Curriculum Vitae for Connor Ahlbach

Contact Information	Texas State University San Marcos, TX, 78666	*Mobile:* +1-650-636-3013 *E-mail:* c_a518@txstate.edu
Website	http://cahlbach.wp.txstate.edu/	
Citizenship	United States of America	

Education

Harvey Mudd College, Claremont, California USA

- B.S., Mathematics, May 2013
- Advisor: Professor Francis Su
- Thesis Title: *A Discrete Approach to the Poincare Miranda Theorem*

University of Washington, Seattle, Washington USA

- Graduate progam in Mathematics: September 2013 - May 2019
- Masters earned in May 2018
- Ph.D. earned on May 16, 2019
- Advisor: Professor Sara Billey
- Thesis Title: *Cyclic Sieving: Refinements, Applications, and Tableaux*

Teaching Experience

- Lecturer at Texas State University (2019-2024). Class Taught:
  - Linear Algebra, Discrete Math I, Calculus 1, Calculus 2, Math for Business and Ecomomics I, Business Calculus, College Algebra, Survey of Contemporary Math
- Instructor at University of Washington (2015-2019). Classes Taught:
  - Linear Algebra, Differential Equations, Precalculus
- Apprentice Instructor at the summer math camp *MathILy* in Summer 2018 and Summer 2019
- Taught Math Prep I and II at Washington Correction Center for Women through the Freedom Education Project Puget Sound in Autumn 2018 and Winter 2019
- Math Circle Volunteer in 2018
- Teaching Assistant at University of Washington (2013-2015) for
  - Precalculus, Calculus

Research Interests

Combinatorics, Algebraic Combinatorics, Symmetric Functions, Young Tableaux, Representation Theory, Cyclic Sieving Phenomena, Permutation Statistics, Coxeter Groups

Book Publications

1. *Euclidean Linear Algebra*, Cognella Academic Publishing, San Diego, CA, first edition, 2024. ISBN: 9798823306645.

Journal Publications

1. Ahlbach, Connor; David, Jacob. Oh, Suho; Wu, Christopher. *Tableau stabilization and lattice paths.* Journal of Combinatorics, 13(1):105–134, 31 January 2022.
2. Ahlbach, Connor. *Tableau stabilization and rectangular tableaux fixed by promotion powers*. Journal of Algebraic Combinatorics, 18 March 2020.
3. Ahlbach, Connor; Swanson, Joshua. *Cyclic sieving, necklaces, and branching rules related to Thall's problem*, Electronic Journal of Combinatorics, Volume 25, Issue 4, 2018, p.42.
4. Ahlbach, Connor; Swanson, Joshua. *Refined cyclic sieving on words for the major index statistic*, European Journal of Combinatorics, Volume 73, October 2018, Pages 37-60.
5. Ahlbach, Connor; Pippenger, Nicholas; Usatine, Jeremy. *Barred preferential arrangements*, Electronic Journal of Combinatorics, Volume 20, Issue 2, 2013.
6. Ahlbach, Connor; Frougny, Christiane; Pippenger, Nicholas; Usatine, Jeremy. *Efficient algorithms for Zeckendorf arithmetic*, Fibonacci Quarterly, Volume 51, Number 3, August 2013, pg. 249 - 255.

Other Papers

1. Ahlbach, Connor; Pippenger, Nicholas; Usatine, Jeremy. *A combinatorial interpretation of the joint cumulant*. arXiv:1211.0652.
2. Ahlbach, Connor; Pippenger, Nicholas; Usatine, Jeremy. *Gap theorems for the delay of circuits simulating finite automata*. arXiv:1308.2970.

Programming Skills

- Familiar with: LaTeX, Python, Sage/CoCalc, Matlab
- Some Experience with: Java, Racket, Prolog
- Wrote program for Type B RSK correspondence, submitted to Sage/CoCalc.

Other Professional Activities

- Mentored research with the Mathworks High School Mathematics Camp at Texas State University on tableau stabilization
- Mentored undergraduate research with the Washington Experimental Mathematics Lab (WXML) on
  - *Luggage Belt models* in Spring 2019
  - *Rook Placement Games* in Spring 2018
  - *Sandpile models* in Autumn 2018.
- Problem Solving Seminar at Texas State in Spring 2022 and Fall 2023
- Peer Reviewed submissions to Journal of Discrete Mathematics (×2), Australian Journal of Combinatorics, Bulletin of the Institute of Combinatorics and its Applications, Journal of Combinatorial Theory Series A, Integers, and the Formal Power Series and Algebra Combinatorics conference

Awards

- Microsoft Scholar Award 2013 - 2017.

Invited Talks

- Graduate Student Expo at Texas State University. *The Sliding Game*, November 4th, 2022.
- *Tableau Stabilization* at Combinatorics seminar at Texas State University, 2019.
- Thesis Defense at University of Washington. *Tableau Stabilization and Rectangular Tableaux Fixed by Promotion Powers.* May 16, 2019.
- *The Sliding Game* at Seattle University, 2019.
- Combinatorics Seminar at University of Washington. *Cyclic sieving, Necklaces, Branching Rules, and Thrall's problem.* April 17, 2019
- *Sum and Intersection of Subspaces in Introductory Linear Algebra* in Innovative and Effective Ways to Teach Linear Algebra section at Joint Math Meetings 2019.
- *Cyclic sieving, Necklaces, Branching Rules, and Thrall's problem* in Combinatorics and Graph Theory section at Joint Math Meetings 2019.
- *Refined Cyclic Sieving on Words for the Major Index Statistic.* November 4-5, 2017. AMS Fall Sectional Meeting at University of California, Riverside: Combinatorial Representation Theory.
- Ahlbach, Connor; Swanson, Joshua. *Refined Cyclic Sieving on Words for the Major Index Statistic.* Poster Presentation at Formal Power Series and Algebraic Combinatorics (FPSAC) Conference 2017.

Other Activities

- Aikido: 2013 - Present.
- Mixed Martial Arts (Kajukenbo): 2000-2013,
- Magic the Gathering aficionado
- Seen every episode of The Simpsons, Seasons 1-33.