Curriculum Vitae

John R. Schmitt
1(802)443-5952
jschmitt@middlebury.edu

http://community.middlebury.edu/~jschmitt/

April 2, 2025

Employment:

Middlebury College, Middlebury, VT
Professor, July 2017 –
Associate Professor, July 2012 — June 2017,
Assistant Professor, July 2008 — June 2012.
Visiting Assistant Professor, July 2005 — June 2008.

Education:

Ph.D. in Mathematics, Emory University, 2005
Advisor – R. Gould, Thesis – On potentially P-graphic degree sequences and saturated graphs
M.S. in Mathematics, University of Vermont, 1998
B.A. in Mathematics, *cum laude* and Honors Program, Providence College, RI, 1994
Junior year at Homerton College, Cambridge University

Research Interests:

Combinatorics Extremal combinatorics, the polynomial method, additive combinatorics, design theory; **Graph theory** saturated graphs of minimum size, Turán-type problems, degree sequences, graph pebbling

Visiting Appointments:

Johannes Kepler Universität Linz, Austria: *Visiting Professor in Institute for Algebra*, April 2025 – June 2025.

Karl Franzens Universität, Graz, Austria: *Fulbright-NAWI Graz Visiting Professor in the Natural Sciences*, February 2022 – July 2022.

Carnegie Mellon University, Pittsburgh, PA: *Visiting Assistant Professor*, July 2009 — June 2011. (As a result of NSF Grant no. DMS 0758057.)

Institute for Pure and Applied Mathematics, University of California Los Angeles, CA: *Fellow* in Combinatorics: Methods and Applications in Mathematics and Computer Science, September

2009 — December 2009.

Grants:

External

- Fulbright U.S. Scholar Award to Graz, Austria for "Delivering a New Master Key to Open Long-locked Doors: Polynomial Method for Combinatorial Problems", February–July 2022.
- National Security Agency Mathematical Sciences Program Conference Grant for Discrete Mathematics Days of the Northeast, September 2014 – June 2015. PI - Rosa Orellana, Steering Committee: Seth Chaiken, Karen Collins, Sergi Elizalde, Jo Ellis-Monaghan, Bill Martin, Lauren Rose, John Schmitt, Julianna Tymoczko.
- National Security Agency Mathematical Sciences Program Conference Grant for Discrete Mathematics Days of the Northeast, July 2012 – June 2014. PI - Rosa Orellana, Steering Committee: Elizabeth Beazley, Seth Chaiken, Karen Collins, Sergi Elizalde, Jo Ellis-Monaghan, Bill Martin, Lauren Rose, John Schmitt.
- National Security Agency Mathematical Sciences Program Young Investigator's Award for "Desirable realizations of degree sequences via the Joint Degree-Matrix Theorem". Dec. 2009 — Dec. 2011. Grant no. H98230-10-1-0173.
- National Science Foundation Research Opportunity Award for collaborative work with Oleg Pikhurko (PI) of Carnegie Mellon University on "Turán Problem for Graphs and Hypergraphs". July 2009 — July 2011. Grant no. DMS 0758057.
- Vermont Experimental Program to Stimulate Competitive Research (VT-EPSCoR) Award, Summer 2008, "Constructing Cost-efficient Networks for the Transportation of Scarce and Consumable Resources".

Internal (Middlebury College)

- Research grant from Kathryn Wasserman Davis Collaborative in Conflict Transformation, 2025, for project "Optimal Scheduling Under Conflict".
- Presidential International Conference and Research Fund, 2023–2024 for travel to Budapest, Hungary.
- Long-term Professional Development Fund, Project: Developing expertise in finite geometry, incidence geometry, combinatorial number theory and additive combinatorics, 2017–2022
- Presidential International Conference and Research Fund, November 2019 for travel to Casa Matemática, Oaxaca, Mexico.
- Ada Howe Kent Fund, 2016-2017, "The Polynomial Method", for travel to an international workshop at Hebrew University of Jerusalem (December 2016).
- Presidential International Conference and Research Fund, 2015-2016 for travel to Graz, Austria.

- Presidential International Conference and Research Fund, 2014-2015 for travel to Budapest, Hungary.
- Ada Howe Kent Fund, Middlebury College, 2009-2010, "Combinatorics and Extremal Graph Theory".
- Undergraduate Collaborative Research Fund, Middlebury College

1. Summer 2025, "Algebraic methods for combinatorial problems" - to support undergraduate Heng (Henry) Zhan ('26)
2. Winter and Spring 2024, "λ-nullity for theorems arising from the linear algebra method" - to support undergraduates Megan Paasche ('24) and Xiuyuan Ge ('24)
3. Spring and Summer 2023, "Martin Gardner's No-3-in-a-line problem" - to support undergraduates Xianzhi Wang ('23) and Seunghwan Oh ('25) (also supported in part by a Howard Hughes Medical Institute grant), resulting in publication
4. Summer 2021, "Saturated graphs of minimum size" - to support undergraduates Toby Weed ('23) and Ariel Silver ('21)
5. Academic Year 2020–21 "Saturated graphs of minimum size" - to support undergraduates Bryan Currie ('22), resulting in co-authorship on publication (19)
6. Summer 2020, "Saturated graphs of minimum size" - to support undergraduates Bryan Currie ('22) and Seamus Turco ('22)
7. Academic Year 2019–20, "Buratti's Conjecture" - to support undergraduates Tommaso Moncao ('20)
8. Summer 2019, "Buratti's Conjecture" - to support undergraduates Tommaso Moncao ('20) and Chris Hauptfeld ('21)
9. Summer 2018, "Zero-sum Theory in Combinatorics" - to support undergraduates Kevin Collins ('20) and Jonathan Perlman ('19)
10. Spring 2015, "Distinct Partial Sums in Cyclic Groups" - to support undergraduates Tom Dobrow ('16) and Shrif Nada ('16)
11. Summer 2011, "Problems in Extremal Graph Theory" - to support undergraduate Alec Cooper ('13), contributing to publication [14]
12. Summer 2009, "Problems in Extremal Graph Theory" - to support undergraduate Ying (Daisy) Zhuo, '12.
13. Summer 2009, "Constructing Realistic Complex Networks Given Degree Sequences and Specific Imposed Conditions" - to support undergraduate Daniel Crow via Nelson R. Easton '41 Research Fellowship
14. Summer 2008, "Constructing Cost-efficient Networks for the Transportation of Scarce and Consumable Resources" - to support undergraduate Angelo Fu, '10.
15. Spring 2007, "Saturated graphs of minimum size" - to support undergraduate Sarri Al-Nashashibi, '08.

Peer-reviewed Journal Publications:
Undergraduate co-authors marked with $(*)$.

1. *A Constructive Upper Bound for Cycle Saturated Graphs of Minimum Size*, (with R. Gould, T. Łuczak), Electronic Journal of Combinatorics **13** (2006) R29, 19pp.

2. *Minimum Degree and the Minimum Size of K_2^t-saturated graphs*, (with R. Gould), Discrete Mathematics, **307** (2007) 9-10, 1108–1114.

3. *Graphic Sequences with a Realization Containing a Friendship Graph*, (with M. Ferrara, R. Gould), Ars Combinatoria, **85** (2007), 161–171.

4. *A note on minimum $K_{2,3}$-saturated graphs*, (with O. Pikhurko), Australasian Journal of Combinatorics **40** (2008), 211–215.

5. *Degree Sum Conditions in Graph Pebbling*, (A. Blasiak*), Australasian Journal of Combinatorics **42** (2008), 83–90.

6. *Graphic Sequences with a Realization Containing a Complete Multipartite Subgraph*, (with Guantao Chen, M. Ferrrara, R. Gould), Discrete Mathematics **308** (2008) 23, 5712–5721.

7. *Graphic Sequences with a Realization Containing a Generalized Friendship Graph*, (with Gang Chen, J. Yin), Discrete Mathematics **308** (2008) 24, 6226–6232.

8. *Using Edge Exchanges to Prove the Erdős-Jacobson-Lehel Conjecture*, (with M. Ferrara, R Gould), Bulletin of the Institute of Combinatorics and its Applications **56** (2009), 73–80.

9. *Potentially H-Bigraphic Sequences*, (with M. Ferrara, M. Jacobson, M. Siggers), Discussiones Mathematicae Graph Theory **29** (2009), 583–596.

10. *A General Lower Bound for Potentially H-Graphic Degree Sequences*, (with M. Ferrara), SIAM Journal on Discrete Mathematics **23** (2009) 1, 517–526.

11. *A survey of minimum saturated graphs*, (with J. Faudree and R. Faudree), Electronic Journal of Combinatorics **18** (2011), #DS19 (Version 1), 36pp. (See Version 2 below.)

12. *Saturation numbers for families of ramsey-minimal graphs*, (with Guantao Chen, M. Ferrara, R. Gould, C. Magnant), Journal of Combinatorics **2** (2011), 435–456.

13. *On the size and structure of graphs with a constant number of 1-factors*, (with A. Dudek), Discrete Mathematics **312** (2012), 1807–1811.

14. *Martin Gardner's minimum no-three-in-a-line problem*, (A. Cooper*, O. Pikhurko, and G. Warrington), American Mathematical Monthly, **121** (2014), no. 3, 213–221.

15. *Warning's Second Theorem with Restricted Variables*, (with P. L. Clark and A. Forrow*), Combinatorica, **37** (2017) 3, 397–417.

16. *On zeros of a polynomial in a finite grid: the Alon-Füredi bound*, (with A. Bishnoi, P.L. Clark and A. Potukuchi), Combinatorics, Probability and Computing **27** (2018), 310–333.

17. *Distinct partial sums in cyclic groups: Polynomial method and constructive approaches*, (with J. Hicks and M. Ollis), Journal of Combinatorial Designs **27** (2019) 6, 369–385.

18. *New Methods to Attack the Buratti-Horak-Rosa Conjecture*, (with M. Ollis, A. Pasotti, and M. Pellegrini), Discrete Mathematics **344** (2021) 9.

19. *A survey of minimum saturated graphs*, (with undergraduate student B. Currie*, J. Faudree and R. Faudree), Electronic Journal of Combinatorics (2021), #DS19 (Version 2), 98pp.

20. *Higher Degree Davenport Constants over Finite Commutative Rings*, (with B. Girard and Y. Caro), Integers: Electronic Journal of Combinatorial Number Theory **21** (2021), A120.

21. *Growable Realizations: Another Approach to the Buratti-Horak-Rosa Conjecture*, (with M. Ollis, A. Pasotti, and M. Pellegrini), Ars Mathematica Contemporanea **22** (2022), #4.04.

22. *Higher Degree Erdős-Ginzburg-Ziv Constants*, (with Y. Caro), Integers: Electronic Journal of Combinatorial Number Theory **22** (2022), A102.

23. *Repeatedly applying the Combinatorial Nullstellensatz for Zero-Sum Grids to Martin Gardner's minimum no-3-in-a-line problem*, (with Seunghwan Oh* and Xianzhi Wang*), European Journal of Combinatorics **125** (2025), Paper No. 104095, 13pp.

Extended Abstracts:

An Erdős-Stone Type Conjecture, (with M. Ferrara), Electronic Notes in Discrete Mathematics (Proceedings of 6th Czech-Slovak Symposium, Prague) **28** (2006) 131-135.

On the Alon-Füredi bound, (with A. Bishnoi, P.L. Clark and A. Potukuchi), Electronic Notes in Discrete Mathematics (Proceedings of Discrete Mathematics Days, Barcelona 2016), Vol 54, October 2016, 57-62.

Courses Taught:

at Middlebury College (x) denotes x sections of a course

- Calculus I, F'08, S'09
- Calculus II, F'05 (2), F'06 (2), F'07 (2), S'08, S'11 (2), S'12 (2), S'13, F'13, F'16, F'22
- Introductory Statistics, S'06 (2)
- Linear Algebra, S'07 (2), F'08 (2), F'11 (2), S'13, S'14 (2), F'14, S'17(2), F'17, S'20, F'20(2), F'21, S'23(2), F'23, F'24(2)
- Multivariable Calculus, F'07, F'12, F'13, F'14, S'18, F'18 (2), F'19, S'21, S'24
- Graph Theory, S'06, S'08, F'11, S'14, F'17, F'19, S'21, S'23, F'24
- Combinatorics, F'06, S'09, F'10, F'12, S'15, S'18, S'20, F'21. S'24
- The Mathematical Gardner (a first-year seminar), F'10, F'16
- The Combinatorial Gardner (a winter-term course), W'13
- Combinatorial Games and Puzzles (a winter-term course), W'06, W'08, W'11
- Senior Seminar, F'10, S'15
- The Polynomial Method (a senior seminar), S'17, F'18, F'20

- The Linear Algebra Method (a senior seminar), F'22, F'23

at Johannes Kepler Universität Linz, Austria

- The Polynomial Method with Combinatorial Applications, Sommersemester 2025

at Karl Franzens Universität, Graz, Austria

- Grundthemen Number Theory: Additive Combinatorics, with a focus on the Polynomial Method, Sommersemester 2022

at Emory University

- Business Calculus, S'02, F'02, S'03
- Calculus I, F'01
- Calculus II, F'03
- Introductory Probability and Statistics, S'04
- Linear Algebra with Applications, F'04

at University of Vermont

- Calculus I, F'96, S'97, F'98 (2)

Relevant Prior Experience:

Emory University, Atlanta, GA: *Dean's Teaching Fellow*, September 2004 — June 2005. Responsible for teaching Linear Algebra with Applications.

Emory University, Atlanta, GA: *Graduate Teaching Associate (Assistant)*, September 2001 — August 2004 (September 2000 — August 2001). Responsible for teaching one undergraduate course each semester, including Calculus I, Calculus II, Business Calculus, and Probability and Statistics.

The Maret School, Washington, DC: *Teacher and Coach*, September 1998 — June 2000. Responsible for teaching four courses of high school mathematics, including AP Calculus, and coaching cross country and track and field.

University of Vermont, Burlington, VT: *Graduate Teaching Fellow*, September 1996 — May 1998. Taught Pre-Calculus and Calculus.

Phillips Academy, Andover, MA: *Faculty*, Summer 1997.

Presentations given:

- AMS Spring Eastern Sectional Meeting, Hartford, CT, Special Session on Recent Trends on Graphs and Hypergraphs, "Repeatedly Applying the Combinatorial Nullstellensatz for Zero-sum Grids to Martin Gardner's minimum no-3-in-a-line problem", April 2025.

- Summit 280 Conference at Eötvös University, Budapest, Hungary, "Repeatedly Applying the Combinatorial Nullstellensatz for Zero-sum Grids to Martin Gardner's minimum no-3-in-a-line problem", July 2024.
- Dartmouth College Combinatorics Seminar, 'The polynomial method is for combinatorial problems", October 2023. (Invited)
- 10th Slovenian International Conference on Graph Theory, Kranjska Gora, Slovenia, June 2023, Minisymposium on Combinatorial Designs and their Applications, "Approaching the minimum number of clues Sudoku problem via the polynomial method."(Invited)
- Combinatorial Constructions Workshop, U. Zagreb, Croatia, "Higher degree Davenport constants over finite commutative rings", June 2022.
- Algebra and Number Theory Research Group Seminar, U. Graz, Austria, "Higher degree Davenport constants over finite commutative rings", May 2022. (Invited)
- Institute of Algebra Seminar, Johannes Kepler University (U. Linz), Austria"The polynomial method is for combinatorial problems", May 2022. (Invited)
- Algebra and Number Theory Research Group Seminar, U. Graz, Austria, "Additive Combinatorics and Polynomial Methods", March 2022. (Invited)
- Combinatorial Designs and Codes, Satellite event of the 8th European Congress of Mathematics, on-line, July 2021, "New methods to attack the Buratti-Horak-Rosa Conjecture".
- 52nd Southeastern International Conference on Combinatorics, Graph Theory and Computing, on-line, March 2021, "New methods to attack the Buratti-Horak-Rosa Conjecture".
- U. Vermont Combinatorics Seminar, Burlington, VT, February 2020, "A combinatorial problem given to us by Dan Archdeacon".(Invited)
- Zero-Sum Ramsey Theory: Graphs, Sequences and More Workshop at Casa Matemática, Oaxaca, Mexico, November 2019, "Counting weighted zero-sum subsequences with the polynomial method". (Invited)
- 9th Slovenian International Conference on Graph Theory, Bled, Slovenia, June 2019, "Distinct Partial Sums in Cyclic Groups".
- Carleton Finite Fields Workshop, Carleton University, Ottawa, Canada, May 2019, "Distinct Partial Sums in Cyclic Groups".
- 50th Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Florida Atlantic University, March 2019, "Distinct Partial Sums in Cyclic Groups".
- Colby College Mathematics Seminar, February 2019, "Martin Gardner's No-3-in-line Problem". (Invited)
- Summer Combinatorics in Vermont (at St. Michael's College), July 2018, "Distinct Partial Sums in Cyclic Groups".
- SIAM Conference on Discrete Mathematics (Mini-symposium on Graph Pebbling) , Denver, CO, June 2018, "On Some Questions Regarding Class 0 Graphs".(Invited)

- Combinatorial and Additive Number Theory Workshop, CUNY Graduate Center, New York City, May 2018, "Distinct Partial Sums in Cyclic Groups".
- George Mason University, Combinatorics, Algebra and Geometry Seminar, Fairfax, VA, October 2016, "On Zeros of a Polynomial in a Finite Grid: the Alon-Füredi Bound". (Invited)
- American Mathematical Society Sectional Meeting (Special Session on New Developments in Graphs and Hypergraphs), Brunswick, ME, September 2016, "Chevalley-Warning Meets Hypergraphs: Counting Sub-hypergraphs with Union Cardinality 0 Modulo q". (Invited)
- SIAM Conference on Discrete Mathematics, Atlanta, GA, June 2016, "On Zeros of a Polynomial in a Finite Grid: the Alon-Füredi Bound".
- Atlanta Lecture Series in Combinatorics and Graph Theory, Georgia State University, April 2016, "Martin Gardner's No-3-in-line Problem". (Invited)
- Combinatorial and Additive Number Theory, Karl-Franzens-Universität - University of Graz (Austria), January 2016, "On Zeros of a Polynomial in a Finite Grid: the Alon-Füredi Bound".
- Topology et al. Seminar, Wesleyan University, October 2015, "Two tools from the polynomial method toolkit". (Invited)
- Summer Combinatorics in Vermont (at St. Michael's College), July 2015, "Counting sub-hypergraphs with union cardinality $0 \pmod q$".(Invited)
- 12th International Conference on Finite Fields and Their Applications (Saratoga Springs, NY), July 2015,"Warning's Second Theorem with restricted variables".
- Virginia Commonwealth University, Pebblefest, March 2015, "On a Conjecture of Benjamin Girard". (Invited)
- University of Georgia, Number Theory Seminar, February 2015, "Warning's Second Theorem with restricted variables". (Invited)
- University at Albany, Mathematics Colloquium, January 2015, "Warning's Second Theorem with restricted variables". (Invited)
- University of Vermont / St. Michael's College Discrete Mathematics Seminar, December 2014, "A lower bound on the number of common roots of a polynomial system". (Invited)
- Institute for Mathematics and its Applications (at the University of Minnesota), Minneapolis, MN, poster presentation "Warning's Second Theorem with restricted variables", September 2014. (Invited)
- Summit:240 Conference at Eötvös University, Budapest, Hungary, "Warning's Second Theorem with restricted variables", July 2014. (Invited)
- Karl-Franzens-Universität - University of Graz (Austria), Algebra and Number Theory Seminar, "Warning's Second Theorem with restricted variables", July 2014. (Invited)
- SIAM Conference on Discrete Mathematics, Minisymposium on Design Theory, Minneapolis, MN, June 2014, (Invited)"Approaching the minimum number of clues Sudoku problem via the polynomial method".

- Summer Combinatorics in Vermont at St. Michael's College, July 2013 "Approaching the minimum number of clues Sudoku problem via the polynomial method".

- M.I.T. Combinatorics Seminar, February 2013 (Invited) *and*
  Dartmouth College Combinatorics Seminar, February 2013, (Invited) *and*
  Combinatorics: Methods and Applications in Mathematics and Computer Science, Institute for Pure and Applied Mathematics, UCLA, June 2012, (Invited) *and*
  University of Vermont / St. Michael's College Discrete Mathematics Seminar, November 2011, (Invited) *and*
  Middlebury College Mathematics Seminar, September 2011, "Martin Gardner's No-3-in-line Problem".

- Combinatorics: Methods and Applications in Mathematics and Computer Science, Institute for Pure and Applied Mathematics, UCLA, June 2011, "On sparse graphs with low pebbling number". (Invited)

- Algorithms, Combinatorics & Optimization Seminar, Carnegie Mellon U., March 2011 (Invited) *and*
  42^{nd} Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Florida Atlantic University, March 2011 *and*
  U. of Vermont / St. Michael's College Discrete Mathematics Seminar, October 2010 (Invited) *and*
  8th French Combinatorial Conference, University of Paris Sud, June 2010 *and*
  Society of Industrial and Applied Mathematics Discrete Mathematics Conference, Minisymposium on Extremal Graph Theory, Austin, TX, June 2010, (Invited) "An extremal problem for a constant number of 1-factors".

- Middlebury College Mathematics Seminar, September 2010, "Friendships and Dorm Assignments".

- American Mathematical Society Sectional Meeting, Newark, NJ, May 2010, (Invited) *and*
  University of Colorado Denver, Discrete Mathematics Seminar, April 2010, (Invited) *and*
  University of Vermont / St. Michael's College Discrete Mathematics Seminar, March 2010, (Invited) *and* Institute for Pure and Applied Mathematics at UCLA, Lake Arrowhead, CA, December 2009 (Invited), "Minimum saturated graphs and ramsey graphs".

- Dartmouth College Combinatorics Seminar, February 2010, (Invited) *and*
  Arizona State University, Discrete Mathematics Seminar, March 2009, (Invited) *and*
  University of Vermont / St. Michael's College Discrete Mathematics Seminar, November 2008, (Invited) "The generalized degree sequence problem".

- British Combinatorics Conference, St. Andrew's, Scotland, UK, July 2009, "Graph pebbling in sparse graphs".

- Discrete Mathematics Day of the Northeast, Burlington, VT, June 2009, (Invited) *and*
  Dartmouth College Combinatorics Seminar, October 2008, (Invited) "A dual to the Turán problem".

- VT EPSCOR Annual State Meeting, June 2011, (Invited) *and*
  VT EPSCOR Annual State Meeting, March 2010, (Invited) *and*

VT EPSCoR Annual State Meeting, June 2009, (Invited)poster presentation of "Constructing Cost-Efficient Networks for the Transportation of Scarce and Consumable Resources".

- 2^{nd} Canadian Discrete and Algorithmic Mathematics Conference, Montreal, Canada, May 2009, "A Lower Bound for Potentially H-Graphic Sequences".
- American Mathematical Society Sectional Meeting, Urbana-Champaign, Illinois, March 2009, "Potentially H-bigraphic degree sequences".
- Governor's Institute in Mathematical Sciences, University of Vermont
  - "Instant Insanity", June 2021. (Invited)
  - "How to Beat your Friends at the Dots-and-Boxes Game", June 2020 (given virtually due to COVID-19). (Invited)
  - Finite Projective Geometry, June 2018. (Invited)
  - "The Game of SET", June 2016. (Invited)
  - (3 lectures) "Hexaflexagons", "Tower of Hanoi", and "Measuring Water", June 2015. (Invited)
  - "How to Beat your Friends at the Dots-and-Boxes Game", June 2014. (Invited)
  - "The Calculus of Finite Differences: Pancakes, Donuts and Cheesecake", June 2012. (Invited)
  - "Instant Insanity", June 2010. (Invited)
  - "The game of hex", June 2009. (Invited)
  - "How to Beat your Friends at the Dots-and-Boxes Game", June 2008. (Invited)
- SIAM Conference on Discrete Mathematics, Burlington, VT, June 2008, "Minimum Size of a Graph of Given Diameter".
- AMS-MAA Joint Meetings, San Diego, CA, Jan. 2008 and Summer Combinatorics in Vermont Conference, St. Michael's College, July 2008, "Degree Sum Conditions in Graph Pebbling".
- 21st British Combinatorial Conference, Reading, UK, July 2007, "Minimum Size of Bipartite-Saturated Graphs".
- 20th Cumberland Conference, Atlanta, GA, May 2007, "Sum Degree of No Class".
- University of Vermont Mathematics Colloquium, April 2007, "Extremal Problems on Bipartite Graphs". (Invited)
- Middlebury College Mathematics Seminar, March 2007, "Erdős, an Extreme Character".
- University of Colorado, Denver, Discrete Mathematics Seminar, September 2006, "Recent Results and Open Problems on Saturated Graphs of Minimum Size". (Invited)
- Horizons of Combinatorics, Lake Balaton, Hungary, July 2006, "On a Relationship of Two Extremal Functions". (Support from the European Mathematical Society.)
- 6th Czech-Slovak International Symposium on Combinatorics, Graph Theory, Algorithms and Applications, Prague, Czech Republic, July 2006, "An Erdős-Stone Type Conjecture". (Partial support from DIMATIA of Charles University.)

- SIAM Conference on Discrete Mathematics, Victoria, Canada, June 2006, "A Lower Bound on Potentially F-Graphic Degree Sequences".
- Middlebury College Mathematics Seminar, October 2005, "The Efficiency of the Bicycle Wheel".
- University of Vermont / St. Michael's College Discrete Mathematics Seminar, October 2005, "The Minimum Size of Saturated Graphs". (Invited)
- Workshop on Extremal Graph Theory, Carnegie Mellon University, May 2005, "Cycle-saturated graphs of minimum size". (Invited)
- University of Vermont/ St. Michael's College Discrete Mathematics Seminar, April 2005, "On a Problem in Extremal Graph Theory". (Invited)
- 36th Southeastern Intl. Conference on Comb., Graph Theory, Computing, Boca Raton, FL, March 2005, "K_2^t-saturated graphs of minimum size".
- AMS-MAA Joint Meetings, Atlanta, GA, Jan. 2005.
- Emory Mathematics Graduate Student Seminar, Atlanta, GA, June 2003, "Degree Sequences".
- Workshop on Extremal Graph Theory, Csopak, Hungary, June 2003, "Potentially K_s^t-Graphic Degree Sequences".

Professional Activities and Service:

- *Local Organizer*, Discrete Mathematics Days of Northeast (a one day conference), Middlebury, VT, September 2014, September 2012 and September 2007
- *Secretary*, Society for Industrial and Applied Mathematics Activity Group on Discrete Mathematics, January 2010 – December 2011
- *Referee*, Moscow Journal of Combinatorics and Number Theory; Journal of Graph Theory; Discrete Mathematics; Discrete Applied Mathematics; Discussiones Mathematicae Graph Theory; Designs, Codes and Cryptography; Electronic Journal of Combinatorics; European Journal of Combinatorics; Australasian Journal of Combinatorics; Graphs and Combinatorics; International Journal of Combinatorics; Involve: a journal of mathematics; Journal of Combinatorial Mathematics and Combinatorial Computing; Acta Mathematica Sinica, English Series.
- *Reviewer*, Mathematical Reviews Database
- *Reviewer*, zbMATH Open
- *Host*, Middlebury College's Friends of International Students Program, 2006–2014, 2016–.
- *Founder, President* of Emory University Society of Industrial and Applied Mathematics (SIAM) Student Chapter, September 2003 — May 2005
- *Organizer*, Emory Mathematics Graduate Student Seminar, 2001 – 2003

- *Graduate Student Representative*, Emory Student Health Insurance Advisory Committee, 2002 – 2005
- *Volunteer Cross Country Coach*, U. Vermont, Fall 1996 – 97

College Service

- Faculty advisor for Newman Club, 2021 – present
- William Lowell Putnam Exam supervisor, 2017 – present
- Spiritual Life Advisory Board, 2019 – 2020
- Faculty Resource Committee, 2017 – 2020
- Committee on Assessment, an *ad hoc* committee of the Educational Affairs Committee, 2016 – 2017
- Taskforce on Priorities and Resources, 2014 – 2015
- Admissions and Financial Aid Advisory Committee, 2011– 2014
- Curriculum Committee, 2008 – 2009
- New Faculty Mentor Program, 2010 – 2013, 2016 – 2017, 2018– 2019

Awards:

- 2024 Gladstone Award for Excellence in Teaching, Middlebury College
- 2016 Perkins Award for Excellence in Teaching, Middlebury College
- Nominated for Student Government Association Marjorie Lamberti Faculty Appreciation Award, Spring 2013
- 2008 Perkins Award for Excellence in Teaching, Middlebury College
- Marshall Hall, Jr., Award (Mathematics Department of Emory University Teaching Award), April 2004
- Dean's Teaching Fellowship, Emory University, 2004-2005
- "Excellence in Teaching", U. Vermont Mathematics Dept., March 1998
- Nominated Graduate Teaching Fellow of the Year, U. Vermont, March 1998
- Junior Year Abroad, Cambridge University, Homerton College, 1992-1993
- Graduate of Liberal Arts Honors Program, Providence College
- Academic All-Big East, 1992
- Member of Pi Mu Epsilon

Undergraduate Theses Directed:

- Megan Paasche, "Borsuk's Conjecture: a geometric application of theorems on intersecting families of sets," Fall 2023
- Xiuyuan Ge, "Constructive lower bounds for the Ramsey number $R(t,t)$ established via linear algebra methods," Fall 2023
- Mei Dwyer-Frattalone, "Improvements to Borsuk numbers using spherical codes via the linear algebra method," Fall 2023
- Liam Smith, "Graph decompositions and Moore graphs: two applications of spectral graph theory," Fall 2023
- Julia Levin, "The past, present, and future of Eventown: exploring a fundamental problem of the linear algebra method," Fall 2023
- Christopher Branch, "Investigating the limits of communication over noisy channels," Fall 2023
- Duncan Kreps, "Experimental design and generalizations of Fisher's Inequality," Fall 2023
- Sirui (Ray) Chen, "Minimum s-saturated families of sets," Fall 2023
- Sally Liu, "Spectral methods in graph partitioning: bounding the density of a sparsest cut", Fall 2023
- Xianzhi Wang, "Total Weight Choosability of Graphs: A Note on Complete Multi-partite Graphs", Fall 2022 - co-winner of departmental thesis prize
- Siena Truex, "The Jamison Method: Associating coests with polynomials to prove a minimal number of cosets for a covering", Fall 2022
- Noah Hannam, "Using Linear Algebraic Strategies for Solving an Extremal Problem", Fall 2022
- Nathan MacDonald, "Balanced Incomplete Block Designs", Fall 2022
- Kenta Togo, "Beck and Fiala's Integer-Making Theorem", Fall 2022
- Kate Kenny, "Spanning Trees and the Matrix-Tree Theorem", Fall 2022
- Seamus Turco, "An Application of Combinatorial Nullstellensatz for finding the List-Distinguishing Number", Summer 2021
- Molly Colwell, "On Proving Snevily's Conjecture: Third Proof's the Charm", Fall 2020
- Tobie Gumener, "Lucky and Lucky Choice Numbers of Graphs", Fall 2020
- Chris Hauptfeld, "Every Nontrivial Graph of Maximum Degree 4 is 4-Weight Choosable", Fall 2020
- Carl Langaker, "Calculating the Neighbor Sum Distinguishing Chromatic Index of Sparse Graphs Using Noga Alon'a Combinatorial Nullstellensatz", Fall 2020
- Graham Rainsby, "Applying the Cominbatorial Nullstellensatz to Frame Hertz and Picouleau's Conjecture", Fall 2020
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- Anthony Santolupo, "On the Minimum Size of Q_2-Saturated Hypercubes", Fall 2005 (Note: a conjecture in Tony's thesis has now been resolved in the negative, see arxiv.org/abs/1406.1766.)