Physics, AMS Meeting, Raleigh NC, April 2009.
37. Algebraic and Geometric Combinatorics, AMS Meeting, Raleigh NC, April 2009.
36. Symplectic Geometry Seminar, Columbia University, February 2009.
35. Geometry Seminar, University of Michigan, April 2008.
34. Colloquium, Tennessee State University, March 2008.
33. Faculty Lecture Series, Williams College, February 2008.
32. Plenary Speaker, AMS Meeting at Rutgers, October 2007.
31. Colloquium, George Washington University, November 2006.

30. Homotopy Theory of Compactified Moduli Spaces, AMS Meeting, Storrs CT, October 2006.
29. Plenary Speaker, Mishner Festival of Arts Symposium, Philadelphia PA, October 2006.
28. Deformation Theory Seminar, University of Pennsylvania, October 2006.
27. Discrete and Convex Geometry, AMS Meeting, Durham NH, April 2006.
26. Arrangements and Configuration spaces, AMS Meeting, Durham NH, April 2006.
25. Invited Speaker, Schloss Dagstuhl program on Spatial Data, Saarbrücken Germany, March 2006.
24. Combinatorics Seminar, University of Michigan, February 2006.
23. Low-Dimensional Algebraic Topology Seminar, Ohio State University, December 2005.
22. Algebraic Topology of Moduli Spaces, AMS Meeting, Eugene OR, November 2005.
21. Topology Seminar, Ohio State University, October 2005.
20. Combinatorics Seminar, MIT, September 2005.
19. Plenary Speaker, Young Mathematicians Conference, Columbus OH, August 2005.
18. Geometry Seminar, Boston University, March 2005.
17. Midwest Topology Seminar, February 2005.
16. Colloquium, Calvin College, February 2005.
15. Combinatorics Seminar, MIT, November 2004.
14. Sigma Xi lectures, Williams College, October 2004.
13. Homotopy Theory in honor of William Browder, AMS Meeting, Princeton NJ, April 2004.
12. Topology Seminar, Brandeis University, March 2004.
11. Valley Geometry Seminar, University of Massachusetts, Amherst, October 2003.
10. Arrangements in Topology and Algebraic Geometry, AMS Meeting, Baton Rouge LA, March 2003.
9. Homotopy Theory, Joint Meetings, Baltimore MD, January 2003.
8. Quantum Topology, AMS Meeting, Columbus OH, September 2001.
7. Representation Theory Seminar, Northeastern University, January 1999.
6. Geometry Seminar, Boston University, January 1999.
5. Combinatorial Topology, Joint Meetings, San Antonio TX, January 1999.
4. Colloquium, Topology/Combinatorics Seminar, George Washington University, November 1998.
3. Colloquium, University of North Carolina, Chapel-Hill, October 1998.
2. Algebraic Topology Seminar, University of Rutgers, April 1998.
1. Homotopy Theory in honor of J. Michael Boardman, Joint Meetings, Baltimore MD, January 1998.

Conversations on Human Flourishing

37. *Where do we place our trust?*, Western Michigan University, October 2023.
36. *God and Math: Mystery, Beauty, Faith*, PursueGod Series, April 2023.
35. *Measuring, Meaning, Mathematics*, Talking Points Series, Second Chance Brewing, June 2022.
34. *Doubt, Disbelief, Deconstruction*, Pepperdine University, March 2022.
33. Plenary Speaker, Center for Faith + Work Conference, Los Angeles, March 2022.
32. *Is Christianity Good for the University*, Boston Veritas Weekend, February 2022.
31. Invited Speaker, Summer Course on Science and Religion, Faraday Institute, Cambridge, July 2021.
30. *Math Mysteries yet to Solve*, Veritas IG Live, September 2020.
29. *What is the Good Life?*, University of Southern California, February 2020.
28. *Touching Mathematics*, Faculty Bridges Speaker, UCLA, October 2019.
27. *Spiderwebs, Symmetry, and Spirituality*, Lewis and Clark College, September 2019.
26. *The Resurrection and the Art of Being Human*, University of San Diego Prayer Breakfast, April 2019.
25. *Does Science point to Atheism?*, University of Washington, March 2019.
24. *God, Math, and Burning Man*, Whitman College, October 2018.
23. *Pascal Lectures on Christianity and the University*, University of Waterloo, March 2018.
22. *Conversations of Science and Faith*, La Jolla Presbyterian Church, October 2017.
21. *God and the Liberal Arts*, Williams College, March 2017.
20. *Vision Pathways Series*, San Diego, January 2017.
19. Plenary Speaker, Association of Christians in Mathematical Sciences, Atlanta GA, January 2017.
18. *Evidence for God*, Saratoga Village Forum, October 2016.
17. *Theory of Everything*, Rensselaer Polytechnic Institute, February 2015.
16. *Science, Ignorance, and the Pursuit of Meaning*, Columbia University, November 2014.
15. *God and the Modern Age*, University of California, Davis, April 2014.
14. *God, Science, and the Nature of Reality*, University of California, San Diego, April 2014.
13. *Knowledge beyond Science*, University of Chicago, April 2014.
12. *Role of Faith at a Secular University*, Northwestern, April 2014.
11. *God, Science, and the Nature of Reality*, University of California, Berkeley, March 2014.
10. *God, Math, Reality*, Claremont Colleges, February 2014.
9. *Humanity in Academia*, California Polytechnic, January 2014.
8. *Magical Thinking*, University of Southern California, January 2014.
7. *Truth, Reality, God*, University of Utah, March 2013.
6. *What is the Meaning of Life*, Ohio State University, March 2013.

5. *Is Science Enough*, University of Arizona, February 2012.
4. *The Nature of Reality*, GeorgiaTech, January 2012.
3. *What will make me Happy*, Dartmouth, October 2011.
2. *Universal Truths and Personal Proofs*, Williams, April 2011.
1. *God, Math, Multiverse*, Caltech, February 2011.

Teaching

University of San Diego:

Changing Face of Humanity Seminar (Summer 2023).

Truth to Power Seminar (Summer 2022).

Mathematics Colloquium (Spring 2022).

Investigations in Mathematics (Spring 2021).

Architectural Folding Geometry (Spring 2019).

Multivariable Calculus (Fall 2019, Fall 2021).

Topology (Spring 2020).

Calculus (Fall 2016).

Discrete Mathematics (Spring 2017, Spring 2018).

Foundations of Higher Mathematics (Fall 2018).

Knapp Scholars Internship + Studies program (Spring 2018).

Computational Geometry (Fall 2017, Spring 2022, Fall 2023).

Mathematics Forum (Fall 2018, Fall 2020).

Senior Projects (Fall 2016, Spring 2017, Fall 2017).

Harvey Mudd College:

Computational Geometry (Spring 2016).

Intermediate Linear Algebra (Spring 2016).

Mathematics Forum (Spring 2016).

Multivariable Calculus (Fall 2015).

Probability and Statistics (Fall 2015).

Williams College:

Calculus (Fall 2006).

Computational Geometry (Spring 2004, 2007, 2009).

Design School — *Art History Department* (Winter 2015).

Differential Equations (Spring 2003, 2005, 2007, 2008).

Discrete Mathematics (Fall 2002, 2003, Spring 2003, 2004, 2005, 2011).

Geometric Group Theory (Fall 2002, Spring 2008).

Knot Theory (Fall 2004).

Lessons in Go — *Asian Studies Department* (Winter 2004).

Linear Algebra (Fall 2004, 2007).

Modeling Geometric Shapes — *Art Department* (Winter 2007).

Multivariable Calculus (Fall 2008, 2010, 2011, 2012, 2014).

Mural — *Art Department* (Winter 2009).

Origami (Spring 2015).

Phylogenetics (Spring 2012).

Visualization (Winter 2012).

Ohio State University:

Computational Geometry (Spring 2006).

Shape of Nature (Spring 2002): self-designed course for first-year undergraduates, involving faculty from Physics, Statistics, Chemistry (under the *Freshman Research Seminar* award).

Honors Accelerated Calculus with Analytic Geometry (Fall 2001).

Differential Equations and their Applications (Fall 1999, 2000, Winter 2000).

Discrete Math Modeling (Spring 2000, 2001): self-designed course for upper-level undergraduates, using *Graph Theory* by D. West.

Topics in Geometry (Summer 2001): self-designed course for first and second year graduate students, using *Differential Geometry of Curves and Surfaces* by M. do Carmo.

Topics in Topology (Summer 2000, 2001): self-designed course for first and second year graduate students, using *Introduction to Knot Theory* by R. Lickorish.

Topics in Mathematics – Geometry (Spring 2000, 2001): self-designed course for in-service high school teachers, using *The Knot Book* by C. Adams.

Topics in Mathematics – Probability (Summer 2000): self-designed course for in-service high school teachers, using *The Pleasures of Counting* by T. Körner.

Johns Hopkins University:

Calculus (Summer 1996, 1997, 1998).

Pre-Calculus (Spring 1999).

Introduction to Knots (Spring 1998): instructor, self-designed course for undergraduates, using *The Knot Book* by C. Adams (under the *Dean's Teaching Fellowship* award).