

CAROLYN CHUN

EDUCATION

- 2009: PhD Mathematics from Louisiana State University (Advisor: James Oxley)
2009: MFA (with distinction) Creative Writing from Louisiana State University (Advisor: Laura Mullen)
2005: MS Mathematics from Louisiana State University
2002: BS Physics & Mathematics from Rutgers University

PUBLICATIONS

Published:

1. Chun, G. Ding, B. Oporowski, and D. Vertigan. Unavoidable parallel minors of 4-connected graphs. *Journal of Graph Theory*. 60(4) (2009), 313-326.
2. J. Aikin, Chun, R. Hall, D. Mayhew. Internally 4-connected binary matroids with cyclically sequential orderings. *Discrete Mathematics*. 310(1) (2010), 92-108.
3. Chun, G. Ding. Unavoidable topological minors of infinite graphs. *Discrete Mathematics*. 310(24) (2010), 3512-3522.
4. Chun, J. Oxley. Unavoidable parallel minors of regular matroids. *European J. Combin.* 32(6) (2011), 762-774.
5. Chun, D. Mayhew, J. Oxley. A chain theorem for internally 4-connected binary matroids. *J. Combin. Theory Ser. B*. 101 (2011), 141-189.
6. Chun, D. Mayhew, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids. *J. Combin. Theory Ser. B*. 102 (2012), 688-700.
7. Chun, D. Mayhew, J. Oxley. Constructing internally 4-connected binary matroids. *Adv. in Appl. Math.* 50 (2013), 16-45.
8. Chun, D. Mayhew, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids II. *Europ. J. Combin.* 36 (2014), 550-563.
9. Chun, D. Mayhew, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids III. *Adv. in Appl. Math.* 51 (2013) 309-344.
10. Chun, D. Mayhew, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids IV. *Adv. in Appl. Math.* 52 (2014), 1-59.
11. Chun, D. Mayhew, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids V. *Adv. in Appl. Math.* 52 (2014), 60-81.
12. Chun, D. Mayhew, M. Newman. Obstacles to decomposition theorems for sixth-roots-of-unity matroids. *Ann. Comb.* 19 (2015), 79-93.
13. Chun, D. Chun, D. Mayhew, S. van Zwam. Fan-extensions in fragile matroids. *Electron. J. Combin.* 22 (2015), no. 2, Paper #P2.30.
14. Chun, G. Ding, D. Mayhew, J. Oxley. Unavoidable connected matroids retaining a specified minor, *SIAM J. Discrete Math.* 30-3 (2016), 1590-1606.
15. Chun. Delta-matroids: Origins, *The Matroid Union* (a blog for and by the matroid community), guest post, 8 pages. matroidunion.org/?p=1882
16. Chun, D. Mayhew, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids IX: the theorem. *J. Combin. Theory Ser. B*, 121 (2016), 2-67.

17. Chun, M. Criel, R. Hall, S. Noble. On zeros of the characteristic polynomial of matroids of bounded tree-width. *Europ. J. Combin.*, 60 (2017), 10-20.
18. Chun, D. Chun, S. Noble. An inductive tool for delta-matroids and multimatroids. *Europ. J. Combin.*, 63 (2017), 59-69.
19. Chun, D. Mayhew, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids VIII: small matroids. *Adv. in Appl. Math.*, 85 (2017), 12-30.

Submitted:

20. Chun, I. Moffatt, S. Noble, R. Rueckriemen. Matroids, delta-matroids, and embedded graphs. Typescript 44 pages.
21. Chun, I. Moffatt, S. Noble, R. Rueckriemen. On the interplay between embedded graphs and delta-matroids. Typescript 25 pages.
22. Chun, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids VI. Typescript 61 pages.
23. Chun, J. Oxley. Towards a splitter theorem for internally 4-connected binary matroids VII. Typescript about 48 pages.
24. Chun, J. Oxley. Internally 4-connected binary matroids with every element in three triangles. Typescript 13 pages.

In preparation:

25. Chun, D. Mayhew, G. Whittle, S. van Zwam. The structure of binary Fano-fragile matroids. Typescript about 60 pages.
26. Chun, D. Chun, B. Clark, D. Mayhew, G. Whittle, S. van Zwam. Computer-verification of the structure of some classes of fragile matroids. [arXiv:1312.5175](https://arxiv.org/abs/1312.5175). 47 pages.
27. J. Bonin, Chun, S. Noble. Delta-matroids as subsystems of sequences of Higgs lifts. 23 pages.
28. J. Bonin, Chun, D. Chun. Minor-closed classes of polymatroids from quotients. 16 pages.
29. Chun, D. Chun, T. Moss, J. Robbins. Ternary delta-matroids.

POSITIONS HELD

- January 2016-present. Assistant professor in mathematics department at the United States Naval Academy in Annapolis, MD, USA.
- November 2012-November 2015. Postdoctoral Research Fellow under the supervision of Steven Noble at Brunel University London, UK.
- August 2010-July 2012. Postdoctoral Research Fellow under the supervision of Geoffrey Whittle at Victoria University of Wellington, New Zealand. Supported by NSF International Research Fellowship.
- August 2009-July 2010. Postdoctoral Research Fellow under the supervision of Geoffrey Whittle at Victoria University of Wellington, New Zealand. Supported by the Marsden Fund.
- August 2009-May 2009. LSU VIGRE Trainee.
- July 2006-July 2008. NSF GK-12 Fellow.
- July 2003-June 2006. LSU Board of Regents Fellow.

TEACHING EXPERIENCE

1. Spring, 2017. United States Naval Academy, Annapolis, MD, USA. Taught 3rd year Discrete Structures, SM342 (1 section). Coordinated 3 sections. Taught 2nd year Discrete Math and Probability, SM242 (1 section). Coordinated 1 section. Taught research reading course in finite geometries, SM482 (1 student).
2. Fall, 2016. United States Naval Academy, Annapolis, MD, USA. Taught 3rd year Discrete Structures, SM342 (2 sections). Coordinated 4 sections.

3. Spring, 2016. United States Naval Academy, Annapolis, MD, USA. Taught 3rd year Discrete Structures, SM342. (2 sections)
4. Autumn, 2013. Brunel University London, United Kingdom. Taught a four-week module, "How to Write Mathematics," in a 2nd year analysis course.
5. Autumn, 2012. Victoria University of Wellington, New Zealand. Taught MATH261, a 2nd year discrete mathematics course for 100 students. Lectured three hours per week, held two recitations per week, gave homework assignments, wrote and graded exams.
6. Autumn, 2011. Victoria University. Taught MATH261, same as above.
7. Autumn, 2010. Victoria University. Taught MATH261, same as above.
8. Autumn, 2010. Victoria University. Taught a 4th year statistics course. Lectured three hours per week on calculus and linear algebra in a statistics context. Wrote and graded exams.
9. June 2008. Baton Rouge, LA. Taught discrete probability and graph theory at MathCircle program for 20 top high school students in Louisiana.
10. Spring 2008. Baton Rouge, LA. LSU calculus instructor. Prepared syllabus, schedule, lectures, quizzes, and exams. Met with class of about 40 students 5 times per week, 50 minutes each. Offered office hours and review sessions outside of class time. Graded quizzes, exams, and group presentations.
11. June 2008. Baton Rouge, LA. Taught discrete probability and graph theory at MathCircle program for 20 top high school students in Louisiana.
12. June 2007. Baton Rouge, LA. Same as June 2008.
13. June 2006. Baton Rouge, LA. Same as June 2008.
14. Summer, 2002. New Brunswick, NJ, Rutgers University: Instructor at 1st annual Engineering Governors School for 100 top high school students in New Jersey.
15. Spring, 2001. New Brunswick, NJ, Rutgers University: Pre-Calculus Recitation Instructor.
16. Spring, 2000 and Fall, 2000. New Brunswick, NJ, Rutgers University: Calculus I and II Peer Mentor.

RESEARCH, MENTORING, & OUTREACH EXPERIENCE

1. Spring 2017. Collaborated with Midshipman Zachary Klein on a research reading course in finite geometries.
2. Fall 2016. Organized weekly USNA CAT (Combinatorics, Algebra, & Topology) Seminar.
3. November 2012-November 2015. London, England. Conducted collaborative research, hosted visitors, obtained grant funding to support my travel to visit collaborators.
4. August 2009-July 2012. Wellington, New Zealand. Conducted collaborative research, participated in the matroid seminar, helped organize Matroids and Computing Conference at Victoria University (November 29-December 3, 2010).
5. February 2009. Participated in the VIGRE High School Math Circuit, a visiting lecture series by the LSU mathematics department promoting mathematics in high schools in Natchitoches, Lake Charles, and Shreveport.
6. August 2008-May 2009. Organized weekly LSU Combinatorics Seminar.
7. August 2006-May 2008. Baton Rouge, LA. Math coach at Robert E. Lee High School.
8. February 2008. Baton Rouge, LA. Volunteered for, designed, and taught free two-day ACT math preparation course at a local high school.
9. Fall 2007. Baton Rouge, LA. Taught at ACT preparation course for local high school students that met on Tuesday and Thursday evenings and during the day Saturday.
10. August 2006-May 2007. Baton Rouge, LA. Mu Alpha Theta math team coach at McKinley High School.
11. August 2005-May 2006. Baton Rouge, LA. Millennium Volunteers at LSU President, selected and organized students from LSU to tutor in local high schools to relieve extra strain in classrooms due to influx of New

Orleans students after Hurricane Katrina. Volunteered as a tutor in physics and chemistry classes weekly at Robert E. Lee High School.

12. August 2002-June 2003. Kennett Square, PA. Volunteer/Tutor at The Garage, a free after-school center for high school students in downtown Kennett Square.
13. Summer, 2002. New Brunswick, NJ, Rutgers University: Residence Advisor, and Social Coordinator at 1st annual Engineering Governors School for 100 top high school students in New Jersey.

AWARDS RECEIVED

1. ONR grant July-August 2016 (Inductive tools for embedded graphs and delta-matroids).
2. London Mathematical Society Research in Pairs (Scheme 4) Research Grant to travel from London to Baton Rouge, LA, USA for a research visit in September and October 2013.
3. AMS-Simons Travel Award 2011-2013.
4. NSF International Research Fellowship, August 2010-July 2012.
5. Marsden Grant Postdoctoral Research Fellowship under the supervision of Geoffrey Whittle at Victoria University of Wellington, New Zealand, August 2009-July 2010.
6. American Association of University Women Scholarship Award, April 2009.
7. LSU VIGRE Traineeship, August 2008-May 2009.
8. Pasquale Porcelli Graduate Student Research Award, December 2008.
9. LSU Student Travel Award (to give a talk at The Netherlands Workshop on Graphs and Matroids in Sittard, the Netherlands), July 2008.
10. NSF GK-12 Fellowship, July 2006-July 2008.
11. LSU Student Travel Award (to give a talk at 20th Cumberland Conference at Emory University in Atlanta), May 2007.
12. SIAM Student Travel Award (to give a talk at a SIAM conference in Canada), June 2006.
13. LSU Board of Regents Fellowship, July 2003-June 2006.

MATHCIRCLE

- June 2008. Coordinated, ran, and helped teach 3rd annual LSU MathCircle Summer Program.
- June 2007. Coordinated, ran, and helped teach 2nd annual LSU MathCircle Summer Program.
- March 2007. Awarded MSRI MathCircle Mini-Grant for use in MathCircle activities.
- June 2006. Co-planned, ran, and helped teach 1st annual LSU MathCircle Summer Program.
- December 2006. PIed MSRI MathCircle Mini-Grant.

REFEREE EXPERIENCE

- European Journal of Combinatorics
- Electronic Journal of Combinatorics
- Information Sciences
- Graphs and Combinatorics
- Bulletin of the ICA
- SIAM Journal on Discrete Mathematics
- Advances in Applied Mathematics
- Australasian Journal of Combinatorics
- Annales de l'Institut Henri Poincaré D (AIHPD), Combinatorics, Physics and their Interactions
- Discrete Mathematics
- Journal of Graph Theory

- Australian Journal of Combinatorics

PROFESSIONAL SERVICE

1. Co-organized a Matroid Theory special session at *The Third PRIMA Congress in Oaxaca, Mexico* in August, 2017.
2. Fall 2016. Organized weekly USNA CAT (Combinatorics, Algebra, & Topology) Seminar.
3. Co-organized a Matroid minisymposium of 15 speakers at the *SLAM Conference on Discrete Mathematics 2016* in Atlanta, Georgia in June, 2016.
4. Co-organized *Matroids and Computing Conference* at Victoria University of Wellington, New Zealand in November, 2010.
5. August 2008-May 2009. Organized weekly LSU Combinatorics Seminar.

INVITED TALKS (a list of contributed talks can be provided upon request)

Conferences

1. July, 2017. Waterloo, Canada. SiGMa 2017 (Structure in Graphs and Matroids): Delta-matroids as subsystems of sequences of Higgs lifts.
2. July, 2016. Eindhoven, The Netherlands. 2016 International Workshop on Structure in Graphs and Matroids: Delta-matroids, an overview.
3. June, 2016. Schloss Dagstuhl, Wadern, Germany. Graph Polynomials: Towards a Comparative Theory: An introduction to the theory of matroids and delta-matroids by Carolyn Chun and James Oxley.
4. December, 2015. Victoria University of Wellington, New Zealand. A Conference in Honour of Geoff Whittle: Delta-matroids are great and you can, too!
5. July 2015. Moutons Matheux, La Vacquerie, France. Workshop on Matroid Structure: A splitter theorem for internally 4-connected graphs and binary matroids.
6. July 2015. Royal Holloway University of London, UK. Workshop on the Tutte Polynomial: A splitter theorem for internally 4-connected GRAPHS (and binary matroids).
7. March 2015. Boca Raton, FL, USA. 46th Southeastern International Conference on Combinatorics, Graph Theory, and Computing: Delta-matroids and ribbon graphs.
8. July, 2014. Princeton University, NJ, USA. International Workshop on Structure in Graphs and Matroids: Inductive tools for delta-matroids.
9. June, 2013. La Vacquerie, France. Workshop on Matroid Computation 2013: Closer toward a splitter theorem for internally 4-connected binary matroids.
10. March, 2013. Oxford, MS, USA. Spring Eastern Sectional Meeting: Closer toward a splitter theorem for internally 4-connected binary matroids.
11. July, 2012. Maastricht, the Netherlands. Third Workshop on Graphs and Matroids: Towards a splitter theorem for internally 4-connected binary matroids.
12. March, 2012. Washington D.C., USA. Spring Eastern Sectional Meeting: Fragility in Matroids.
13. June, 2011. La Vacquerie, France. Computing and Matroids II Conference: Towards a splitter theorem for internally 4-connected binary matroids, part II.
14. January, 2011. New Orleans, Louisiana. Joint MAA-AMS meetings special session: Towards a splitter theorem for internally 4-connected binary matroids.
15. December, 2010. Wellington, New Zealand. Computing and Matroids Conference: Towards a splitter theorem for internally 4-connected binary matroids.
16. August, 2010. Maastricht, the Netherlands. Second Workshop on Graphs and Matroids: Fragility in matroids.
17. June, 2010. Austin, TX. SIAM Conference on Discrete Mathematics (DM10): Fragility in matroids.

18. January, 2010. San Francisco, CA. Joint MAA-AMS meetings: Fragility in Matroids.
19. December, 2009. Auckland, New Zealand. New Zealand Mathematics Colloquium: Unavoidable Minors in Infinite Graphs.
20. July, 2008. Sittard, the Netherlands. The Netherlands Workshop on Graphs and Matroids: Internally 4-connected Binary Matroids with Cyclically Sequential Orderings.
21. July, 2008. La Vacquerie, France. Matroid Workshop Dedicated to the Memory of Thomas Brylawski: A Chain Theorem for Binary Internally 4-connected Matroids.
22. March, 2008. Baton Rouge, LA. 2008 AMS Spring Southeastern Meeting: Unavoidable Minors of Infinite Graphs and Matroids.
23. December, 2007. Wellington, New Zealand. Joint NZMS-AMS meetings: Unavoidable Minors of Loosely c-connected Infinite Graphs.
24. May, 2007. Atlanta, GA. 20th Cumberland Conference: Unavoidable Minors of Infinite Graphs.
25. January, 2007. New Orleans, LA. Joint MAA-AMS meetings special session: Unavoidable Minors in Graphs.
26. June, 2006. Victoria, British Columbia Canada. SIAM Discrete Mathematics Conference: Unavoidable Parallel Minors in 4-Connected Graphs.

Seminars (not at my home institution)

1. May, 2017. Fairfax, VA. George Mason University Mathematical Sciences Colloquium: Inductive tools for graphs (and matroids).
2. February, 2016. Washington, DC. George Washington University Colloquium: Inductive tools for graphs (and matroids).
3. October, 2015. London, United Kingdom. Royal Holloway University of London Mathematics Seminar: A splitter theorem for internally 4-connected graphs and binary matroids.
4. March, 2015. Baton Rouge, LA. LSU Combinatorics Seminar: Delta-matroids and ribbon graphs.
5. October, 2013. Baton Rouge, LA. LSU Combinatorics Seminar: Delta-matroids, partial duality, and ribbon graphs.
6. May, 2013. London, United Kingdom. London School of Economics and Political Science Discrete Maths Seminar: Fundamental Questions in Matroids.
7. January, 2013. London, United Kingdom. Royal Holloway University of London Mathematics Seminar: Fundamental Questions in Matroids.
8. January, 2012. Honolulu, HI. University of Hawai'i at Manoa Mathematics Seminar: Fundamental Questions in Matroids.
9. November, 2010. Christchurch, New Zealand. Canterbury University Math and Stats Seminar: Towards a splitter theorem for internally 4-connected binary matroids.
10. April, 2010. Christchurch, New Zealand. Canterbury University Math and Stats Seminar: Fragility in matroids.
11. January, 2009. Oxford, MS. University of Mississippi Combinatorics Seminar: A Chain Theorem for Internally 4-connected Binary Matroids.
12. August, 2007. Berlin, Germany. Arbeitsgruppe Diskrete Mathematik of the Institut für Mathematik, Technische Universität Berlin: Unavoidable Minors of Graphs and Matroids.

Local Seminars

1. February, 2017. Annapolis, MD. USNA CAT (Combinatorics, Algebra, & Topology) Seminar: Delta-matroids: Why? Part III.
2. February, 2017. Annapolis, MD. USNA CAT (Combinatorics, Algebra, & Topology) Seminar: Delta-matroids: Why? Part II.

3. January, 2017. Annapolis, MD. USNA CAT (Combinatorics, Algebra, & Topology) Seminar: Delta-matroids: Why? Part I.
4. September, 2016. Annapolis, MD. USNA Basic Notions in Mathematics Seminar: Fundamental questions in matroid theory.
5. March, 2016. Annapolis, MD. USNA Matroid Seminar: Inductive tools for graphs (and matroids) Part II.
6. March, 2016. Annapolis, MD. USNA Matroid Seminar: Inductive tools for graphs (and matroids) Part I.
7. March, 2012. Wellington, New Zealand. Victoria University of Wellington Matroid Seminar: Recent progress toward Rota's Conjecture.
8. May, 2010. Wellington, New Zealand. MSOR Seminar: Fragility in matroids.
9. September, 2009. Wellington, New Zealand. Victoria University of Wellington Matroid Seminar: On unavoidable minors in graphs.
10. November, 2008. Baton Rouge, LA. LSU Combinatorics Seminar: A Chain Theorem for Internally 4-connected Binary Matroids.
11. August, 2008. Baton Rouge, LA. G.E.A.U.X. Program: Unavoidable Minors!
12. June, 2007. Baton Rouge, LA. LSU MathCircle Program: Graphs and Unavoidable Structure.
13. June, 2006. Baton Rouge, LA. LSU MathCircle Program: Graphs, Connectedness, and Unavoidable Parallel Minors.
14. January, 2006. Baton Rouge, LA. LSU General Exam: Unavoidable Parallel Minors of Large, c -Connected Graphs.
15. October, 2005. Baton Rouge, LA. LSU Combinatorics Seminar: Unavoidable Parallel Minors of Large, 4-Connected Graphs.
16. July, 2005. Baton Rouge, LA. LSU REU Seminar: Unavoidable Induced Minors of Large, c -Connected Graphs.

CREATIVE WRITING AWARDS AND PUBLICATIONS

1. Chun, D. Chun. Incomplete Instruction Set II. In E. Gerdes (Ed.), *Offbeat/Quirky* (pp. 63—67). Aurora, Illinois: Journal of Experimental Fiction, 2017.
2. Chun, L. Hakim. Autoinventio. In E. Gerdes (Ed.), *Offbeat/Quirky* (pp. 68—76). Aurora, Illinois: Journal of Experimental Fiction, 2017.
3. Chun, P. Hobson. Decoherence. In E. Gerdes (Ed.), *Offbeat/Quirky* (pp. 77—78). Aurora, Illinois: Journal of Experimental Fiction, 2017.
4. Chun. models of the solar system. In D. Ward (Ed.), *The 8th Madness* (pp. 35—38). Esk, Australia: Dirt Heart Pharmacy Press, 2015.
5. Chun. or cold. In D. Ward (Ed.), *The 8th Madness* (pp. 39—42). Esk, Australia: Dirt Heart Pharmacy Press, 2015.
6. Chun, P. Hobson. Incomplete Instruction Set. In D. Ward (Ed.), *The 8th Madness* (pp. 42—53). Esk, Australia: Dirt Heart Pharmacy Press, 2015.
7. Chun. At Sea Again. In D. Ward (Ed.), *The 8th Madness* (pp. 53—55). Esk, Australia: Dirt Heart Pharmacy Press, 2015.
8. Chun. *Nobody Will Bury Us If We Die Here*, eLectio Publishing, Texas, 2013 (180 pages).
9. Chun. *How to Break Article Noun*, JEF Books, Illinois, 2012 (160 pages).
10. Kenneth Patchen Award for the Innovative Novel, 2011.
11. Evelyn Hamilton Award for Short Story, 2002.
12. Rutgers – Newark High School Poetry Contest Winner, 1998.
13. Rutgers – Newark High School Poetry Contest Winner, 1997.