

Curriculum Vitae

Chun-Hung Liu

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Appointments:

Sep 2023 – now	Associate Professor, Department of Mathematics, Texas A&M University.
Aug 2018 – Aug 2023	Assistant Professor, Department of Mathematics, Texas A&M University.
Jul 2018 – Aug 2018	Associate Research Scholar, Department of Mathematics, Princeton University.
Sep 2014 – Jun 2018	Instructor, Department of Mathematics, Princeton University.

Research Interests:

Graph theory, combinatorics, and algorithms.

Education:

Aug 2010 – Aug 2014	PhD program in Algorithms, Combinatorics, and Optimization, School of Mathematics, Georgia Institute of Technology, USA.
Sep 2007 – Jan 2009	M.S., Department of Mathematics, National Taiwan University, Taiwan (R.O.C.)
Sep 2003 – Jun 2007	B.S., Department of Mathematics, National Taiwan University, Taiwan (R.O.C.) (Minor: Department of Computer Science and Information Engineering, National Taiwan University, Taiwan (R.O.C.))

Grants:

- NSF grant DMS-2400268 (for the conference CombinaTexas 2024--2026), PI (with 3 other coPIs) (03/01/2024 – 02/28/2027).
- NSF grant DMS-2302139 (for the conference CombinaTexas 2023), coPI (04/01/2023 – 03/31/2024).
- NSF CAREER grant DMS-2144042 (07/01/2022 – 06/30/2027).
- NSF grant DMS-1954054 (07/01/2020 – 06/30/2024).
- T3: Texas A&M Triads for Transformation, project ID:1381, coPI (01/01/2020-12/31/2021).
- NSF grant DMS-1664593 (07/01/2017 – 05/31/2019) and DMS-1929851 (08/16/2018 – 06/30/2021). (07/01/2017 - 06/30/2021)

Academic Honors:

- NSF CAREER Award (2022)
- ACO Outstanding Student Prize, Georgia Tech (2018)
- AMS Simons Travel Grant (2015-2017)
- Best PhD Thesis Award, School of Mathematics, Georgia Tech (2015)
- Honorable Mention for New World Mathematics Awards (2014)
- Bob Price Travel Fellowships, Georgia Tech (2013, 2014)
- Anne Robinson Clough Conference Grant, Georgia Tech (2012, 2013)
- Georgia Tech Algorithms & Randomness Center Student Fellowship (2011, 2013)
- Top Graduate Student Award of School of Mathematics of Georgia Institute of Technology (2012)
- Master's Thesis Award of The Mathematical Society of the Republic of China (2009)
- Honored member of The Phi Tau Phi Scholastic Honor Society of the Republic of China
- National Taiwan University Dean's Award for M.S. degree (2009)
- National Taiwan University Dean's Award for B.S. degree (2007)
- National Taiwan University Presidential Award (5 times, 2003-2007)

Publications:

1. *Bounds on treewidth via excluding disjoint unions of cycles* (with M. Hatzel, B. Reed and S. Wiederrecht), (submitted), arXiv:2501.01703.
2. *Product structure and tree-decompositions* (with S. Norin and D. R. Wood), (submitted), arXiv:2410.20333.

3. *Quasi-tree-partitions of graphs with an excluded subgraph* (with D. R. Wood), (submitted), arXiv:2408.00983.
4. *Tight minimum degree conditions for apex-outerplanar minors and subdivisions in graphs and digraphs* (with Y. Yoo), (submitted), arXiv:2403.11470.
5. *Peaceful colourings* (with B. Reed), (submitted), arXiv:2402.09762.
6. *Homomorphism counts in robustly sparse graphs*, (submitted), arXiv:2107.00874.
7. *Robertson's conjecture I. Well-quasi-ordering bounded tree-width graphs by the topological minor relation* (with R. Thomas), (submitted), arXiv:2006.00192.
8. *Clustered coloring of graphs excluding a subgraph and a minor* (with D. R. Wood), (submitted), arXiv:1905.09495.
9. *Clustered graph coloring and layered treewidth* (with D. R. Wood), (submitted), arXiv:1905.08969.
10. *Disjoint Path Problems with group-expressible constraints* (with Y. Yoo), Proceedings of the 57th Annual ACM Symposium on Theory of Computing (STOC '25), (accepted).
11. *Weak diameter choosability of graphs with an excluded minor* (with J. Crouch), J. Combin. Theory Ser. B 174 (2025), pp. 28-70.
12. *Asymptotically optimal proper conflict-free colouring* (with B. Reed), Random Structures Algorithms 66 (2025), e21285.
13. *Assouad-Nagata dimension of minor-closed metrics*, Proc. London Math. Soc. 130 (2025), e70032.
14. *Proper conflict-free coloring of graphs with large maximum degree* (with D. W. Cranston), SIAM J. Discrete Math. 38 (2024), pp. 3004-3027.
15. *Clustered coloring of graphs with bounded layered treewidth and bounded degree* (with D. R. Wood), European J. Combin. 122 (2024), 103730.
16. *Asymptotic dimension of minor-closed families and Assouad-Nagata dimension of surfaces* (with M. Bonamy, N. Bousquet, L. Esperet, C. Groenland, F. Pirot and A. Scott), J. Eur. Math. Soc. (JEMS) 26 (2024), pp. 3739-3791.
17. *Defective coloring is perfect for minors*, Combinatorica 44 (2024), pp. 467-507.
18. *Proper conflict-free list-coloring, odd minors, subdivisions, and layered treewidth*, Discrete Math. 347 (2024), 113668.
19. *Phase transition of degeneracy in minor-closed families* (with F. Wei), Adv. Appl. Math. 146 (2023), 102489.
20. *Well-quasi-ordering digraphs with no long alternating paths by the strong immersion relation* (with I. Muzi), J. Combin. Theory Ser. B 158 (2023), pp. 210-251.
21. *Immersion and clustered coloring*, J. Combin. Theory Ser. B 158 (2023), pp. 252-282.
22. *Packing topological minors half-integrally*, J. Lond. Math. Soc. 106 (2022), pp.

- 2193-2267.
23. *Legacy of Robin Thomas*, Notices Amer. Math. Soc. 69 (2022), pp. 966-977.
 24. *A unified proof of conjectures on cycle lengths in graphs* (with J. Gao, Q. Huo, and J. Ma), Int. Math. Res. Not. 2022 (2022), pp. 7615-7653.
 25. *A global decomposition theorem for excluding immersions in graphs with no edge-cut of order three*, J. Combin. Theory Ser. B 154 (2022), pp. 292-335.
 26. *Clustered variants of Hajos' conjecture* (with D. R. Wood), J. Combin. Theory Ser. B 152 (2022), pp. 27-54.
 27. *Packing and covering immersions in 4-edge-connected graphs*, J. Combin. Theory Ser. B 151 (2021), pp. 148-222.
 28. *Asymptotic dimension of minor-closed families and beyond*, Proceedings of the 2021 ACM-SIAM Symposium on Discrete Algorithms (SODA), (2021), pp. 1997-2013. arXiv:2007.08771.
 29. *Notes on graph product structure theory* (with Z. Dvorak, T. Huynh, G. Joret and D. R. Wood), 2019-20 MATRIX Annals (2021), pp. 513-533.
 30. *Recent progress on well-quasi-ordering graphs*, Well-Quasi Orders in Computation, Logic, Language and Reasoning. Trends in Logic (Studia Logica Library) 53 (2020), pp. 161-188.
 31. *Triangle-free graphs that do not contain an induced subdivision of K_4 are 3-colorable* (with M. Chudnovsky, O. Schaudt, S. Spirkl, N. Trotignon and K. Vuskovic), J. Graph Theory 92 (2019), pp. 67-95.
 32. *Excluding subdivisions of bounded degree graphs* (with R. Thomas), J. Combin. Theory Ser. B 134 (2019), pp. 1-35.
 33. *Size of the largest induced forest in subcubic graphs of girth at least four and five* (with T. Kelly), J. Graph Theory 89 (2018), pp. 457-478.
 34. *Characterization of cycle obstruction sets for improper coloring planar graphs* (with I. Choi and S. Oum), SIAM J. Discrete Math. 32 (2018), pp. 1209-1228.
 35. *Domination in tournaments* (with M. Chudnovsky, R. Kim, P. Seymour and S. Thomasse), J. Combin. Theory Ser. B 130 (2018), pp. 98-113.
 36. *Partitioning H -minor free graphs into three subgraphs with no large components* (with S. Oum), J. Combin. Theory Ser. B 128 (2018), pp. 114-133.
 37. *Cycle lengths and minimum degree of graphs* (with J. Ma), J. Combin. Theory Ser. B 128 (2018), pp. 66-95.
 38. *On the minimum edge-density of 4-critical graphs of girth five* (with L. Postle), J. Graph Theory 86 (2017), pp. 387-405.
 39. *Minimum size of feedback vertex sets of planar graphs of girth at least five* (with T. Kelly), European J. Combin. 61 (2017), pp. 138-150.
 40. *Edge Roman domination on graphs* (with G. J. Chang and S.-H. Chen), Graphs Combin. 32 (2016), pp. 1731-1747.

41. *Deploying robots with two sensors in $K_{\{1,6\}}$ -free graphs* (with W. Abbas, M. Egerstedt, R. Thomas and P. Whalen), *J. Graph Theory* 82 (2016), pp. 236-252.
42. *An upper bound on the fractional chromatic number of triangle-free subcubic graphs*, *SIAM J. Discrete Math.* 28 (2014), pp. 1102-1136.
43. *Linear colorings of subcubic graphs* (with G. Yu), *European J. Combin.* 34 (2013), pp. 1040-1050.
44. *A new bound for the 2/3 conjecture* (with D. Král', J.-S. Sereni, P. Whalen and Z. Yilma), *Combin. Probab. Comput.* 22 (2013), pp. 384-393.
45. *Roman domination on strongly chordal graphs* (with G. J. Chang), *J. Comb. Optim.* 26 (2013), pp. 608-619.
46. *Trees with strong equality between the Roman domination number and the unique response Roman domination number* (with N. Jafari Rad), *Australas. J. Combin.* 54 (2012), pp. 133-140.
47. *Upper bounds on Roman domination numbers of graphs* (with G. J. Chang), *Discrete Math.* 312 (2012), pp. 1386-1391.
48. *Roman domination on 2-connected graphs* (with G. J. Chang), *SIAM J. Discrete Math.* 26 (2012), pp. 193-205.
49. *Well-quasi-ordering graphs by the topological minor relation: Robertson's conjecture II-IV* (with R. Thomas), manuscript, 2014.
50. *Erdos-Posa property for topological minors* (with L. Postle and P. Wollan), manuscript, 2015.

Conference presentations:

1. *Roman domination on strongly chordal graphs*, High School Mathematics Research Conference at Texas A&M (College Station, USA, May 2025). **(Invited talk.)**
2. *Excluding an apex-tree minor H makes treewidth linear in H* , 2025 Barbados Graph Theory Workshop (Holetown, Barbados, March 2025).
3. *Disjoint paths problem with group-expressible constraints*, AMS Spring Southeastern Sectional Meeting (Clemson, USA, March 2025). **(Invited special session talk.)**
4. *Disjoint paths problem with group-expressible constraints*, Oberwolfach Graph Theory Workshop (Oberwolfach, Germany, January 2025).
5. *Defective coloring is perfect for minors*, AMS Fall Southeastern Sectional Meeting (Savannah, October 2024). **(Invited special section talk.)** (Conference was cancelled by the organizers due to severe weather.)
6. *Weak diameter list-coloring for minor-closed families*, New Perspectives in Colouring and Structure (Banff, Canada, October 2024).

7. *Weak diameter list-coloring of graphs with an excluded minor*, AMS Fall Central Sectional Meeting (San Antonio, USA, September 2024). (**Special section co-organizer and speaker.**)
8. *Weak diameter choosability of graphs with an excluded minor*, SIAM Conference on Discrete Mathematics (Spokane, USA, July 2024). (**Mini-symposium co-organizer and speaker.**)
9. *Proper conflict-free coloring and maximum degree*, NCTS One-day Combinatorics Workshop (Taipei, Taiwan, July 2023). (**Invited talk.**)
10. *Coloring minor-closed families coarsely*, 2023 International Conference on Graph Theory and Combinatorics & Twelfth Cross-strait Conference on Graph Theory and Combinatorics, (Hualien, Taiwan, July 2023). (**Plenary talk.**)
11. *Minor-closed families are defectively perfect*, Canadian Discrete and Algorithmic Mathematics (CanaDAM 2023), (Winnipeg, Canada, June 2023). (**Invited mini-symposium talk.**)
12. *Improper coloring of minor-closed families*, MATRIX-IBS Workshop: Structural Graph Theory Downunder III (Creswick, Australia, April 2023).
13. *Proper conflict-free coloring of graphs with bounded maximum degree*, 2023 AMS Spring Southeastern Sectional Meeting (Atlanta, USA, March 2023). (**Invited special session talk.**)
14. *Proof of the minor characterization for defective colouring*, Second 2022 Barbados Graph Theory Workshop (Holetown, Barbados, December 2022).
15. *Homomorphism counts in robustly sparse graphs*, Workshop on Graph Theory and Combinatorics in Memory of Robin Thomas (Atlanta, USA, August 2022). (**Invited talk.**)
16. *Minor-closed families are perfect for defective coloring*, 8th Czech-Slovak International Symposium on Graph Theory, Combinatorics, Algorithms and Applications (July 2022, (remotely)). (**Invited special session talk.**)
17. *Homomorphism counts in robustly sparse graphs*, Oberwolfach Workshop on Graph Theory (January 2022, (remotely)).
18. *Weak diameter coloring of minor-closed families in large scale*, New Perspectives in Colouring and Structure (October 2021, (remotely)).
19. *Excluding immersions in graphs with no 3-edge-cut*, SIAM Conference on Discrete Mathematics (July 2021, (remotely)). (**Mini-symposium co-organizer and speaker.**)
20. *Asymptotic dimension of minor-closed families and beyond*, Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM) 2021 (May 2021, (remotely)). (**Invited mini-symposium talk.**)
21. *Clustered coloring for Hadwiger-type conjectures*, CombinaTexas 2021 (February 2021, (remotely)). (**Invited plenary talk.**)

22. *Asymptotic dimension of minor-closed families and beyond*, ACM-SIAM Symposium on Discrete Algorithms (SODA21) (January 2021, (remotely)).
23. *Asymptotic dimension of minor-closed families and beyond*, 3rd Annual Meeting of the SIAM Texas-Louisiana Section (October 2020, (remotely)).
(Mini-symposium organizer and speaker.)
24. *Asymptotic dimension of minor-closed families and beyond*, AMS Fall Southeastern Sectional Meeting (October 2020, (remotely)). **(Invited mini-symposium talk.)**
25. *Immersion and clustered coloring*, AMS Fall Southeastern Sectional Meeting (October 2020, (remotely)). **(Invited mini-symposium talk.)**
26. *Clustered colouring and immersion*, New Perspectives in Colouring and Structure (Banff, Canada, March 2020, (remotely)).
27. *Clustered coloring for Hadwiger-type conjectures*, Structural Graph Theory Downunder (Creswick, Australia, December 2019).
28. *Minimum degree, connectivity, chromatic number and cycle lengths in graphs*, The 9th Workshop on Graph Classes, Optimization, and Width Parameters (GROW 2019) (Vienna, Austria, September 2019).
29. *Clustered coloring for old graph coloring conjectures*, 2019 International Conference on Graph Theory and Combinatorics & Tenth Cross-strait Conference on Graph Theory and Combinatorics (Taichung, Taiwan, August 2019). **(Invited plenary talk.)**
30. *Clustered coloring on old graph coloring conjectures*, The 8th International Congress of Chinese Mathematicians (ICCM 2019) (Beijing, China, June 2019). **(Invited 45-minute speaker.)**
31. *Threshold probability for destroying large minimum degree subgraphs of an H -minor free graph*, CanaDAM 2019 (Vancouver, Canada, May 2019). **(Invited mini-symposium talk.)**
32. *Killing subgraphs of large minimum degree in H -minor free graphs randomly*, CombinaTexas (College Station, USA, March 2019).
33. *Clustered coloring on old graph coloring conjectures*, Oberwolfach Workshop on Graph Theory (Oberwolfach, Germany, January 2019).
34. *Packing topological minors half-integrally*, AMS Fall Eastern Sectional Meeting (Newark, USA, September 2018). **(Invited special session talk.)**
35. *Clustered coloring, Hajos' conjecture and Gerards-Seymour conjecture*, SIAM Conference on Discrete Mathematics (Denver, USA, June 2018). **(Invited mini-symposium talk.)**
36. *Clustered coloring*, 2018 Barbados Graph Theory Workshop (Holetown, Barbados, April 2018).
37. *Packing topological minors half-integrally*, AMS Spring Southeastern Sectional

- Meeting (Nashville, April 2018). (**Invited special session talk.**)
38. *Clustered coloring and conjectures of Hajos, Gerards and Seymour*, Rio Workshop on Extremal and Structural Combinatorics (Rio de Janeiro, Brazil, January 2018). (**Invited talk.**)
 39. *Half-integrally packing topological minors*, The Ninth Cross-strait Conference on Graph Theory and Combinatorics (Fuzhou, China, November 2017). (**Invited talk.**)
 40. *Half-integral Erdos-Posa property for topological minors*, Workshop on Graph Classes, Optimization, and Width Parameters (Toronto, Canada, October 2017).
 41. *Packing topological minors half-integrally*, Geometric and Structural Graph Theory (Banff, Canada, August 2017).
 42. *Packing topological minors half-integrally*, Structure in Graphs and Matroids (SiGMa) (Waterloo, Canada, July 2017).
 43. *Half-integrally packing topological minors*, CanaDAM (Toronto, Canada, June 2017) (**Invited mini-symposium talk.**)
 44. *Packing and covering immersions in 4-edge-connected graphs*, AMS Spring Southeastern Sectional Meeting (Charleston, USA, March 2017) (**Invited special session talk.**)
 45. *The Erdos-Posa property*, 25th Anniversary Conference of the ACO program (Atlanta, USA, January 2017) (**Invited talk.**)
 46. *Characterizations of minimal cycle obstruction sets for balanced and unbalanced partitionable planar graphs*, New Trends in Graph Coloring (Banff, Canada, October 2016)
 47. *Well-quasi-ordering by the topological minor relation*, Symposium for young combinatorialists (Taichung, Taiwan, August 2016) (**Invited talk.**)
 48. *Packing and covering immersions in 4-edge-connected graphs*, SIAM Conference on Discrete Mathematics (Atlanta, USA, June 2016) (**Invited mini-symposium talk.**)
 49. *Cycle lengths in graphs with large minimum degree*, 2016 Barbados Graph Theory Workshop (Holetown, Barbados, March 2016)
 50. *Robertson's conjecture on well-quasi-ordering and topological minors*, Dagstuhl Seminar on Well Quasi-Orders in Computer Science (Dagstuhl, Germany, January 2016)
 51. *Packing and covering immersions in 4-edge-connected graphs*, Oberwolfach Workshop on Graph Theory (Oberwolfach, Germany, January 2016)
 52. *Minimum degree and lengths of cycles*, 2015 CMS Winter Meeting (Montreal, Canada, December 2015) (**Invited session talk.**)
 53. *Forcing existence of cycles by small minimum degree*, Atlanta Lecture Series XVI (Atlanta, November 2015) (**Invited talk.**)
 54. *Partitioning H -minor free graphs into three subsets with no large components*,

- European Conference on Combinatorics, Graph Theory and Applications (EUROCOMB) (Bergen, Norway, August 2015)
55. *Minimum degree and cycles of specific lengths*, The 8th International Congress on Industrial and Applied Mathematics (ICIAM) (Beijing, China, August 2015) **(Invited mini-symposium talk.)**
 56. *Erdos-Posa property for topological minors*, 2015 International Conference on Graph Theory and Combinatorics & Eighth Cross-Strait Conference on Graph Theory and Combinatorics (Kaohsiung, Taiwan, June 2015)
 57. *Minimum degree and length of cycles*, Connections in Discrete Mathematics (Burnaby, Canada, June 2015)
 58. *Erdos-Posa property for topological minors*, CanaDAM 2015 (Saskatoon, Canada, June 2015) **(Invited mini-symposium talk.)**
 59. *Partitioning H -minor free graphs into three subgraphs with no large components*, AMS Spring Western Sectional Meeting (Las Vegas, USA, April, 2015) **(Invited session talk.)**
 60. *Colouring so that monochromatic components have bounded size*, 2015 Barbados Graph Theory Workshop (Holetown, Barbados, March, 2015)
 61. *Erdos-Posa property for topological minors*, International Workshop on Graph Decomposition (Marseille, France, January, 2015)
 62. *Well-quasi-ordering graphs by the topological minor relation*, ICM2014 Satellite Conference on Extremal and Structural Graph Theory (Gyeongju, Korea, August, 2014)
 63. *Well-quasi-ordering graphs by the topological minor relation*, 9th International Colloquium on Graph Theory and Combinatorics (Grenoble, France, June, 2014)
 64. *Well-quasi-ordering graphs by the topological minor relation*, SIAM Conference on Discrete Mathematics (Minneapolis, USA, June, 2014) **(Invited mini-symposium talk.)**
 65. *Structure of graphs with no H -subdivision*, 2014 Barbados Workshop on Structural Graph Theory (Holetown, Barbados, March, 2014)
 66. *Well-quasi-ordering graphs by the topological minor relation*, 45th Southeastern International Conference on Combinatorics, Graph Theory, and Computing (Boca Raton, USA, March, 2014)
 67. *Well-quasi-ordering graphs by the topological minor relation: Robertson's conjecture*, Bertinoro Workshop on Algorithms and Graphs (Bertinoro, Italy, December, 2013)
 68. *Structure theorems and well-quasi-ordering*, 6th workshop on Graph Classes, Optimization, and Width Parameters (Santorini Island, Greece, October, 2013)
 69. *Structure theorems and well-quasi-ordering*, Geometric and Topological Graph Theory (Banff, Canada, September, 2013)

70. *Linear colorings of subcubic graphs*, Atlanta Lecture Series in Combinatorics and Graph Theory VIII (Atlanta, USA, February, 2013) **(Invited talk.)**
71. *Linear colorings of subcubic graphs*, Bordeaux Graph Workshop (Bordeaux, France, November, 2012)
72. *The fractional chromatic number of K_3 -free subcubic graphs*, The Third Workshop on Graphs and Matroids (Maastricht, The Netherlands, July, 2012)
73. *An upper bound on the fractional chromatic number of triangle-free subcubic graphs*, Graph Theory @ Georgia Tech – Conference Honoring the 50th Birthday of Robin Thomas (Atlanta, USA, May, 2012) **(Invited talk.)**
74. *$(5,2)$ -configuration on minimum degree at least two $K_{\{1,6\}}$ -free graphs*, 36th SIAM Southeastern Atlantic Section Conference (Huntsville, USA, March, 2012) **(Invited mini-symposium talk.)**

Invited Seminar presentations:

1. *Weak diameter choosability of graphs with an excluded minor*, Algebra and Combinatorics Seminar, Texas A&M University, USA (February 2025).
2. *Disjoint Paths Problem with group-expressible constraints*, Graph Theory Seminar, Georgia Institute of Technology, USA (December 2024).
3. *Disjoint Paths Problem with group-expressible constraints*, Algebra and Combinatorics Seminar, Texas A&M University, USA (November 2024).
4. *Asymptotically optimal proper conflict-free coloring of bounded maximum degree graphs*, Algebra and Combinatorics Seminar, Texas A&M University, USA (April 2024).
5. *Assouad-Nagata dimension of minor-closed metrics*, Combinatorics Seminar, Louisiana State University, USA (January 2024).
6. *Assouad-Nagata dimension of minor-closed metrics*, Seminar on Combinatorics, Academia Sinica, Taiwan (December 2023).
7. *Assouad-Nagata dimension of minor-closed metrics*, Combinatorics Seminar, Duke University, USA (November 2023).
8. *Assouad-Nagata dimension of minor-closed metrics*, Algebra and Combinatorics Seminar, Texas A&M University, USA (October 2023).
9. *Proper conflict-free coloring and maximum degree*, Colloquium, National Chung Hsing University, Taiwan (June 2023).
10. *Proper conflict-free coloring and maximum degree*, Algebra and Combinatorics Seminar, Texas A&M University, USA (March 2023).
11. *Homomorphism counts in robustly sparse graphs*, Korea-Taiwan-Vietnam Joint Seminar in Combinatorics and Analysis, (remotely) (February 2023).
12. *Coarse graph colorings on minor-closed families*, Promotion Talk, Texas A&M

- University, USA (August 2022).
13. *Homomorphism counts in robustly sparse graphs*, Colloquium, Academia Sinica, Taiwan (July 2022).
 14. *A decomposition theorem for immersion-free graphs with no 3-edge-cut*, Algebra and Combinatorics Seminar, Texas A&M University, USA (April 2022).
 15. *Homomorphism counts in robustly sparse graphs*, Graphs and Matroids Seminar, the Matroid Union (remotely) (February 2022)
 16. *Homomorphism counts in robustly sparse graphs*, Algebra and Combinatorics Seminar, Texas A&M University, USA (September 2021).
 17. *Well-quasi-ordering digraphs by the strong immersion relation*, Discrete Mathematics Seminar, Illinois State University, USA (remotely) (March 2021).
 18. *Well-quasi-ordering digraphs by the strong immersion relation*, Algebra and Combinatorics Seminar, Texas A&M University, USA (remotely) (March 2021).
 19. *Asymptotic dimension of minor-closed families, and beyond*, Combinatorics Seminar, University of Bristol, United Kingdom (remotely) (February 2021).
 20. *Well-quasi-ordering digraphs by the strong immersion relation*, AGCO Seminar, Chile (remotely) (December 2020).
 21. *Asymptotic dimension of minor-closed families and beyond*, Graph Theory Seminar, Georgia Tech, USA (remotely) (December 2020).
 22. *Clustered coloring for Hadwiger type problems*, SCMS Combinatorics Seminar, Shanghai Center for Mathematical Science, China (remotely) (November, 2020).
 23. *Asymptotic dimension of minor-closed families and beyond*, Virtual Discrete Math Colloquium, Institute of Basic Science (IBS), South Korea (remotely) (October 2020).
 24. *Asymptotic dimension of minor-closed families and beyond*, Algebra and Combinatorics Seminar, Texas A&M University, USA (remotely) (September, 2020).
 25. *Clustered coloring for Hadwiger-type conjectures*, UCSD Combinatorics Seminar, UC San Diego, USA (February, 2020).
 26. *Well-quasi-ordering graphs by the topological minor relation*, Algebra and Combinatorics Seminar, Texas A&M University, USA (February, 2020).
 27. *Length of cycles in non-sparse graphs*, Algebra and Combinatorics Seminar, Texas A&M University, USA (October, 2019).
 28. *Cycle lengths, minimum degree, connectivity and chromatic number*, Seminar on Combinatorics, Academia Sinica, Taiwan (August, 2019)
 29. *Clustered coloring for old graph coloring conjectures*, Discrete Mathematics Seminar, Iowa State University, USA (May, 2019)
 30. *The Erdos-Posa property*, Seminar on Combinatorics, Academia Sinica, Taiwan (December, 2018)

31. *The Erdos-Posa property*, Mathematics & COMS Joint Colloquium, Middle Tennessee State University, USA (November, 2018)
32. *Graph minors and topological minors*, NTU Math Seminar, National Taiwan University, Taiwan (February, 2018)
33. *Graph minors and topological minors*, Colloquium, Louisiana State University, USA (February, 2018)
34. *Graph minors and topological minors*, Hiring Candidate, Texas A&M University, USA (January, 2018)
35. *Graph minors and topological minors*, Department Colloquium, University of Mississippi, USA (January, 2018)
36. *Graph minors and topological minors*, Department of Mathematics Colloquium, UC San Diego, USA (January, 2018)
37. *Packing and covering in graphs*, Seminar, National Sun Yat-sen University, Taiwan (October, 2017)
38. *The Erdos-Posa property*, Rutgers Discrete Mathematics Seminar, Rutgers University, USA (October, 2017)
39. *The Erdos-Posa property*, Seminar, National Sun Yat-sen University, Taiwan (August, 2017)
40. *The Erdos-Posa property*, ACO seminar, Carnegie Mellon University, USA (April, 2017)
41. *Packing and covering in graphs*, Undergraduate Colloquium, Princeton University, USA (April, 2017)
42. *Well-quasi-ordering graphs by the topological minor relation*, MIT Combinatorics Seminar, MIT, USA (December, 2016)
43. *Domination in tournaments*, Graph Theory Seminar, Georgia Tech, USA (November, 2016)
44. *Partitioning graphs in proper minor-closed families into three graphs with no large components*, Seminar on Combinatorics, Institute of Mathematics, Academia Sinica, Taiwan (July, 2016)
45. *Feedback vertex sets in graphs*, Seminar, Huazhong Normal University, China (July, 2016)
46. *Well-quasi-ordering graphs*, Undergraduate Colloquium, Princeton University, USA (February, 2016)
47. *3-coloring H -minor-free graphs with no large monochromatic components*, ACO Student Seminar, Georgia Tech, USA (September, 2015)
48. *Packing and covering topological minors and immersions*, Graph Theory Seminar, Georgia Tech, USA (September, 2015)
49. *Partitioning H -minor-free graphs into three subgraphs with no large components*, Georgia State University, USA (September, 2015)
50. *3-coloring H -minor-free graphs with no large monochromatic components*,

- University of Science and Technology of China, China (August, 2015)
51. Partitioning H -minor-free graphs into three subgraphs with no large components, Nanjing Normal University, China (August, 2015)
 52. *3-coloring H -minor-free graphs with no large monochromatic components*, Shanghai Jiao Tong University, China (August, 2015)
 53. *Graph structures and well-quasi-ordering*, Combinatorics Seminar, National Central University, Taiwan (July, 2015)
 54. *Minimum degree and length of cycles*, Seminar in Combinatorics, Institute of Academia Sinica, Taiwan (July, 2015)
 55. *Packing, covering, and the Erdos-Posa property*, Undergraduate Colloquium, Princeton University (March, 2015)
 56. *Well-quasi-ordering by the topological minor relation*, Colloquium in Department of Mathematics, University of Central Florida, USA (November, 2014)
 57. *Excluding topological minors and well-quasi-ordering*, Princeton Discrete Math Seminar, Princeton University, USA (September, 2014)
 58. *Excluding topological minors and well-quasi-ordering*, Columbia Discrete Math Seminar, Columbia University, USA (September, 2014)
 59. *Graph structures and well-quasi-ordering*, Graph Theory Seminar, Georgia Tech, USA (August, 2014)
 60. *Graph structures and well-quasi-ordering*, KAIST Discrete Math Seminar, KAIST, Korea (July, 2014)
 61. *Well-quasi-ordering on graphs*, NTU/NCTS Seminar of Discrete Mathematics, National Taiwan University, Taiwan (July, 2014)
 62. *Graph structures and well-quasi-ordering*, Seminar in Combinatorics, Institute of Academia Sinica, Taiwan (July, 2014)
 63. *(5,2)-configuration in $K_{\{1,6\}}$ -free graphs*, Graph Theory Seminar, Georgia Tech, USA (February, 2013)
 64. *Linear colorings of subcubic graphs*, ACO Student Seminar, Georgia Tech, USA (September, 2012)
 65. *Roman domination on 2-connected graphs*, CSUMS Seminar, The College of William and Mary, USA (June, 2012)
 66. *Roman domination on 2-connected graphs*, Graph Theory Seminar, Georgia Tech, USA (April, 2011)

Students and Postdocs Mentoring:

- Students advised at Texas A&M University:
 - PhD students:

- ◆ Joshua Crouch, on leave.
- Master students:
 - ◆ Huy Bui, 2019. (Oral exam only, no thesis.)
 - ◆ Alexander Koutsoutis, in progress
- Postdocs advised at Texas A&M University:
 - Youngho Yoo, 2022-now.
- Independent work advised at Princeton University:
 - Senior thesis students:
 - ◆ Thomas Kelly, 2014-2015.
Thesis title: *Large induced forests in subcubic graphs.*
 - ◆ Andrew Tao, 2016-2017.
Thesis title: *(1,k)-choosability of graphs with edge lists containing arithmetic progressions.*
 - ◆ Iden Kalemaj, 2017-2018
Thesis title: *Feedback vertex sets and cycle packings in planar subcubic graphs.*
 - Junior paper student:
 - ◆ Heather Newman, 2018
Paper title: A survey of vertex and edge betweenness centrality.

Teaching Experience:

- Course instructor at Texas A&M University:
 - MATH 470, Communications and Cryptography, Sections 201 (stacked honors section), 501, Spring 2025.
 - MATH 470, Communications and Cryptography, Sections 205 (stacked honors section), 501, 502, Fall 2024.
 - MATH 662, Seminar in Algebra: Advanced Graph Theory, Section 603, Spring 2024.
 - MATH 613, Graph Theory, Section 600, Fall 2023.
 - MATH 662, Seminar in Algebra: Graph Algorithms, Section 602, Spring 2023.
 - MATH 470, Communications and Cryptography, Section 502, Fall 2022.
 - MATH 689, Special Topics in Graph Coloring, Section 605, Spring 2022.
 - MATH 613, Graph Theory, Section 600, Fall 2021.
 - MATH 304, Linear Algebra, Sections 200 (stacked honor section), 501, 502, Spring 2021.
 - MATH 302, Discrete Mathematics, Section 501, Fall 2020.
 - MATH 689, Special Topics in Advanced Graph Theory, Section 600, Spring

2020.

- MATH 613, Graph Theory, Section 600, Fall 2019.
- MATH 302, Discrete Mathematics, Section 502, Spring 2019.
- MATH 302, Discrete Mathematics, Section 501, Fall 2018.
- Course instructor at Princeton University:
 - MAT 104, Calculus II, Sections C03A and C04, Spring 2018.
 - MAT 377, Combinatorial Mathematics, Fall 2017.
 - MAT 104, Calculus II, Sections C02 and C03A, Spring 2017.
 - MAT 377, Combinatorial Mathematics, Fall 2016.
 - MAT 202, Linear Algebra with Applications, Sections C03A and C04A, Spring 2016.
 - MAT 377, Combinatorial Mathematics, Fall 2015.
 - MAT 378, Theory of Games, Spring 2015.
 - MAT 104, Calculus II, Sections C03A and C04A, Fall 2014.
- Teaching Assistant at Georgia Institute of Technology:
 - MATH 2602, Linear and Discrete Mathematics, Spring 2012 (2 sections), Fall 2013 (2 sections).
 - MATH 2401, Calculus II, Fall 2010.
- Research assistant:
 - Research in Graph Theory under the direction of Prof. Robin Thomas, supported by the National Science of Foundation, Spring 2011, Summer 2011, Fall 2011, Summer 2012, Fall 2012, Spring 2013, Summer 2013, Spring 2014, Summer 2014.
- Teaching Assistant at National Taiwan University:
 - MATH 1402, Computer Programming, Fall 2008 (97-1), 55 students.
 - MATH 1203, Calculus (General Mathematics) (B) (1), Fall 2008 (97-1), 100 students.
 - MATH 5402, Introduction to Computational Linear Algebra, Spring 2008 (96-2), 50 students.
 - MATH 1202, Calculus (General Mathematics) (A) (2), Spring 2008 (96-2), 70 students.
 - MATH 1201, Calculus (General Mathematics) (A) (1), Fall 2007 (96-1), 70 students.
 - MATH 5407, Introduction to Computational Mathematics, Fall 2007 (96-1), 50 students.

Academic service:

- Leadership in professional organization:

- Program Director, SIAM Activity Group on Discrete Mathematics, 2025-now.
- Associate editor for:
 - Taiwanese Journal of Mathematics, 2023-now.
- Referee for journals in mathematics and computer science:
 - ACM Transactions on Algorithms.
 - Advances in Applied Mathematics.
 - Advances in Combinatorics.
 - Algorithmica.
 - Australasian Journal of Combinatorics.
 - Canadian Journal of Mathematics.
 - Combinatorial Theory.
 - Combinatorica.
 - Combinatorics, Probability and Computing.
 - Discrete Applied Mathematics.
 - Discrete & Computational Geometry.
 - Discrete Mathematics.
 - Discrete Mathematics, Algorithms and Applications.
 - Discrete Mathematics & Theoretical Computer Science.
 - Electronic Journal of Combinatorics.
 - European Journal of Combinatorics.
 - Graphs and Combinatorics.
 - Information Processing Letters.
 - Journal of Combinatorial Optimization.
 - Journal of Combinatorial Theory, Series B.
 - Journal of Combinatorics.
 - Journal of Graph Theory.
 - Journal of Supercomputing.
 - Journal of the London Mathematical Society.
 - Order.
 - Proceedings of the American Mathematical Society. (quick opinion)
 - Proceedings of the London Mathematical Society. (quick opinion)
 - SIAM Journal on Computing.
 - SIAM Journal on Discrete Mathematics.
 - Theoretical Computer Science.
- Referee for conferences in computer science:
 - ACM Symposium on Theory of Computing (STOC).
 - ACM-SIAM Symposium on Discrete Algorithms (SODA).
 - EATCS International Colloquium on Automata, Languages and Programming

(ICALP).

- European Symposium on Algorithms (ESA).
- IEEE Symposium on Foundation of Computer Science (FOCS).
- International Symposium on Computational Geometry (SoCG).
- International Workshop on Graph-Theoretic Concepts in Computer Science (WG).

- Symposium on Theoretical Aspects of Computer Science (STACS)
- Reviewer for proposals for research grants or workshops for funding agencies in multiple countries.
- Reviewer for books or book proposals for:
 - Cambridge University Press.
 - Elsevier.
 - Springer-Verlag Heidelberg.
- Scientific committee/organizer of conferences:
 - (Invited organizer of an invited minisymposium), Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM 2025), May 2025.
 - (Co-organizer and scientific committee), CombinaTexas 2025, April 2025.
 - (Co-organizer of a special session), AMS Fall Central Sectional Meeting, September 2024.
 - (Co-organizer of a minisymposium), SIAM Conference on Discrete Mathematics (DM24), July 2024.
 - (Co-organizer and scientific committee), CombinaTexas 2024, March 2024.
 - (Co-organizer), CombinaTexas 2023, April 2023.
 - (Scientific committee), Workshop on Graph Theory and Combinatorics in Memory of Robin Thomas, August 2022.
 - (Co-organizer), CombinaTexas 2022, March 2022.
 - (Co-organizer of a minisymposium), SIAM Conference on Discrete Mathematics (DM21), July 2021.
 - (Organizer of a minisymposium), 3rd Annual Meeting of the SIAM Texas-Louisiana Section, October 2020.
 - (Organizer of a minisymposium), SIAM Conference on Discrete Mathematics (DM20), June 2020 (cancelled due to pandemic).
 - (Scientific committee), X Latin and American Algorithms, Graphs and Optimization Symposium (LAGOS 2019).
- Co-organizer of seminars:
 - Algebra and Combinatorics Seminar, Texas A&M University: Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024, Spring 2025.
 - Princeton Discrete Math Seminar, Princeton University: Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring

2018.

- ACO student seminar, Georgia Institute of Technology: Fall 2012, Spring 2013, Fall 2013.
- Thesis committee member for:
 - 2 PhD students in Department of Mathematics at Texas A&M University, current. (Committee member.)
 - Master student in Department of Mathematics at Texas A&M University, current. (**Committee chair.**)
 - PhD student in Department of Mathematics at Texas A&M University, current (student on leave). (**Committee chair.**)
 - 2 PhD students in Department of Computer Science & Engineering at Texas A&M University, current. (Committee member.)
 - PhD student in Department of Mathematics at Texas A&M University, 2024. (Committee member.)
 - Master oral exam (no thesis) at Texas A&M University, 2023. (Committee member.)
 - PhD student in School of Mathematics at Georgia Institute of Technology, 2022. (**Thesis reader and committee for oral exam.**)
 - PhD student in Department of Mathematics at Texas A&M University, 2019. (Committee for oral exam only.)
 - Master oral exam (no thesis) at Texas A&M University, 2019. (**Exam committee chair.**)
 - PhD student in Department of Computer Science at University of Rome "La Sapienza", 2017. (**External reviewer (thesis reader).**)
 - PhD student in Department of Computer Science at Princeton University, 2016. (**Thesis reader and committee for oral exam.**)
 - Undergraduate students in Department of Mathematics at Princeton University, 2014--2018.