

HELEN JENNE

CONTACT INFORMATION

Faculté des Sciences et Techniques
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EDUCATION

University of Oregon , Eugene, OR Ph.D. in Mathematics, June 2020 M.S. in Mathematics, December 2017 Advisor: Dr. Benjamin Young	2014-2020
Budapest Semesters in Mathematics , Budapest, Hungary	2013-2014
Whitman College , Walla Walla, WA B.A. in Mathematics and Psychology, May 2013 Graduated summa cum laude with honors in both majors	2009-2013

RESEARCH INTERESTS

My interests are in algebraic combinatorics and statistical mechanics, specifically the dimer and double-dimer models.

PUBLICATIONS AND PREPRINTS

MATHEMATICS:

The combinatorial PT-DT correspondence. arXiv preprint, arXiv:2012.08484, 2020. (This is an extended abstract submitted to FPSAC 2021. The full version of this abstract is forthcoming).

Combinatorics of the double-dimer model. Submitted. arXiv preprint, arXiv:1911.04079, 2019.

Matching complexes of trees and applications of the matching tree algorithm, with M. Jelić Milutinović, A. McDonough, and J. Vega. Submitted. arXiv preprint, arXiv:1905.10560v2, 2019.

Tilings, continued fractions, derangements, scramblings, and e , with B. Balof. In *Journal of Integer Sequences*, 17(2): Article 14.2.7, 2014.

PSYCHOLOGY:

Socioeconomic status affects means-end behavior across the first year, with M.W. Clearfield and S. Stanger. In *Journal of Applied Developmental Psychology*, 38:22-28, 2015.

Socioeconomic status affects oral and manual exploration across the first year, with M.W. Clearfield, L. Bailey, S. Stanger, and N. Tacke. In *Infant Mental Health Journal*, 35(1):63-69, 2014.

TALKS AND PRESENTATIONS

RESEARCH TALKS AND POSTERS:

Combinatorics of the $dP3$ Quiver

Institut de Recherche en Informatique Fondamentale Enumerative and Analytical Combinatorics Seminar (Virtual), Université de Paris, December 2020

Graduate Online Combinatorics Colloquium, November 2020

Double-dimer condensation and the $dP3$ Quiver

Canadian Mathematical Society Winter Meeting, Enumerative Combinatorics Session (Virtual), December 2020

Algebraic geometry and moduli seminar, ETH Zürich (Virtual), November 2020

Séminaire DIMERS, Sorbonne University (Virtual), October 2020

Combinatorics of the double-dimer model.

Dimers in Combinatorics and Cluster Algebras, University of Michigan (Virtual), Aug 2020

FPSAC 2020 Online, July 2020

Discrete Math Seminar, University of Massachusetts Amherst, May 2020

Combinatorics and Geometry Seminar, University of Washington, May 2020

Combinatorics Seminar, UC Berkeley, March 2020

Combinatorics Seminar, University of Minnesota, February 2020

Combinatorics Seminar, University of Michigan, November 2019

Algebra Seminar, University of Oregon, November 2019

Anomaly detection in network traffic data using tensor decomposition. Pacific Northwest National Laboratory National Security Internship Program (NSIP) Symposium, September 2019

Visualizing network traffic graphs using structural equivalence grouping. Pacific Northwest National Laboratory NSIP Poster Session, August 2018

Grove probabilities and the double-dimer model. Poster Session: Building Bridges II, July 2018

Combinatorics of the double-dimer model. Pacific Northwest Combinatorics Day, March 2018

Particle tracking in streaming images. Seattle Science Social at Pacific Northwest National Labs, August 2017

Tilings, continued fractions, derangements, scramblings, and e . SMP Graduate Education Mentoring Workshop during the Joint Mathematics Meetings, January 2015

EXPOSITORY TALKS:

Using vertex operators to prove MacMahon's plane partition generating function. Student Algebra and Combinatorics Seminar at University of Minnesota, February 2020

Topology of Matching Complexes. Student Combinatorics Seminar at University of Oregon, April 2019

Better binomials begin with Fibonacci. Student Combinatorics Seminar at University of Oregon, October 2018

The cube recurrence. Grad Notions Student Seminar at University of Oregon, March 2018

Graphical condensation. Student Combinatorics Seminar at University of Oregon, February 2017

Robinson-Schensted algorithm. Student Combinatorics Seminar at University of Oregon, November 2016

PROFESSIONAL EXPERIENCE

Ph.D. Intern, Pacific Northwest National Laboratory, Seattle, WA

Summer 2015, 2017, 2018, 2019

Group: Data Sciences and Analytics

Advisor: Dr. Emilie Purvine

PROJECTS:

Anomaly detection in network traffic data using tensor decomposition

Exploring anomaly detection and visualization in cyber network graphs

Particle tracking in streaming images

Graph models of the power grid

TEACHING EXPERIENCE

GRADUATE EMPLOYEE AT UNIVERSITY OF OREGON

Fall 2014-present

For each of the following courses, I was the instructor of record. As such, I was responsible for designing the syllabus and preparing and presenting the material, as well as writing and grading all homework, quizzes, and exams.

- Calculus I (Math 251), Winter 2017, Spring 2017, Winter 2019
- Discrete Math II (Math 232), Fall 2017
- Elementary Functions (Math 112), Spring 2015
- College Algebra (Math 111), Fall 2014, Winter 2015, Spring 2015, Fall 2018
- University Math I (Math 105), Summer 2016

I was a teaching assistant for the following courses:

- Introduction to Probability and Statistics (Math 243), Spring 2018
- Calculus for Business and Social Science (Math 241), Fall 2015, Winter 2016, Fall 2016

AWARDS AND HONORS

UO College of Arts and Sciences Dissertation Research Fellowship

Sep 2019-June 2020

Walter Brattain Merit Scholarship, Whitman College

2009-2013

CONFERENCES AND WORKSHOPS ATTENDED

AMS Mathematics Research Communities: Combinatorial Applications of Computational Geometry and Algebraic Topology (Upcoming)	June 2021
Bordeaux Combinatorial Days (Upcoming, virtual)	February 2021
Canadian Mathematical Society Winter Meeting (Virtual)	December 2020
Dimers in Combinatorics and Cluster Algebras, University of Michigan (Virtual)	August 2020
FPSAC 2020 Online	July 2020
MSRI Mathematics of Machine Learning, Seattle, WA	July 29-Aug 9 2019
FPSAC 2018, Hanover, NH	July 2018
Building Bridges II, Budapest, Hungary	July 2018
Graduate Research Workshop in Combinatorics, Ames, IA	May 2018
Pacific Northwest Combinatorics Day, Seattle, WA	March 31, 2018
AMS/MAA Joint Mathematics Meetings	Jan 2015, 2016, 2017
University of Nebraska IMMERSE, Lincoln City, NE	June-July 2014
Park City Math Institute Summer Session, Park City, UT	June-July 2013
Mount Holyoke Research Experience for Undergraduates, South Hadley, MA	June-Aug 2012
Carleton Summer Mathematics Program for Undergraduate Women, Northfield, MN	July 2011

SERVICE

Member of the Organizing Committee for FPSAC 2020 Online	July 2020
Mentor in first-year graduate student mentoring program	Fall 2018-Spring 2020
Organizer of UO Student Counting Seminar	Fall 2018-Spring 2019
UO Association for Women in Mathematics (AWM) Student Chapter	
Organizer of Reading Room	Fall 2019-present
Member of K-12 Outreach Committee	January 2018-present
Secretary	Fall 2017-Spring 2019

PROGRAMMING SKILLS

Sage, Python, R, MATLAB, Git