

# Catherine Huafei Yan

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## Research Interests

Algebraic Combinatorics, Probabilistic Methods, Ordered Algebraic Structures, and Discrete Structures.

## Education

**Massachusetts Institute of Technology** Cambridge, MA  
**School of Science**, Department of Mathematics  
Doctor of Philosophy in Pure Mathematics, June 1997  
–Dissertation title: Theory of Commuting Boolean Algebras  
–Adviser: Gian-Carlo Rota

**Beijing University** Beijing, China  
Bachelor of Science in Mathematics, July 1993.

## Academic Positions

**Professor of Mathematics**, *September 2004– present*, Texas A&M University.  
**Associate Professor**, *2002– 2004*, Texas A&M University.  
**Assistant Professor**, *1999–2002*. Texas A&M University.  
**Member**, *Academic Year 2000*. Institute for Advanced Study.  
**Courant Instructor**. *1997–1999*. Courant Institute of Mathematical Sciences, New York University.  
**Graduate Teaching Assistant**. *1993–1997*. Department of Mathematics, Massachusetts Institute of Technology.

## Editorial Board

Advances in Applied Mathematics, co-Editor-in-Chief, 2014– present; Editor since Nov. 2007  
Science China Mathematics, Associate Editor, 2013–present  
Journal of Combinatorics and Number Theory, 2007 – present  
Discrete Mathematics, Algorithms and Applications, 2008–present  
Electronic Journal of Combinatorics, Editors-in-Chief, March 2010 – December 2013; Editor, 2014–present.  
Enumerative Combinatorics and Applications, 2020– present

## Grants and Awards

Simons Collaboration Grant 704276, “Research on Enumerative Combinatorics: Parking functions, interpolation polynomials, and operator methods”, September 1, 2020 – August 31, 2025,

Fellow of American Mathematical Society, class of 2018.

National Science Foundation, “CombinaTexas Conference”,  
2024–2026: Joint with L. Matusevich, C-H Liu and J. White. DMS-2400268.  
2023: Joint with L. Matusevich and C-H Liu, DMS-2302139.  
2020–2022: Joint with L. Matusevich. DMS-2000531.  
2019: joint with L. Matusevich and Y. Cai, DMS-1901444.  
2018: joint with L. Matusevich and J. White. DMS-1743183  
2016: joint with L. Matusevich, D. Ferrero, L. Garcia-Puente, and K. Smith. DMS-1633874

Institute for Mathematics and Its Applications, IMA PI Conference Award for “CombinaTexas Conference”.  
2022: joint with L. Matusevich. May 2020–End of 2022. \$2,000  
2020–21: joint with L. Matusevich. May 2019–End of 2021. \$3,000  
2018: joint with L. Matusevich. Feb 2017–Dec. 2018. \$3,000.

Qatar National Research Foundation, “Crossings and Nestings in Combinatorial Structures”. Joint with P. Schumacher (for year 1) and Rudolph Lorentz (for year 2 &3) 10/15/2012–4/14/2016.

National Science Foundation, Single PI grants in Combinatorics Research: DMS 1161414 (2012–2016), DMS-0653846 (2007–2011), DMS-0245526 (2003-2007), DMS-0070574.(2000-2003).

National Security Agency, “ A Novel Approach in Enumerative Combinatorics”, 2011–2013.

The paper *Crossings and nestings of matchings and partitions* was named as one of the “Top one hundred most influential papers of 2007, China”, December, 2008.

National Security Agency, “CombinaTexas: A Combinatorics Conference in the South-Central U.S. ”, 09/01/07–08/31/09. \$14,607.

National Security Agency, “Combinatorial Patterns and Structures”, recommended for award. (Declined for conflict with NSF grant.)

National Science Foundation, “Interdisciplinary Grants in the Mathematical Sciences: Combinatorial Methods in Manufacturing”, DMS-0308827, September 1, 2003 – August 31, 2004.

General Motors Research and Development. “An Exploration of New Approaches for Identifying and Mitigating Enterprise Risk,” joint with M.A. Wortman and G-A. Klutke, Department of Industrial Engineering. June 1, 2003–May 31, 2004.

National Science Foundation Conference Grant, DMS-0300205. Titled “CombinaTexas: A Combinatorics Conference for the South-Central U.S.,” April 1, 2003 – March 31, 2006.

Alfred P. Sloan Foundation Research Fellow, 2001–2003, extended to 2005.

NSF research grant through Institute for Advanced Study. DMS 97-29992. Academic year 2000–01.

Travel support for FoataFest: A Conference on Classical Combinatorics. July, 2000.

NSF-AWM Travel Grant from Association for Women in Mathematics, May, 2000.

Challenge Fund Awards for Research, New York University. Title: Modular Lattices in Invariant Theory, June 1999 to May 2000.

Morse Academic Plan Teaching Fund, New York University. September 1998 to August 1999.

Gold medal in the third Youth Science Awards of Beijing, China, 1991.

Jiu-Zhang Mathematics Prize, highest honor in Department of Mathematics, Peking University, 1991.

Top Fellowship for Freshman, Peking University, 1989.

Top Award of Science Prize Competition, Beijing, China, 1989.

Silver medal in International Olympiad Mathematics, Germany, 1989.

Silver-Sail Prize for Science, Beijing, China, 1989.

## Other Experiences

**AMS Mathematics Research Community 2024**, Java Center, NY June 2024. One of five organizers for the program in Algebraic Combinatorics. Lead two research teams.

**Research Community in Algebraic Combinatorics**,

ICERM, Brown University, RI

*August 2021 – July 2024*, Project leader of a group of five young researchers.

<b>Nankai University,</b>	Tianjin, China
May 2005–August 2008, Summers, Chern Professor at Center of Combinatorics.	
<b>Graduate School of Academic Sinica,</b>	Beijing, China.
Summer 2002, 2005–2008. Visiting Invited Professor at Department of Mathematics.	
<b>Dalian University of Technology,</b>	Dalian, China
January, 2003–December, 2005, Invited Professor at the Institute of Higher Technology.	
<b>AT&amp;T Labs.</b>	Florham Park, NJ
Summer 1998 & 1999. Consultant in Mathematics. Did research on recurrence relations of Turan numbers and on the Apollonian circle packings.	
<b>Massachusetts Institute of Technology</b>	Cambridge, MA
Summer 1997. Mentor in the Summer Program of Undergraduate Research.	
Summer 1996. Lecturer for Differential Equations.	
Academic year 1993–97. Graduate Teaching Assistant.	
<b>Research Science Institute</b>	Cambridge, MA
Summer 1995. Mentor. Supervised high school students in research.	
<b>High School Olympiad in Mathematics</b>	Beijing, China
Summer 1991, 92, 93. Lecturer. Taught topics in discrete mathematics and led problem solving seminars.	

## Presentations

### Invited Conference Presentations

- SQuaRE program on ” Vacillating Tableaux for Integer Sequences”, American Institute of Mathematics. April 20–25, 2025, Californian Institute of Technology, Pasadena, CA.
- Stanley’s 80 Birthday conference, June 5–9, 2024. Harvard University, Boston.
- AMS Mathamatical Research Community in Algebraic Combinatorics. June 9–15, 2024. Java Center, NY.
- SIAM Texas-Louisiana Section Meeting, mini-symposium ”Algebraic Combinatorics and Parking Functions” November 3–5, 2023 (invited). University of Louisiana–Lafayette.
- International Conference on Enumerative Combinatorics and Applications, (virtual), invited speaker. September 4–6, 2023.
- Integers Conference, May 17–21, 2023. May 17– 20, 2023 University of Georgia Athens, Georgia. (invited)
- Triangle Lectures in Combinatorics. UNC Greensboro, Greensboro, December 3, 2022.
- AMS Fall 2022 Southeastern Sectional Meeting, University of Tennessee at Chattanooga, Chattanooga, TN Oct 15–16, 2022.
- Combinatorial and Additive Number Theory conference (CANT 2022), Virtual, May 24–27, 2022.
- Research Community in Algebraic Combinatorics. August 2021–Feb 2022. Project Leader on “Enumerative Combinatorics with Fillings of Polyominoes”.

Work with a group of junior faculty. Virtual Conference August 5–6, 2021. In-Person Conference on Feb 10–11, 2022. ICERM, Brown University. RI.

- Conference on the Occasion of the Retirement of Yeong-Nan Yeh, Institute of Mathematics, Academia Sinica, Taipei, Taiwan. June 27–28, 2021.
- Combinatorial and Additive Number Theory conference (CANT 2021), Virtual, May 24–28, 2021.
- The Eighteenth International Conference on Permutation Patterns, Valparaiso University, Valparaiso, IN. June 29–July 3, 2020.
- SIAM TX/LA Regional Conference, Nov 1–3, 2019. Mini-symposium on Parking Functions and (Co)invariant Rings. Dallas, TX.
- Tenth Discrete Geometry and Algebraic Combinatorics Conference, September 23–26, 2019, at The University of Texas Rio Grande Valley, South Padre Island, TX.
- Minisymposium of E-JC at CanaDAM 2019 (The 7th biennial Canadian Discrete and Algorithmic Mathematics Conference). Invited speaker. May 28–31, 2019 at Simon Fraser University, Vancouver, British Columbia
- SIAM Conference on Discrete Mathematics. Plenary talk. University of Colorado, Denver, Colorado, USA. June 4–8, 2018.
- SIAM Conference on Discrete Mathematics. Minisymposium on New Trends in Enumerative Combinatorics. Invited talk. University of Colorado, Denver, Colorado, USA. June 4–8, 2018.
- Graduate Student Combinatorics Conference. Key-note speaker. Dallas, April 6–8, 2018.
- AMS Spring Central Sectional Meeting, (45 minutes special talk), Special session in Algebraic Combinatorics. Ohio State University, Columbus, OH. March 17–18, 2018.
- 31st Midwest Conference on Combinatorics and Combinatorial Computing. Plenary talk, University of West Georgia, Carrollton, October 20–22, 2017.
- AMS Fall Central Sectional Meeting, Special session in Generalizations of Graph Theory. University of North Texas, Denton, TX, September 9–10, 2017.
- Workshop on Extremal and Random Phenomenon in Discrete Mathematics, Tianjin, May 14–15, 2016.
- AMS Fall Southeastern Sectional Meeting, Special Session on Topological Combinatorics. University of Memphis, Memphis, TN, October 17–18, 2015
- Formal Power Series and Algebraic Combinatorics 2015. Invited plenary speaker, KAUST, South Korea, July 6–9, 2015.
- Connections in Discrete Mathematics—A celebration of the work of Ron Graham. Invited speaker, June 15–19, Vancouver, 2015.
- 2015 Cumberland Conference. Invited plenary talk, University of South Carolina, May 15–18, 2015.
- Conference in honor of Michelle Wachs 60th birthday, Invited speaker. January 6–9, Miami, 2015.
- Bijective and Algebraic Combinatorics: Conference in honor of Bruce Sagan’s 60th birthday. Invited talk, March 24–25, 2014.
- AMS Southeastern Section Meeting, invited talk in Special Session on Algebraic Combinatorics, University of Mississippi, Oxford, MS March 1–3, 2013.
- First ICTP-IPM School & Conference in Combinatorics and Graph Theory, International Center for Theoretical Physics. Trieste, Italy. invited plenary speaker. September 2–15, 2012.
- AMS spring Central Section Meeting, invited plenary speaker. March 31–April 1, 2012.

- Joint Mathematical Meetings, invited talk in AMS Special Session on Enumerative and Algebraic Combinatorics. Boston, Jan. 4–7, 2012.
- International Conference on Designs, Matrices, and Enumerative Combinatorics, Institute of Mathematics, Academic Sinica, Taiwan, May 19-22, 2011. Invited plenary speaker.
- CombinaTexas 2011, Sam Houston State University, April 15-16, 2011. Invited plenary speaker.
- AMS Spring Southeastern Section meeting, Special session on Applied Combinatorics, Georgia, March 12–13, 2011.
- The Australian National University, Canberra, 34th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing (34ACCMCC), Australia , December 6–10, 2010. Plenary speaker.
- AMS Spring Southeastern Sectional Meeting, Special session on Advances in Algebraic and Geometric Combinatorics, Lexington, Kentucky, March 27-28, 2010,
- Joint Mathematical Meetings, AMS Special Session on Zonotopal Algebra and its Applications, San Francisco, CA, January 13–16, 2010.
- AMS Fall Southeastern Sectional Meeting, Special session on Enumerative Combinatorics, Florida, October 31–Nov. 1, 2009.
- CMS winter meeting, Special Session on Combinatorics, Ottawa, Ontario, December, 2008. Invited talk.
- Twenty-Second Midwest Conference on Combinatorics, Cryptography, and Computing. Plenary talk, October 22-24, 2008.
- “Crossings and nestings of two edges in set partitions”, AMS Western Section Spring Meeting, Claremont, CA, May 2008. Invited 20 minutes talk.
- Ottawa-Carleton Discrete Math Workshop. May 25-26, 2007. Invited one hour talk. “Crossings and Nestings in Combinatorics”.
- Conference on Random Combinatorial Structures, April 20–22, University of Nebraska-Lincoln. Invited one hour talk. “Searching with Errors and the Liar Game”.
- The Second National Conference on Combinatorics and Graph Theory, Nankai University, Tianjin, China. August 16–19, 2006. “G-parking Functions, Graph Search, and Tutte Polynomial”.
- Conference on Probabilistic Combinatorics & Algorithms: a Conference in Honor of Joel Spencer’s 60th Birthday. DIMACS, Rutgers, NJ. April 2006. “An Algorithmic Approach to Enumeration”.
- Canada Mathematical Society Winter Meeting 2005, Special Session on Discrete and Convex Geometry, Victoria, December 9–12, 2005. “Crossings and nestings on chord configurations”.
- Combinatorial and Additive Number Theory, New York, NY. May, 2005. “Crossings and nestings of matchings and partitions”.
- AMS Eastern Section Meeting, Special session on *Probabilistic paradigms in Combinatorics*, Newark, Delaware, April, 2005. “On the diameter of random geometric graphs”.
- The sixth joint meeting of AMS-SMM, special session on graph theory and combinatorics, Houston, May 2004. “On Random Points in the Unit Disk”.
- Canada Mathematical Society Summer Meeting 2002, Symposium in Combinatorics, Quebec City, Canada. June, 2002. “Goncarov polynomials and Parking Functions”.

- Joint Mathematics Meetings of AMS, MAA and SIAM, special session of *Many Lives of Lattice Theory and the Theory of Ordered Sets with Connections to Combinatorics*, San Diego, CA January, 2002. “Lattice of Commuting Boolean Subalgebras”.
- AMS 2001 Spring Western Section meeting, Las Vegas, April, 2001. Invited talk in the special session on Number Theory with a Geometric Flavor. “Apollonian Circle Packings: Number Theory”.
- Ninth Quadrennial International Conference on Graph Theory, Combinatorics, Algorithms, and Applications. Michigan, June, 2000, invited talk, “Generalized Parking Functions, Tree Inversions and Multicolored Graphs”.
- CombinaTexas Conference, College Station, Texas, March, 2000, plenary talk, “Integral Apollonian Packings”.
- Joint Mathematics Meetings of AMS, MAA and SIAM, special session of *In Memory of Gian-Carlo Rota*, Washington DC, January, 2000. “Geometric Identities in Linear Lattices”.

### Contributed Conference Presentations

- CombinaTexas 2025, Texas A&M University, April 12-13, 2025
- CombinaTexas 2016, Texas A&M University, May 7-8, 2016.
- CombinaTexas 2013, University of Houston-Downtown, April 20–21, 2013.
- CombinaTexas 2012, Southwestern University, Georgetown, TX. April 21–22, 2012.
- 22nd International Conference on Formal Power Series and Algebraic Combinatorics, August 2–6, 2010. San Francisco State University, “Mixed statistics of 01-fillings of moon polyominoes”, (Poster).
- CombinaTexas Conference 2010, Texas State University, San Marcos, April 2010. “Mixed statistics of 01-fillings of moon polyominoes”, (contributed 20 min).
- “Lattice and Schroder paths with periodic boundaries”, CombinaTexas Conference 2008, El Paso, TX. April 2008. (contributed 20 min)
- 19th International Conference in Formal Power Series and Algebraic Combinatorics. July 2–7, Nankai University, Tianjin, China. “Multi-parking functions, graph search, and Tutte polynomial”. (Poster)
- CombinaTexas Conference 2006, Houston, TX. February 2006. “Extended Goncarov polynomials, parking functions, and lattice paths”.
- CombinaTexas Conference 2005, San Marcos, TX, February, 2005. “Crossings and nestings in matchings and partitions”.
- International Congress of Mathematicians. Beijing, 2002. Short communication in the session of combinatorics, August, 2002. “Goncarov polynomials and Parking Functions”.
- Finite and Infinite Combinatorics, Budapest, Hungary, January, 2001, invited talk. “Asymptotics for Branching Processes”.
- 31st Southeast International Conference on Combinatorics, Graph Theory, and Computing. Florida, March, 2000. “On the Enumeration of Generalized Parking Functions”.

### Colloquium and Lecture Series

- Beijing Tech University, China. January 9, 2024.
- Beijing University, China. January 3, 2024.
- University of North Texas, January, 2018.

- Texas State University, San Marcos, April, 2016.
- Tulane University, New Orleans, March 2015.
- Georgia Southern University, Statesboro, GA, October, 2014.
- Texas A&M University at Qatar, Doha, Qatar. January 2014.
- Graduate School of Academic Sinica, Department Seminar, Beijing, China. July, 2011.
- Institute of Mathematics, Academic Sinica, Beijing, China. July, 2009.
- School of Mathematical Sciences, Peking University, Beijing, China. Summer course, June 28–July 18, 2009.
- Texas A&M at Galveston, April, 2009.
- Vanderbilt University. November 8, 2007.
- Mini-course on Algebraic Combinatorics. Graduate School of Academic Sinica, Beijing, China. June 18– July 20, 2007.
- Virginia L. Chatelain Memorial Lecture series. in cooperation with the ADVANCED Distinguished Lecture Series. Kansas State University, April 3, 2007.
- Beijing University, June 9th, 2006.
- Center of Combinatorics, Nankai University, Tianjin, China. May, 2006.
- Center of Combinatorics, Nankai University, Tianjin, China. June – August, 2005. Summer Colloquium Series.
- Graduate School of Academic Sinica, Beijing, China. June 13–25, 2005. Summer Colloquium Series. (Delivered five colloquium talks.)
- Texas A&M University, Department Colloquium, Department of Industrial Engineering, September, 2003.
- Texas A&M University, College Station, September, 2003,
- Dalian University of Technology, colloquium, Dalian, China. July, 2002.
- Southwest Texas State University, colloquium. San Marcos, TX. April, 2002.
- Texas A&M University, College Station, October, 2001,
- Temple University, Pennsylvania, invited talk, April 2001.
- William Paterson University, New Jersey, colloquium talk, October 2000.
- Vanderbilt University, Tennessee, colloquium talk, January 1999,
- Texas A&M University, Texas, colloquium talk, November 1998,
- Dartmouth College, New Hampshire, invited talk, February 1998,
- Denver University, Colorado, colloquium talk, February 1997,
- Virginia Polytechnic Institute and State University, Virginia, invited talk, January 1997,
- Texas A&M University, Texas, invited talk, January 1997, “ $k$ -Parking Functions, Tree Inversions, and Hyperplane Arrangements”.

## Seminar Talks

- Analysis Seminar, Denver University, Denver, CO. February 28, 2025.
- Math Club, Texas A&M University, College Station, TX. November 18, 2024.
- Algebra and Combinatorics Seminar, TAMU. December 1, 2023.
- Virtual Combinatorics Seminar, Jiang-Su Normal University, China. December 11, 2022.
- Algebra and Combinatorics Seminar, TAMU. October 1, 2022.
- Math Club, Texas A&M University, College Station, TX. October 4, 2022.
- Virtual Combinatorics Seminar, Jiang-Su Normal University, China. June, 2021.
- Math Club, Texas A&M University, College Station, TX. April 12, 2021.
- University of California, San Diego, May 2013.
- Institute of Mathematics, Academic Sinica, Taiwan. Seminar in Combinatorics, May 18, 2011.
- National Cheng Kung University, Taiwan, Seminar in Algebra, May 17, 2011.
- Algebra, Number Theory and Combinatorics Seminar, University of Texas, October 18, 2007.
- Combinatorics Seminar, Beijing University, China. July 17, 2007.
- Algebra Seminar, Kansas State University, April, 2007
- Graduate Student Seminar, Texas A&M University, February, 2007.
- Georgia Institute of Technology, Combinatorics seminar, March 2006.
- University of Texas at Arlington, Applied Mathematics Seminar, November, 2004.
- University of Wisconsin-Madison, Combinatorics Seminar, October, 2004. September, 2004.
- Texas A&M University, Department of Industrial Engineering, Seminar of Combinatorics, Optimization, Computing and Algorithms (COCA), December, 2003.
- Texas A&M University, Seminar of Group and Dynamics, April, 2003.
- University of Washington and Microsoft Research, Combinatorics Seminar, April, 2003.
- Texas A&M University, Department of Industrial Engineering, Applied Probability Seminar, March, 2003. 5
- Texas A&M University, Algebra and Combinatorics Seminar, January, 2003.
- Texas A&M University, Department of Industrial Engineering, Applied Probability Seminar, April, 2002.
- University of Florida, Combinatorics Seminar, February, 2001.
- University of Minnesota, Combinatorics Seminar, December, 2000.
- Massachusetts Institute of Technology, Combinatorics Seminar, November, 2000.
- University of Pennsylvania, Combinatorics Seminar, October, 2000.
- University of Pennsylvania, Combinatorics Seminar, February, 1998.
- Massachusetts Institute of Technology, Combinatorics seminar, November 1996.

## Publications

1. Distribution of new statistics of parking functions and their generalizations, S. Wagner, C. H. Yan and M. Yin. Preprint 2025.
2. Primeness of Generalized Parking Functions, S. Armon, J. Beckford, D. Hanson, N. Krawzik, O. Mandelshtam, L. Martinez, and C.H. Yan. 2024. Submitted to E-JC, November, 2024.
3. On the correspondence between integer sequences and vacillating tableaux. Joint with Z. Berikkyzy, P. Harris, A. Pun and C. Zhao. *Enumerative Combinatorics and Applications*, 5:1 (2025), Article #S2R7.
4. On the enumeration of vacillating tableaux (in Chinese), joint with R. Du. *Sci Sin Math*, 2025, 55: 1–11.
5. Combinatorial identities for vacillating tableaux. Joint with Z. Berikkyzy, P. Harris, A. Pun and C. Zhao. *Integers*, Volume 24A (2024). Printed version appears in *Proceedings of the Integers Conference 2023: Combinatorial Number Theory*, De Gruyter Proceedings in Mathematics, 2025 Walter de Gruyter GmbH, Berlin/Boston. 31–64.
6. On the limiting vacillating tableaux for integer sequences. Joint with Z. Berikkyzy, P. Harris, A. Pun and C. Zhao. *Journal of Combinatorics*, Volume 15(2024), Number 3, 383–400.
7. U-parking Functions and  $(p, q)$ -Parking Functions. Joint with L. Snider, *Adv. Appl. Math.* vol.134, 2022, article 102309. (28 pages).
8. Multivariate Difference Goncarov Polynomials. Joint with A. Adeniran and L. Snider. *Integers*, vol 21A, 2021. (21 pages).
9. Introduction to the Special Issue dedicated to Joseph Kung. Joint with H. Schenck and S. Schroll. *Adv. Appl. Math.* Vol. 126 (2021), article 102148.
10. Goncarov Polynomials in Partition Lattices and Exponential Families. Joint with A. Aderinan. *Adv. Appl. Math.* Vol. 126 (2021), article 102045.
11. On increasing and invariant parking sequences. Joint with A. Adeniran. *Australas. J. Combin.* Vol. 79(1), 2021. pp 167–182.
12. Vector parking functions with periodic boundaries and rational parking functions, joint with Yue Cai. *J. Combin. Theory A.* Volume 173 (2020), 105239.
13. Parking Functions on Directed Graphs and some Directed Trees, joint with W. King. *Electron. J. Combin.* Volume 27(2) (2020). P2.48.
14. Prime Parking Functions on Rooted Trees. Joint with W. King. *Journal of Combinatorial Theory A.* Vol. 168, 2019, page 1–25.
15. Counting with Borel’s Triangle. Joint with Yue Cai, *Discrete Mathematics*, Vol 342(2), 2019, 529–539.
16. Parking Distributions on Oriented Trees (extended abstract). Joint with Westin King. 30th International Conference on Formal Power Series and Algebraic Combinatorics, Séminaire Lotharique de Combinatoire 80B (2018), Art. 47, 12 pp
17. Generalized Goncarov Polynomials, Joint with Rudolph Lorentz and Salvatore Tringali, in *Connections in Discrete Mathematics: A Celebration of the Work of Ron Graham*, edited by Steve Butler, Joshua Cooper, and Glenn Hurlbert. Cambridge University Press. 2018. page 56–85.
18. Parking distributions on trees. Joint with Ron Graham and Steve Butler. *European J. Combin.* 65(2017), 168–185.
19. Multivariate Delta Goncarov and Abel Polynomials, Joint with Rudolph Lorentz and Salvatore Tringali. *Journal of Mathematical Analysis and Applications*, 446 (2017), 663–680.

20. Moments of Matching Statistics, joint with Niraj Khare and Rudolph Lorentz. *Journal of Combinatorics*, Vol. 8, No. 1(2017), pp. 1–27.
21. Bivariate Affine Goncarov Polynomials, joint with Rudolph Lorentz. *Discrete Mathematics*, 339 (2016), pp. 2371–2383.
22. Avoiding monotone chains in fillings of layer polyominoes, joint with M. Phillipson. *Annals of Combinatorics*, 20(4), 883–897, 2016.
23. Derangements on a Ferrers board, joint with William Linz, *Discrete Mathematics, Algorithms and Applications*, 2015. Vol. 07, No. 03. 1550036.
24. Parking Functions, Chapter 13 in *Handbook of Enumerative Combinatorics*, edited by Miklos Bona. Chapman and Hall/CRC, 2015.
25. Maximal increasing sequences in fillings of almost-moon polyominoes, joint with Svetlana Poznanovic, *Advances in Applied Mathematics* Volume 66(2015), 1–21.
26. Bivariate Goncarov Polynomials and Integer Sequences, joint with Niraj Khare and Rudolph Lorentz. *Science China Mathematics* Volume 57 Issue 8(2014), 1561–1578.
27. Chains of length 2 in fillings of layer polyominoes, joint with M. Phillipson and J. Yeh. *Electronic Journal of Combinatorics*, Volume 20, Issue 3 (2013), Paper 51.
28. Positive and negative chains in charged moon polyominoes, joint with A. Wang. *Advances in Applied Mathematics* 51 (2013) 467–482.
29. On the enumeration of non-crossing pairings of well-balanced binary strings, joint with P. Schumacher. *Annals of Combinatorics*, Vol 17, Issue 2 (2013), 379–391. Published on-line in January 10, 2013.
30. High-energy String Scattering Amplitudes and Signless Stirling Number Identity , joint with J-C. Lee and Y. Yang. *Symmetry, Integrability and Geometry: Methods and Applications*, 8 (2012), 045.
31. Descents of permutations in a Ferrers board, joint with C. Song, *Electronic Journal of Combinatorics*, Volume 19 (2012), Paper 7. (16 pages)
32. “Mixed statistics on 01-fillings of moon polyominoes”, joint with W. Chen, A. Wang and A. Zhao.
  - Extended abstract is published at *Discrete Mathematics and Theoretical Computer Science*, DMTCS proc. AN, 2010, 481–492.
  - Complete paper appears in *SIAM Journal on Discrete Mathematics*, Vol. 24 (2010) issue 4, 1272–1290.
33. “Major index for Moon Polyominoes”, joint with W. Chen, S. Poznanovik, and A.Yang. *Journal of Combinatorial Theory, Series A*. Vol. 117 (2010), no.8, 1058–1081.
34. “Combinatorics: The Rota Way”, joint with Joseph Kung and Gian-Carlo Rota, Cambridge Mathematical Library, 2009. 400 pages, ISBN: 9780521883894.
35. “Crossings and nestings of two edges in set partitions”, joint with S. Poznanovik. *SIAM journal on Discrete Mathematics*, Vol. 23, No.2, (2009) 787–804.
36. “Lattice and Schroder paths with periodic boundaries”, joint with A. de Mier, J. Kung and X. Sun. Accepted by *Journal of Statistical Planning and Inference*. vol. 139, issue 6, (2009) 2014–2027. Available on line since September, 2008 at <http://dx.doi.org/10.1016/j.jspi.2008.09.002>
37. “A Major Index for Matchings and Set Partitions”, joint with W.Y.C. Chen, I. Gessel and A.L . Yang. *Journal of Combinatorial Theory A*, Series A, vol. 115 (2008) 1069-1076.
38. “How to play the one-lie Renyi-Ulam game”, joint with R. Ellis and V. Ponomarenko, *Discrete Mathematics*, vol. 308 (2008), no. 23, 5805–5803.

39. “Linked partitions and cycles”, joint with B. Chen and S. Wu. European Journal of Combinatorics. Vol 29, issue 6 (2008), 1408–1426.

40. “G-parking Functions, Graph Search, and Tutte Polynomial”, joint with Dimitrije Kostic.

- Extended abstract for 19th FPSAC, (November 2006, 12 pages)
- Complete paper is in Advances in Applied Mathematics, Vol. 40 (2008), 73–97.

41. “Two boundary lattice path and parking functions”, joint with J. Kung and X. Sun. Advances in Applied Mathematics, vol. 39 (2007), 515–524.

42. “Random Geometric Graph Diameter in the Unit Ball”, joint with R. Ellis, J. Martin. Algorithmica, **47(4)** (2007), 421–438.

43. “Crossings and Nestings of Matchings and Partitions”, joint with W.Y.C. Chen, E. Deng, R. Du, and R. Stanley. Trans. Amer. Math. Soc. **359(4)** (2007) 1555–1575.

44. “Apollonian Circle Packings: Geometry and Group Theory II. Super-Apollonian Group and Integral Packings”, joint work with R. Graham, J. Lagarias, C. Mallows and A. Wilks. Discrete & Computational Geometry, 25(2006), 1–36.

45. “Apollonian Circle Packings: Geometry and Group Theory III. Higher Dimensions”, joint work with R. Graham, J. Lagarias, C. Mallows and A. Wilks. Discrete & Computational Geometry, 35(2006), 37–72.

46. “On the Random Points in the Unit Disk”, joint with R. Ellis and X. Jia. Accepted by Random Structures and Algorithms. Volume 29, Issue 1 (2006), 14–25.

47. “Apollonian Circle Packings: Geometry and Group Theory I. The Apollonian Group”, joint work with R. Graham, J. Lagarias, C. Mallows and A. Wilks. Discrete & Computational Geometry, 34(2005), 547–585.

48. “The Renyi-Ulam Pathological Liar Game with a Fixed Number of Lies”, joint with R. Ellis, V. Ponomarenko. Journal of Combinatorial Theory, Series A, 112(2005), 328–336.

49. “Random Geometric Graph Diameter in the Unit Disk with  $\ell_p$  Metric, (Extended Abstract)”, joint with R. Ellis and J. Martin. in Lecture Notes in Computer Science, Vol. 3383, p167. Springer-Verlag, 2005.

50. “The Modeling of Random Graphs and Its Applications”. Technique report. General Motor R&D, May, 2004.

51. “Ulam’s Covering Game with One Half-lie”, joint work with R. Ellis. International Journal of Mathematics and Mathematical Sciences, special issue for CombinaTexas’03, vol. 29 (2004), 1523–1532.

52. “Apollonian Circle Packings: Number Theory”, R. Graham, J.C. Lagarias, C.L. Mallows, A.R. Wilks, and C.H. Yan. Journal of Number Theory, vol.100, no.1 (2003), 1–45. Preprint available at e-Print archive math.NT/0009113.

53. “Expected Sums of Moments for General Parking Functions”, joint work with J. Kung. Annals of Combinatorics, vol. 7 (2003), 481–493.

54. “The Halflie Problem”, joint with J. Spencer. Journal of Combinatorial Theory, Series A, vol. 103 (2003) 69–89.

55. “Exact Formulas for Moments of Sums of Classical Parking Functions”, joint with J. Kung. Advances in Applied Mathematics, vol. 31 (2003) 215–241.

56. “Branching Processes with Negative Poisson Offspring Distribution”, joint work with J. Spencer and I. Dumitriu. Annals of Combinatorics, vol. 7 (2003) 35–47.

57. “Goncarov Polynomials and Parking Functions”, joint with J.P. Kung, *Journal of Combinatorial Theory, Series A*, vol. 102, no.1 (2003), 16–37.

58. “Generating Functions for Moments of the Quasi-nilpotent DT-operator”, joint with K. Dykema. *Advances in Applied Mathematics*, vol. 30, no.3 (2003), 545–561.

59. “Six Problems of Gian-Carlo Rota in Lattice Theory and Universal Algebra”, joint work with J. P. Kung. *Algebra Universalis*, vol. 49(2003), 113–127.

60. “Hirzebruch  $\chi_y$  Genus of Hilbert Schemes from Fixed Point Formula”, joint work with K. Liu and J. Zhou. *Sci. China (Zhong Guo Ke Xie) Ser. A* 45 (2002), no. 4, 420–431.

61. “Generalized Parking Functions, Tree Inversions and Multicolored Graphs”, C. H. Yan. *Advances in Applied Mathematics*, vol. 27 (2001), 641–670.

62. “On Discrepancy of Strongly Unimodular Matrices”, H. Peng and C. H. Yan. *Discrete Mathematics* vol. 219 (2000), 223–333.

63. “On the Enumeration of Generalized Parking Functions”, C.H. Yan. *Proceedings of the Thirty-first Southeastern International Conference on Combinatorics, Graph Theory and Computing* (Boca Raton, FL, 2000). *Congressus Numerantium*, 147 (2000), 201–209.

64. “Geometric Identities in Lattice Theory”, joint work with M. Mainetti. *Journal of Combinatorial Theory, Ser. A*, vol. 91, No. 1/2, (2000), 411–450.

65. “Arguesian Identities in the Congruence Variety of Abelian Groups”, C. H. Yan. *Advances in Mathematics*, vol. 150, (2000), 36–79.

66. “On the Limit of a Recurrence Relation”, R. L. Graham and C. H. Yan. *Journal of Difference Equations and Applications*, vol. 5, (1999) 71–95.

67. “Theory of Commuting Boolean  $\sigma$ -algebras”, C. H. Yan. *Advances in Mathematics*, vol. 144, (1999) 94–116.

68. “Arguesian Identities in Linear Lattices”, M. Mainetti and C. H. Yan. *Advances in Mathematics*, vol. 144, (1999) 50–93.

69. “Graphical Operations on Projective Spaces”, M. Mainetti and C. H. Yan. *Annals of Combinatorics*, vol.2 (1998) 245–291.

70. “The Theory of Commuting Subalgebras of a Complete Heyting Algebra”, J. Crants and C. H. Yan. *Advances in Mathematics*, vol. 139(2), (1998) 260–292.

71. “Decomposition of Lebesgue Spaces”, C. H. Yan. *Advances in Mathematics*, vol. 138(2), (1998) 330–350.

72. “Balancing Game with a Buffer”, H. Peng and C. H. Yan, *Advances in Applied Mathematics*, vol. 21(2), (1998) 193–204.

73. “Quasifinite Representations of Classical Lie Subalgebras of  $\mathcal{W}_{1+\infty}$ ”, V. G. Kac, W. Wang and C. H. Yan. *Advances in Mathematics*, vol. 139(1), (1998) 56–140.

74. “Quasifinite Highest Weight Modules over the Lie Algebra of Matrix Differential Operators on the Circle”, C. Boyallian, V. G. Kac, J. I. Liberati and C. H. Yan. *Journal of Mathematical Physics*, vol. 39(5), (1998) 2910–2928.

75. “Commuting Quasi-order Relations”, C. H. Yan. *Discrete Mathematics*, vol. 183(1–3), (1998) 285–292.

76. “Distributive Laws for Commuting Equivalence Relations”, C. H. Yan. *Discrete mathematics*, vol. 181(1–3), (1998) 295–298.

77. “Generalized Tree Inversions and  $k$ -Parking Functions”, C. H. Yan. Journal of combinatorial theory A, vol. 79(2) (1997) 268–280.

### **Student Supervised**

#### **Ph.D. students:**

- Abishek Hariharan (current),
- Seongjune Han (current),
- Derek Wu (current, joint with J. Landsberg),
- Lauren Snider (2023),
- Ayomikun Adeniran (2020),
- Westin King (2019),
- Mitchell Phillipson (2015),
- Jeffrey Pattiello (2011),
- Svetlana Poznanovikj (2010),
- Paul Schumacher (2009),
- Dimitrije Kostic (2007)

#### **Masters students:**

- Dimitrije Kostic (2003),
- Lisa Sparrgrove (2004),
- Amanda Rich (2010),
- William Linz (2016),
- Ziyi Zhou (2018-19),
- Trevor Egan (2022),
- Matthew Enderle (2022),
- Michael Keeler (2023),
- Amy Eversole (2023, Nov–)

#### **Undergraduate Research:**

- Kris Horn (Summer 2003),
- Nathaniel Strawn (Spring 2005),
- Justin Falck (Spring 2007),
- William Linz (2013-2015),
- Yu Zheng (2016),
- Ziyi Zhou (2017-18)

## Postdoc Supervised

- Robert Ellis (2002–2005),
- Xinyu Sun (2004–2007)
- Eva Yuping Deng (2009–2010, visiting scholar)
- Niraj Khare (March 2013–August 2014, TAMU-Qatar)
- Salvadore Tringali (October 2014–October 2015, TAMU-Qatar)
- Yue Cai (September 2016–July 2019.)

## Services Conference Organized

One of the leading organizers and member of Steering Committee of CombinaTexas Conferences. 2000–present

Organizer of the Geller Undergraduate Lecture, Texas A&M University, 2019–present.

One of the five organizers of AMS Mathematics Research Communities 2024, the program on Algebraic Combinatorics. September, 2023–August, 2024.

SIAM Discrete Mathematics 2022 Organizing Committee, Fall 2021.

Co-organizer of Mini-symposium on New Trend in Enumerative Combinatorics, SIAM Conference in Discrete Mathematics, University of Colorado, Denver, Colorado, USA. June 4–8, 2018.

Program Committee, International Conference in Formal Power Series and Algebraic Combinatorics, 2009, 2014, 2021

Co-organizer of Special session on Geometric and Enumerative Combinatorics, AMS 2012 Spring Central Section Meeting, March 30–April 1, Lawrence, KS.

Member of Organizing Committee. 19th International Conference on Formal Power Series and Algebraic Combinatorics, July 2–6, 2007, Nankai University, Tianjin, China.

Lead Organizer. Special Session on Algebraic and Enumerative Combinatorics at joint AMS-MAA-SIAM national meeting, January 12–15, 2006, San Antonio, TX. Co-organizers: Marcelo Aguiar, Joseph Kung, and Laura Matusevich.

Organizer of the Algebra and Combinatorics Seminar, Academic year 2004, spring 2012–Fall 2013. Fall 2014–Fall 2016. Fall 2018–present

Organizer of Enumeration working seminar

## Journals Refereed

Advances in Applied Mathematics

Advances in Mathematics

American Mathematical Monthly

Annals of Combinatorics

Ars Combinatoria

Australasian Journal of Combinatorics

Discrete Applied Mathematics

Discrete and Computational Geometry

Discrete Mathematics

Discrete Mathematics, Algorithms and Applications

The Electronic Journal of Combinatorics

Enumerative Combinatorics and Applications  
European Journal of Combinatorics  
Frontier of Mathematics in China  
Geometric and Functional Analysis  
Graphs and Combinatorics  
International Journal of Mathematics and Mathematical Sciences  
Internet Mathematics  
Journal of Combinatorial Optimization  
Journal of Combinatorial Theory, Series A  
Journal of Combinatorics  
Journal of Graph Theory  
Order  
Pacific Journal of Mathematics  
Proceedings of American Mathematical Society  
Pure Mathematics and Applications  
Random Structures and Algorithms  
Rocky Mountain Journal of Mathematics  
Science China Mathematics  
Seminaire Lotharingien de Combinatoire  
SIAM Journal of Discrete Mathematics  
Studies in Applied Mathematics  
Reviewer for Mathematical Reviews  
Reviewed for NSF, NSA, FPSAC, and International Southeast Conference on Combinatorics, Graph Theory, and Computing  
Reviewed Book Proposals for Cambridge University Press

### Extra-University Activities

- Project leader in AMS Mathematics Research Communities: Algebraic Combinatorics, Java Center, NY. (September 2023– present).
- Project Leader in 2021 Research Community in Algebraic Combinatorics, ICERM (The Institute for Computational and Experimental Research in Mathematics), Brown University. May 2021– August 2024.
- Board Member and Treasurer of the Robert F. Smith Memorial Fund, (for Excellence of Mathematics in TAMU) (April 2017—present).
- AMS Centennial Fellowship Committee, July 1, 2020– June 30, 2022
- AMS Fan Fund Committee, (Feb 1, 2017 – Jan 31, 2020).
- AMS Contemporary Mathematics Editorial Committee, Feb 1, 2016– Jan 31, 2024.
- American Mathematical Society. Member of Large of the Council, elected, February 2005–January 2008.
- Member of AMS Committee on Conference and Meeting, February 2005–January 2008.
- Member, Subcommittee on International meetings, AMS, March 2006–present
- Member, Subcommittee on New Conference, AMS Committee on Conference and Meeting, April 2005–present
- AMS representative to Canada Mathematical Society, February 2007 –January, 2008.
- Invited speaker at the fall meeting of Texas Section Project NExT. Sam Houston State University, Huntsville, TX. September 2005.

## **Selected University and Department Activities**

- Disability Resources Liaison for Math department. April 2025–present.
- Director of Undergraduate Program, Department of Mathematics, September 2024–present
  - Undergraduate Instruction Committee, College of Arts and Sciences
  - Undergraduate Program Committee, Department of Mathematics
- TAMU-Galveston, Post Tenure Review Committee, 2020–2021.
- TAMU-Qatar Science Program, APT Searching Committee, April 2021–Summer 2022.
- (University) Goldwater Selection Committee, Year 2019 & 2020
- (University) Astronaut Scholarship Foundation Selection Committee, 2019 - 2021.
- (University) Office of Graduate and Professional Studies, Diversity Fellowships reviewer. 2015-2017.
- (College) Undergraduate Instructor Committee (2024– )
- Executive Committee, September 2008- August 2010. April 2021– 2023
- Associate Head for Undergraduate Programs (2024– )
- Award Committee, Fall 2015–2017.
- Graduate Student Committee, Fall 2014–Fall 2016
- Undergraduate Program Committee (2024– )
- Bei-Hang Exchange Student Supervising Committee; August 2014—2019. .
- Postdoc Committee, 2010–2012, 2017-2019, 2020–2022
- Promotion Subcommittee. 2006–2008, 2019–2021. 2023–2024.
- Tenure Subcommittee. 2003–2005, 2011-2013,
- Speakers Committee, Geller’s lecture, 2019–present.
- Math Department Head Search Advisory Committee, 2010. 2018.
- Endowed Chair Committee, 2008–2020.
- Math 302 Textbook Committee, Fall 2003.