Curriculum Vitae

Christopher O'neill

Office Address:	GMCS Room 570	Email Address:	cdoneill@sdsu.edu
	Math & Stats Department	Homepage:	https://cdoneill.sdsu.edu/
	San Diego State University	Date of CV:	October 2021

Education

2014	Ph.D.	Duke University, Mathematics (advisor: Ezra Miller)
2009	B.A.	San Francisco State University, Mathematics
2009	B.S.	San Francisco State University, Computer Science

Employment

2021 –	Associate Professor, San Diego State University
2018 – 2021	Assistant Professor, San Diego State University
2016 – 2018	Arthur J. Krener Assistant Professor, University of California Davis
2014 – 2016	Visiting Assistant Professor, Texas A&M University
2009 – 2014	Graduate Student Instructor, Duke University

REU positions

2019 – 2022	Co-PI and Project Director, San Diego State University Mathematics REU
2017	Project Codirector, San Diego State University Mathematics REU
2015	Research Consultant, Pacific Undergraduate Research Experience in Mathematics
2014	Research Assistant, San Diego State University Mathematics REU
2012 – 2013	Research Assistant, Pacific Undergraduate Research Experience in Mathematics

Research

Scientific/academic honors and grants

2019 – 2021	REU site grant: San Diego State University (co-PI) Award: $345600 from National Science Foundation (with V. Ponomarenko)
2017 – 2019	AMS-Simons travel grant Award: $4000 from Simons Foundation
2016 – 2017	AMS travel grant: "A computer algebra system for `R`: `Macaulay2` and the `m2r` package" Award: $3000 from NSF (with D. Kahle and J. Sommars)
2016	AMS travel grant: "Combinatorial properties of hierarchical models" Award: $750 from NSF (with D. Bernstein)
2016	Mathematics Research Communities (MRC) on Algebraic Statistics (participant) Award: participant travel and lodging, travel to JMM 2017

Teaching awards

2017	G. Thomas Sallee mathematics teaching award Award: $500
2012	L.P. and Barbara Smith award for teaching excellence Award: $2,500 fellowship

Conferences organized

2019 –	Underrepresented Students in Topology and Algebra Research Symposium (committee)
2020	AMS Special Session, Western Sectional, CSU Fresno (co-organizer) (cancelled, COVID-19)
2019	AMS Special Session, Joint Central & Western Sectional, UH Manoa (co-organizer)
2016	CombinaTexas, Texas A&M University (co-organizer)
2016	AMS Special Session, Central Sectional, NDSU (co-organizer)

Research interests

Discrete geometry, algebra, and combinatorics; computation and algorithms

Expository and survey publications

50. (with S. Chapman, P. García-Sánchez) *Distances between factorizations in the Chicken McNugget monoid*
College Mathematics Journal **52** (2021), no. 3, 158–176. (arXiv:1912.04494)

49. (with S. Chapman, R. Garcia) *Beyond coins, stamps, and Chicken McNuggets: an invitation to numerical semigroups*
A Project-Based Guide to Undergraduate Research in Mathematics (ed. P. Harris, E. Insko, A. Wootton)
Foundations of Undergraduate Research in Mathematics Series, Birkhäuser, Cham. (arXiv:1902.05848)

48. (with S. Chapman) *Factoring in the Chicken McNugget monoid*
Mathematics Magazine **91** (2018), no. 5, 323–336. (arXiv:1709.01606)

47. (with R. Pelayo) *Factorization invariants in numerical monoids*
Algebraic and Geometric Methods in Discrete Mathematics (ed. H. Harrington, M. Omar, M. Wright)
Contemporary Mathematics **685** (2017), 231–249. (arXiv:1508.00128)

46. (with R. Pelayo) *How do you measure primality?*
American Mathematical Monthly **122** (2015), no. 2, 121–137. (arXiv:1405.1714)

Teaching publications

45. (with A. Chavez) *The fundamental theorem of finite fields: a proof from first principles*
to appear, American Mathematical Monthly. (arXiv:2010.09124)

44. (with L. Silverstein) *Discovery learning in an interdisciplinary course on finite fields and applications*
submitted. (arXiv:1810.10568)

Research publications (* indicates an undergraduate coauthor)

submitted 43. (with *C. Brower, S. Chapman, *T. Kulhanek, *J. McDonough, *V. Pavlyuk, V. Ponomarenko) *Length density and numerical semigroups*
(arXiv:2110.10618)

42. (with S. R. García, *G. Udell) *Factorization length distribution for affine semigroups IV: a geometric approach to weighted factorization lengths in three-generator numerical semigroups*
(arXiv:2108.06063)

41. (with *T. Gomes, *E. Torres Davila) *Numerical semigroups, polyhedra, and posets III: minimal presentations and face dimension*
(arXiv:2009.05921)

40. (with S. Chapman, V. Ponomarenko) *On length densities*
(arXiv:2008.06725)

to appear 39. (with N. Kaplan) *Numerical semigroups, polyhedra, and posets I: the group cone*
Combinatorial Theory (arXiv:1912.03741)

38. (with R.A.C. Edmonds, B. Kubik, S. Talbott) *On atomic density of numerical semigroup algebras*
Journal of Commutative Algebra (arXiv:2003.01710)

37. (with J. Autry, *A. Ezell, *T. Gomes, *C. Preuss, *T. Saluja, *E. Torres Davila) *Numerical semigroups, polyhedra, and posets II: locating certain families of semigroups*
Advances in Geometry (arXiv:1912.04460)

36. (with S. R. García, M. Omar, *T. Wesley) *Factorization length distribution for affine semigroups III: modular equidistribution for numerical semigroups with arbitrarily many generators*
Journal of the Australian Mathematical Society (arXiv:2006.00121)

2021 35. (with S. R. García, M. Omar, *S. Yih) *Factorization length distribution for affine semigroups II: asymptotic behavior for numerical semigroups with arbitrarily many generators*
Journal of Combinatorial Theory, Series A **178** (2021), 105358. (arXiv:1911.04575)

34. (with A. Böttcher, S. R. García, M. Omar) *Weighted means of B-splines, positivity of divided differences, and complete homogeneous symmetric polynomials*
Linear Algebra and its Applications **608** (2021), 68–83. (arXiv:2001.01658)

2020 33. (with J. Autry, *T. Gomes, V. Ponomarenko) *Elasticity in Apéry sets*
American Mathematical Monthly **127** (2020), no. 8, 744–749. (arXiv:1908.06448)

32. (with F. Gotti) *The elasticity of Puiseux monoids*
Journal of Commutative Algebra **12** (2020), no. 3, 319–331. (arXiv:1703.04207)

31. (with *F. Kerstetter) *On parametrized families of numerical semigroups*
Communications in Algebra **48** (2020), no. 11, 4698–4717. (arXiv:1909.04281)

30. (with J. Autry) *Sequentially embeddable graphs*
Journal of Graph Theory **95** (2020), no. 1, 27–33. (arXiv:1812.02904)

29. (with W. Bruns, P. García-Sánchez, D. Wilbourne) *Wilf's conjecture in fixed multiplicity*
International Journal of Algebra and Computation **30** (2020), no. 4, 861–882. (arXiv:1903.04342)

28. (with D. Kahle, J. Sommars) *A computer algebra system for R: Macaulay2 and the m2r package*
Journal of Statistical Software **93** (2020), no. 9, 1–31. (arXiv:1706.07797)

27. (with D. Oliveros, S. Zerbib) *The geometry and combinatorics of discrete line segment hypergraphs*
Discrete Mathematics **343** (2020), no. 6, 111825. (arXiv:1807.04826)

2019 26. (with *C. Leng) *A sequence of quasipolynomials arising from random numerical semigroups*
Journal of Integer Sequences **22** (2019), no. 6, Art. 19.6.2. (arXiv:1809.09915)

25. (with *J. Glenn, V. Ponomarenko, *B. Sepanski) *Augmented Hilbert series of numerical semigroups*
Integers **19** (2019), #A32. (arXiv:1806.11148)

24. (with S. R. García, *S. Yih) *Factorization length distribution for affine semigroups I: numerical semigroups with three generators*
European Journal of Combinatorics **78** (2019), 190–204. (arXiv:1804.05135)

23. (with *S. Lee, *B. Van Over) *On arithmetical numerical monoids with some generators omitted*
Semigroup Forum **98** (2019), no. 2, 315–326. (arXiv:1712.06741)

22. (with L. Matusevich) *Some algebraic aspects of mesoprimary decomposition*
Journal of Pure and Applied Algebra **223** (2019), no. 1, 380–394. (arXiv:1706.07496)

21. (with P. García-Sánchez, *G. Webb) *On computation of factorization invariants for affine semigroups*
Journal of Algebra and its Applications **18** (2019), no. 1, 1950019, 21 pp. (arXiv:1504.02998)

2018 20. *On mesoprimary decomposition of monoid congruences*
Rocky Mountain Journal of Mathematics **48** (2018), no. 6, 2069–2085. (arXiv:1708.03441)

19. (with J. De Loera, D. Wilbourne) *Random numerical semigroups and a simplicial complex of irreducible semigroups*
Electronic Journal of Combinatorics **25** (2018), no. 4, #P4.37. (arXiv:1710.00979)

18. (with R. Pelayo) *Realizable sets of catenary degrees of numerical monoids*
Bulletin of the Australian Mathematical Society **97** (2018), no. 2, 240–245. (arXiv:1705.04276)

17. (with R. Pelayo) *Apéry sets of shifted numerical monoids*
Advances in Applied Mathematics **97** (2018), 27–35. (arXiv:1708.09527)

16. (with *R. Conaway, F. Gotti, *J. Horton, R. Pelayo, *M. Pracht, B. Wissman) *Minimal presentations of shifted numerical monoids*
International Journal of Algebra and Computation **28** (2018), no. 1, 53–68. (arXiv:1701.08555)

2017 15. (with D. Bernstein) *Unimodular hierarchical models and their Graver bases*
Journal of Algebraic Statistics *8* (2017), no. 2, 29–43. (arXiv:1704.09018)

14. (with *J. Hartzer) *On the periodicity of irreducible elements in arithmetical congruence monoids* Integers **17** (2017), #A38. (arXiv:1606.00376)
13. *On factorization invariants and Hilbert functions* Journal of Pure and Applied Algebra **221** (2017), no. 12, 3069–3088. (arXiv:1503.08351)
12. *Mesoprimary decomposition of binomial submodules* Journal of Algebra **480** (2017), 59–78. (arXiv:1511.00161)
11. (with I. Aliev, J. De Loera, T. Oertel) *Sparse solutions of linear Diophantine equations* SIAM Journal on Applied Algebra and Geometry **1** (2017), no. 1, 239–253. (arXiv:1602.00344)
10. (with *T. Barron, R. Pelayo) *On dynamic algorithms for factorization invariants in numerical monoids* Mathematics of Computation **86** (2017), 2429–2447. (arXiv:1507.07435)
9. (with *T. Barron, R. Pelayo) *On the set of elasticities in numerical monoids* Semigroup Forum **94** (2017), no. 1, 37–50. (arXiv:1409.3425)

2016
8. (with T. Kahle, E. Miller) *Irreducible decomposition of binomial ideals* Compositio Mathematica **152** (2016), 1319–1332. (arXiv:1503.02607)
7. (with V. Ponomarenko, *R. Tate, *G. Webb) *On the set of catenary degrees of finitely generated cancellative commutative monoids* International Journal of Algebra and Computation **26** (2016), no. 3, 565–576. (arXiv:1506.07587)
6. (with *C. Kiers, V. Ponomarenko) *Numerical semigroups on compound sequences* Communications in Algebra **44** (2016), no. 9, 3842–3852. (arXiv:1503.05993)

2014
5. (with *J. Haarmann, *A. Kalauli, *A. Moran, R. Pelayo) *Factorization properties of Leamer monoids* Semigroup Forum **89** (2014), no. 2, 409–421. (arXiv:1309.7477)
4. (with R. Pelayo) *On the linearity of ω-primality in numerical monoids* Journal of Pure and Applied Algebra **218** (2014), no. 9, 1620–1627. (arXiv:1309.7476)
3. *Monoid congruences, binomial ideals, and their decompositions* Thesis (Ph.D.), Duke University. 2014. 76 pp.

Student journal publications

2. (with I. White) *On minimal presentations of shifted affine semigroups with few generators* to appear, Involve. (arXiv:2006.01396)
1. (with *J. Autry, *P. Graves, *J. Loucks, V. Ponomarenko, *S. Yih) *Squarefree divisor complexes of certain numerical semigroup elements* Involve **14** (2021), no. 1, 1–9. (arXiv:1804.06632)

Computing

Mathematics software packages (most on Github `@coneill-math`)

affinesgps-sage: A `SAGE` class for obtaining cone decompositions of affine semigroups (with M. Chen)
acm-sage: A `SAGE` class for ACMs (with J. Hartzer)
leamermonoid: A `SAGE` class for Leamer monoids
kunzposet: A `SAGE` package for the Kunz polyhedron (with C. Preuss, E. Torres Davila)
m2r: An `R` interface to `Macaulay2` (with D. Kahle, J. Sommers)
monomial-staircase: A `Python` program for drawing staircase diagrams of monomial ideals
numsgps-sage: A `SAGE` wrapper for the `GAP` package `numericalsgps`
numsgpsalg: A `SAGE` class, factors polynomials in numerical semigroup algebras (with S. Zinevich)
polylongdiv-tex: Python script producing LaTeX for polynomial long division over $\mathbb{Z}_n$
rns-db-plot: Experimentation with random numerical semigroups (with Z. Spaulding)
viro: A `SAGE` class for Viro patchworking (with T. de Wolff, E. Kwaakwah)
Various implementations contributed to the `GAP` package `numericalsgps`

Computing-related positions

2014, 2017 Sage lab coordinator, San Diego State University Mathematics REU
2012, 2013 Sage lab assistant, Pacific Undergraduate Research Experience in Mathematics
2005 – 2010 Software engineer, OPSWAT Inc., San Francisco, CA

Computing Expertise

Computer algebra systems: `SAGE`, `GAP`
General computing systems: `C`, `C++`, `Objective-C`, `Java`, `Python`, `Macaulay2`, `R`, Unix terminal

Teaching experience

Courses taught at San Diego State University

2022	Spring	Combinatorics (Math 579)
		Topics in Algebra: Combinatorial Commutative Algebra (Math 621)
2021	Fall	Discrete Geometry (Math 596)
		Groups, Rings, and Fields (Math 620)
2021	Spring	Number Theory (Math 522)
		Topics in Algebra: Algebraic Topology (Math 621)
2020	Fall	Combinatorics (Math 579)
		Groups, Rings, and Fields (Math 620)
		Triangulations (Reading Course)
2020	Spring	Topics in Algebra: Combinatorial Commutative Algebra (Math 621)
2019	Fall	Combinatorics (Math 579)
		Groups, Rings, and Fields (Math 620)
		Combinatorial Topology (Reading Course)
2019	Spring	Abstract Algebra (Math 320)
		Special Topics: Semigroups and Combinatorics (Math 596)
2018	Fall	Abstract Algebra (Math 320)

Courses taught at University of California Davis

2018	Winter	Short Calculus II (Math 16B)
		Discrete Mathematics (Math 148)
2017	Fall	Short Calculus I (Math 16A)
2017	Spring	Short Calculus II (Math 16B)
2017	Winter	Discrete Mathematics (Math 148)
2016	Fall	Calculus II (Math 21B)

Courses taught at Texas A&M University

2016	Spring	Engineering Mathematics II (Math 152)
		Directed Study: Topics in Combinatorics (Math 485)
2015	Fall	Structures and Methods of Combinatorics (Math 431)
2015	Spring	Engineering Mathematics II (Math 152)
2014	Fall	Discrete Mathematics (Math 302)

Courses taught at Duke University

2013	Fall	Lab calculus and functions II (Math 106L)
2013	Spring	Lab calculus and functions II (Math 106L)
2011	Fall	Lab calculus and functions I (Math 105L)
2010	Fall	Lab calculus and functions I (Math 105L)

Mentoring activities

San Diego State REU program

An 8-week summer REU leading students on projects in algebra, number theory, and combinatorics.

2022	Codirected with: Maria Bras-Amorós and Vadim Ponomarenko (expected)
2020	Cancelled (COVID-19)
2019	Codirected with: Vadim Ponomarenko
2017	Codirected with: Vadim Ponomarenko
2014	Directors: Scott Chapman, Pedro García Sánchez, and Vadim Ponomarenko

Polymath Jr. REU program

A large 8-week summer REU aimed at providing research opportunities to every undergraduate who wishes to explore advanced mathematics. Each project consists of 20-30 undergraduates and is mentored by an active researcher with experience in advising undergraduates.

2021	Project Advisor (Program Director: Adam Sheffer)

PURE Math REU program (Pacific Undergraduate Research Experience in Mathematics)

An 8-week Mentoring through Critical Transition Points (MCTP) program encouraging rising juniors and seniors from underrepresented backgrounds to pursue careers in mathematics.

2015	Directors: Scott Chapman, Roberto Pelayo, and Brian Wissman
2013	Directors: Scott Chapman and Roberto Pelayo
2012	Directors: John Little and Roberto Pelayo

Masters theses advised

2021-2022
11. Jackson Autry, Mathematics, SDSU (expected)
Thesis: *Graver bases and the Kunz polyhedron*
10. James Howard, Mathematics, SDSU (expected)
Thesis: *Graver bases of shifted numerical semigroups*
9. Andrew Morris, Mathematics, SDSU (expected)
Thesis: *Generating functions and the Kunz polyhedron*
8. Judy Wu, Mathematics, SDSU (expected)
Thesis: *Factorization in semigroup algebras over finite fields*

2020-2021
7. Brittney Marsters, Mathematics, SDSU
Thesis: *Optimizing polytopal norms with respect to numerical semigroups*
6. Mariah Moschetti, Mathematics, SDSU
Thesis: *Edges, loops, and hypercubes: an exploration of the topological structure of graphs in numerical semigroup theory*
5. Gilad Moskowitz, Mathematics, SDSU
Thesis: *The structure theorem for sets of length for numerical semigroups*
4. Kiley Sprigg, Mathematics, SDSU
Thesis: *A geometric approach to block monoids*

2019-2020
3. Zachary Dickinson, Mathematics, SDSU
Thesis: *Gröbner fans of 3-generator numerical semigroups*
2. Erin Grooms, Mathematics, SDSU
Thesis: *Maximal factorization length for affine semigroups in dimension 2*
1. Isabel White, Mathematics, SDSU
Thesis: *Minimal presentations of shifted affine semigroups*

Other masters research projects advised

2020-2021 3. Tara Gomes, Mathematics, San Diego State University
Project: Free resolutions and the Kunz polyhedron

2019-2020 2. Gilad Moskowitz, Mathematics, San Diego State University
Project: Primitive length sets under set addition

2018-2019 1. Jackson Autry, Mathematics, SDSU
Projects: Sequentially embeddable graphs
Piercing numbers of intersecting r-segment hypergraphs
Limiting elasticities in affine semigroups

Other masters thesis committees

2020-2021 3. Eric Geels, Mathematics, SDSU (advisor: Carmelo Interlando)
Thesis: *Ball collision decoding performance on linear codes*

2. Robert Simpson, Mathematics, SDSU (advisor: Christopher Curtis)
Thesis: *Dynamic mode decomposition and network evolution*

2019-2020 1. Ryan Ly, Mathematics, SDSU (advisor: Christopher Curtis)
Thesis: *A data-driven study of random graphs and social networks*

Undergraduate theses advised

2017-2018 6. Madeline Chen, Computer Science and Mathematics, UC Davis
Thesis: *A software package for decomposing affine semigroups*

5. Franklin Kerstetter, Mathematics, UC Davis
Thesis: *Parametrized and shifted numerical semigroups*

4. Calvin Leng, Mathematics, UC Davis
Thesis: *A sequence of quasipolynomials arising from random numerical semigroups*

3. Zachary Spaulding, Mathematics, UC Davis
Thesis: *A database of random numerical semigroups*

2. Sviatoslav Zinevich, Applied Mathematics, UC Davis
Thesis: *Factorization in numerical semigroup algebras*

2016-2017 1. Robert Harrison, Mathematics (through University Writing Program), UC Davis
Copy-editing: *A computer algebra system for R: Macaulay2 and the m2r package*

Other undergraduate projects advised

2020-2021 29. Cole Brower, Mathematics, SDSU
Project: Polyhedral computation with GPU-acceleration

28. Cole Brower, Mathematics, SDSU
Joseph McDonough, Mathematics, SDSU
Project: Rays of Kunz polyhedron faces with low embedding dimension

27. Kaelia Okamura, Mathematics, SDSU
Project: Quasipolynomials and parametrized families of numerical semigroups

2020-2021 26. Cole Brower, Mathematics, SDSU
Project: A GPU-accelerated triangulation algorithm

25. Cole Brower, Mathematics, SDSU
Joseph McDonough, Mathematics, SDSU
Project: Quasipolynomials and the Kunz polyhedron

24. Nils Olsson, Mathematics, SDSU
    Derek Rawling, Mathematics, SDSU
    Project: Atomic density of arithmetical congruence monoids

2019-2020 23. Cole Brower, Mathematics, SDSU
    Travis Kulhanek, Mathematics, UCLA
    Joseph McDonough, Mathematics, SDSU
    Vody Pavlyuk, Mathematics, SDSU
    Project: Length density of numerical semigroups (coadvisors: Scott Chapman and Vadim Ponomarenko)

22. Tara Gomes, Mathematics, SDSU
    Eduardo Torres Davila, Mathematics, SDSU
    Projects: Faces of Kunz polyhedra
    Wilf's conjecture as a combinatorial game
    Free resolutions over numerical semigroup algebras

21. Adam Hoyt, Mathematics, SDSU
    Derek Rawling, Mathematics, SDSU
    Project: Atomic density of regular arithmetical congruence monoids

20. Jose Parra, Mathematics, SDSU
    Aditya Windy, Mathematics, SDSU
    Project: Elements of 3-generated numerical semigroup with a given factorization length

19. Amy Petris, Computer Science, SDSU
    Project: Counting numerical semigroup elements with a given factorization length

18. Tim Wesley, Mathematics, Pomona College
    Project: Factorization length parity (coadvisor: Stephan Ramon Garcia)

2018-2019 17. Bryan Hayes, Mathematics, SDSU
    Project: Generalizations of a graph-theoretic puzzle from "Myst IV: Revelations"

16. Nils Olsson, Mathematics, SDSU
    Project: Atomic density of arithmetical congruence monoids

15. Sophie Quynn, Mathematics, UC Davis
    Project: Rank of randomly selected positroids (coadvisor: Anastasia Chavez)

14. Ashley Schwartz, Mathematics, SDSU
    Project: Shifted affine semigroups

13. Louis Selstad, Mathematics, SDSU
    Project: Bounds on random numerical semigroup attributes

12. Eduardo Torres Davila, Mathematics, SDSU
    Project: Apéry posets of numerical semigroups

2017-2018 11. Samuel Yih, Mathematics, Pomona College
    Project: Factorization length multisets (coadvisor: Stephan Ramon Garcia)

10. Melanie Zhang, Applied Mathematics and Computer Science, UC Davis
    Project: Atomic density of arithmetical congruence monoids

2016-2017 9. Abdulhai Naqvi, Computer Science, UC Davis
    Project: Generalizations of a graph-theoretic puzzle from "Myst IV: Revelations"

8. Yuze Luan, Computer Science, UC Davis
    Project: Atomic density in arithmetical congruence monoids

7. Sung Hyup Lee, Mathematics, UC Berkeley
   Brandon Van Over, Mathematics, UC Berkeley
   Project: Sets of length of semi-arithmetic numerical monoids

2015-2016

6. David Fountain, Mathematics, Texas A&M
   Project: Generalizations of a graph-theoretic puzzle from "Myst IV: Revelations"
5. Jose Rivera Montes De Oca, Mathematics, Texas A&M
   Project: Minimal presentations of shifted monoids
4. Gautam Webb, Mathematics, University of Oregon
   Project: A dynamic algorithm for computing the catenary degree
3. Larry Harris, Computer Engineering, Texas A&M
   Project: The dissonance point of ω-primality in numerical monoids
2. Jacob Hartzer, Computer Engineering, Texas A&M
   Project: A software package for arithmetic congruence monoids

2014-2015

1. Thomas Barron, Mathematics, University of Kentucky
   Projects: Dynamic computation of factorization invariants (coadvisor: Roberto Pelayo)
   On the set of elasticities in numerical monoids (coadvisor: Roberto Pelayo)

Presentations

Research talks

2021 Jan Commutative Rings: Ideals, Modules, and Factorizations, JMM Washington DC (Virtual)
2020 May Algebraic Geometry in Stats and Machine Learning, AMS Sectional, CSU Fresno (cancelled, COVID-19)
2020 Feb Ring Theory Seminar, Ohio State University
—— Jan Getting Started in Undergraduate Research: Topics, Tools and Open Problems, JMM Denver
2019 May Southern California Discrete Mathematics Symposium, Claremont McKenna College
—— Feb Colloquium, US Naval Academy
—— Jan Commutative Ring Theory: Research for Undergraduates Special Session, JMM Baltimore
2018 Oct Combinatorics Seminar, University of California San Diego
—— May Discrete Mathematics Seminar, Technische Universität Berlin
—— Apr. Geometry Seminar, Texas A&M University
—— Apr. Algebraic Statistics Seminar, Illinois Institute of Technology
—— Apr. Algebra/Geometry/Combinatorics Seminar, San Francisco State University
—— Apr. Fletcher-Jones Math Seminar, University of San Diego
—— Apr. Colloquium, San Diego State University
—— Apr. USTARS Conference, Reed College
—— Apr. CACAO Seminar, University of California Davis
—— Jan. Combinatorial Commutative Algebra and Polytopes Special Session, JMM San Diego
2017 Oct. Algebra, Number Theory, and Combinatorics Seminar, Sacramento State University
—— Sep. Algebra/Number Theory/Combinatorics Seminar, Claremont McKenna College
—— Aug. SIAM Applied Algebraic Geometry Meeting, Georgia Tech
—— May CACAO Seminar, University of California Davis
—— Apr. Bay Area Discrete Math Day (BAD Math), San Jose State University
—— Mar. Algebra/Number Theory/Combinatorics Seminar, Claremont McKenna College
—— Feb. Algebraic Geometry Seminar, Duke University
—— Jan. Contributed Talk, JMM Atlanta
2016 Dec. Research Seminar, San Jose State University
—— Sep. CACAO Seminar, University of California Davis
—— Sep. Discrete Math Seminar, University of California Davis

—— May CombinaTexas Conference, Texas A&M University
—— May Discrete Geometry and Algebraic Combinatorics Conference, South Padre Island, TX
—— Mar. Combinatorial and Computational Algebra Special Session, AMS Sectional, U. of Georgia
—— Jan. Contributed Talk, JMM Seattle
2015 Oct. Postdoc Colloquium, Texas A&M University
—— Oct. Colloquium, University of Hawaii Hilo
—— Sep. Colloquium, Sam Houston State University
—— Jul. Weekly Research Seminar, Pacific Undergraduate Research Experience in Math
—— Jun. Commutative Monoids Special Session, AMS-EMS-SPM Meeting, Porto, Portugal
—— May Algebra and Discrete Math Seminar, University of California Davis
—— Apr. Algebra and Discrete Math Seminar, Clemson University
—— Mar. Algebra and Combinatorics Seminar, Texas A&M University
—— Jan. MRC Special Session, JMM San Antonio
—— Jan. Factorization Theory Special Session, JMM San Antonio
2014 Nov. Algebra and Combinatorics Seminar, Texas A&M University
—— Nov. Student Discrete Math Seminar, Texas A&M University
—— Oct. Applied Discrete Math Special Session, AMS Sectional, San Francisco State University
—— Oct. Postdoc Colloquium, Texas A&M University
—— Sep. Arithmetic and Ideal Theory of Rings and Semigroups, Graz, Austria
—— Mar. Algebra and Combinatorics Seminar, Texas A&M University
—— Feb. Symbolic Computation Seminar, North Carolina State University
—— Jan. Contributed talk, JMM Baltimore
2013 Apr. Graduate Student Combinatorics Conference, University of Minnesota
2012 Sep. Graduate Faculty Seminar, San Francisco State University

Expository math talks

2021 Oct. Math Club, San Diego State University
2019 Feb. Math Club, US Naval Academy
2018 Aug. Inquiry-Based Learning Session, MathFest Denver
—— Apr. Math Club, San Diego State University
2017 May Math Club, CSU East Bay
2016 Nov. Statistics Colloquium, Baylor University
—— Nov. Undergraduate Lecture Series, University of California Berkeley
—— Nov. CACAO Seminar, University of California Davis
—— Feb. Junior Algebraic Geometry Seminar, Texas A&M University
—— Feb. Math Club, Texas A&M University
2015 Feb. Graduate Student Seminar, Texas A&M University
—— Feb. Student Discrete Math Seminar, Texas A&M University
2014 Feb. Graduate Faculty Seminar, Duke University
—— Mar. Graduate Faculty Seminar, Duke University
2012 Nov. Graduate Faculty Seminar, Duke University
2011 Nov. Graduate Faculty Seminar, Duke University
—— Feb. Graduate Faculty Seminar, Duke University

Computing tutorials

2017 Jun. Introductory Week Sage Labs, SDSU Math REU
2016 Oct. Sage Day, University of California Davis
2015 May Hypatian Seminar, University of California Santa Barbara
2014 Jun. Introductory Week Seminar, SDSU Math REU
2013 Jul. Friday Technical Seminar, PURE Math REU
—— Jun. Friday Technical Seminar, PURE Math REU
2012 Jul. Friday Technical Seminar, PURE Math REU

Poster presentations

2015 Aug. PosterFest 2015, MathFest
2013 May Algebraic Geometry in the Southeast, University of South Carolina
2009 May COSE Project Showcase, San Francisco State (advisor: Matthias Beck)
2008 May COSE Project Showcase, San Francisco State (advisor: William Hsu, computer science)
2007 May COSE Project Showcase, San Francisco State (advisor: Matthias Beck)

Other conferences attended

2020 Apr. USTARS Conference, University of Iowa, IA (cancelled, COVID-19)
2019 Apr. USTARS Conference, Iowa State University, IA
2018 Oct. MAA Southern California-Nevada Sectional Meeting, Scripps College, CA
2017 Apr. USTARS Conference, Amherst College, MA
—— Mar. MAA Golden Sectional Meeting, Santa Clara University, CA
2016 Aug. MathFest, Columbus, OH
2015 Aug. MathFest, Washington DC
—— Feb. Texas Geometry and Topology Conference, University of Houston
2014 Feb. Triangle Lectures in Combinatorics, UNC Chapel Hill
2013 Nov. Commutative Algebra and Algebraic Geometry in the Southeast, University of South Carolina
—— Oct. AMS Sectional, Temple University
—— Oct. SACNAS Annual Conference, San Antonio, TX
—— Sep. Triangle Lectures in Combinatorics, NC State
—— Feb. Triangle Lectures in Combinatorics, Wake Forest
—— Jan. Joint Meetings in Mathematics, San Diego, CA
2012 Dec. Combinatorial Commutative Algebra and Applications Workshop, MSRI
—— Oct. SACNAS Annual Conference, Seattle, WA
—— Sep. Triangle Lectures in Combinatorics, NC State
—— Sep. Joint Introductory Workshops in Cluster Algebras and Commutative Algebra, MSRI
—— Feb. Triangle Lectures in Combinatorics, Duke University
2011 Nov. Triangle Lectures in Combinatorics, UNC Chapel Hill
—— Nov. Binghamton Graduate Algebra and Topology Conference
—— Aug. Summer Graduate School in Cluster Algebras and Cluster Combinatorics, MSRI
—— Apr. Triangle Lectures in Combinatorics, NC State
—— Apr. Texas Algebraic Geometry Symposium, Rice University
2010 Nov. Triangle Lectures in Combinatorics, Duke University
—— Mar. Clifford Lectures, Tulane
2009 Nov. Binghamton Graduate Algebra and Topology Conference
2007 July Congreso Colombiano de Matematicas, Medellin, Colombia
—— July Coloquio Latinoamericano de Algebra, Medellin, Colombia

Other academic activities

Departmental service

2021 – Math Club Faculty Supervisor, San Diego State University
2019 – Putnam Team Supervisor, San Diego State University
2018 – Website Committee, San Diego State University
2018 – Colloquium Committee, San Diego State University
2018 Algebra and Discrete Math Seminar, University of California Davis (Spring organizer)
2016 – 2018 CACAO Seminar, University of California Davis (co-organizer)
2014 – 2016 Algebra and Combinatorics Seminar, Texas A&M University (co-organizer)

Other service

2020 External reviewer, Austrian Science Fund (FWF)

Outreach

2021 Jan. Moderator, AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates and Students in Post-Baccalaureate Programs, JMM Washington DC (Covid)
2020 Jan. Judge, MAA Undergraduate Student Paper Session, JMM Denver
2019 Feb. Judge, Student Research Symposium, San Diego State University
—— Jan. Judge, MAA Undergraduate Student Paper Session, JMM Baltimore
2018 Aug. Judge, MAA Undergraduate Student Paper Session, MathFest Denver
—— Jan. Judge, MAA Undergraduate Student Poster Session, JMM San Diego
2017 Apr. Panelist, Mentoring Panel, USTARS Conference, Amherst College
—— Jan. Judge, MAA Undergraduate Student Poster Session, JMM Atlanta
2016 Aug. Judge, MAA Undergraduate Student Paper Session, MathFest Columbus
—— Jun. Panelist, Job Search Discussion, Mathematical Research Communities
—— Apr. Designer/leader, Math Circles, Texas A&M University
—— Apr. Panelist, Job Search Discussion, Texas A&M University
—— Jan. Panelist, REU Information Session, Texas A&M University
—— Jan. Judge, MAA Undergraduate Student Poster Session, JMM Seattle
—— Jan. Accompany Texas A&M undergraduate attendees, JMM Seattle
2015 Sep. Assistant, Math Circles, Sam Houston State University
—— Aug. Judge, MAA Undergraduate Student Paper Session, MathFest Washington DC
—— Aug. Accompany Texas A&M undergraduate attendees, MathFest Washington DC
—— Mar. Assistant, π-day of the millenium, Texas A&M University
—— Jan. Panelist, REU Information Session, Texas A&M University
—— Jan. Judge, MAA Student Poster Session, JMM San Antonio
2014 Oct. Panelist, Job Search Discussion, Texas A&M University
—— Jul. Panelist, Mathematics Career Panel, San Diego Community College

Journal referee experience

Advances in Mathematics
Aequationes Mathematicae
The American Mathematical Monthly
Communications in Algebra
FILOMAT
Forum Mathematicum
The Houston Journal of Mathematics
Int.l Journal of Algebra and Computation
Int.l Journal of Number Theory
Involve, A Journal of Mathematics
Integers
Journal of Algebra
Journal of Algebra and its Applications
Journal of Algebraic Statistics
Journal of Combinatorial Theory: Series A
Journal of Combinatorial Algebra
Journal of Commutative Algebra
Journal of Integer Sequences
Journal of Pure and Applied Algebra
Journal of Symbolic Computation
Mediterranean Journal of Mathematics
Proceedings of the AMS
Semigroup Forum
The Ramanujan Journal
The Rose-Hulman Undergraduate Math Journal
The Royal Society of Edinburgh: Proceedings A
SIAM Journal on Discrete Mathematics

References

Scott Chapman, Mathematics
Sam Houston State University
stc008@shsu.edu

Jesus De Loera, Mathematics
University of California Davis
deloera@math.ucdavis.edu

David Kahle, Statistics
Baylor University
david_kahle@baylor.edu

Ezra Miller, Mathematics
Duke University
ezra@math.duke.edu

Mary Pilgrim, Mathematics Education
San Diego State University
mpilgrim@sdsu.edu

Vadim Ponomarenko, Mathematics
San Diego State University
vponomarenko@mail.sdsu.edu