

Jonathan M. Wells, PhD

Reed College, OR
✉ wellsj@reed.edu
🌐 <https://people.reed.edu/wellsj/>

Research Interests

- Random Matrix Theory
- Statistical Learning
- Stochastic Processes
- Data Ethics
- Integrable Probability
- Random Forest Models
- Statistical Mechanics
- Statistics Education

Academic Appointments

2019 - **Visiting Assistant Professor**, *Reed College*.
Statistics

Education

2019 **Ph.D., Mathematics**, *University of Oregon*.

Dissertation: On the Solvability of Beta-Ensembles when Beta is a Square Integer
Committee: Christopher Sinclair (supervisor), Benjamin Young,
David Levin, Jonathan Brundan, Graham Kribbs

2015 **M.S., Mathematics**, *University of Oregon*.

2011 **B.A., Mathematics and Philosophy**, *Whitman College*, Magna Cum Laude.

Senior Project: Generalizations of the Riemann Integral: An Investigation of the Henstock
Integral. Adviser: Russell Gordon

Teaching

Reed College

- Fall 2021 Statistical Learning (Math 243)
- Fall 2021 Probability (Math 391)
- Spring 2021 Mathematical Statistics (Math 392)
- Spring 2021 Introduction to Probability and Statistics (Math 141)
- Fall 2020 Statistical Learning (Math 243)
- Fall 2020 Probability (Math 391)
- Spring 2020 Introduction to Probability and Statistics (Math 141)
- Fall 2019 Probability (Math 391)
- Fall 2019 Stochastic Processes (Math 393)

University of Oregon

- 2019 Introduction to Applied Mathematics (Math 410)
- Vector Calculus II (Math 282)

- 2018 Calculus with Infinite Series (Math 253)
 Vector Calculus II (Math 282)
 Integral Calculus (Math 252)
 Differential Calculus (Math 251)
- 2017 Introduction to Statistics (Math 243)
 Introduction to Proof (Math 307)
 Abstract Algebra(Math 391), *as discussion leader*
- 2016 Integral Calculus (Math 252)
 Introduction to Statistics (Math 243)
 Differential Calculus (Math 251)
 Elementary Functions (Math 112)
- 2015 Differential Calculus (Math 251)
 University Math II (Math 106)
 Differential Calculus (Math 251)
 Elementary Functions (Math 112)
- 2014 Introduction to Statistics (Math 243), *as discussion leader*
 Introduction to Statistics (Math 243)
 Introduction to Statistics (Math 243), *as discussion leader*
 Calculus for Business II (Math 242), *as discussion leader*
- 2013 Introduction to Statistics (Math 243), *as discussion leader*
 Introduction to Statistics (Math 243)
 College Algebra (Math 111)
 College Algebra (Math 111)
- 2012 College Algebra (Math 111)
Whitman College
- 2011 Mathematics Senior Exam Advisor. (Led new program designed to prepare mathematics majors for their senior qualifying exam, created weekly lectures, assigned and marked problem sets, led discussion sections seminars)
- 2011 Philosophy Writing Fellow. (Led weekly study sessions and conducted paper reviews for Modern and Introductory Philosophy)
- 2010 Mathematics Writing Fellow. (Led weekly study sessions and conducted proof reviews for Linear Algebra)
- 2008 - 2011 Mathematics Tutor. (Led weekly study sessions in single- and multivariate-calculus)

Undergraduate Mentoring Experience

Reed College, Senior Thesis Advising

- 2021 - 2022 Ian Cates-Doglio, Statistical Modeling for Avalanche Detection
- 2020 - 2021 Jonathan Li, Simulating Repeated Coalition Formation under Uncertainty
- 2020 - 2021 Ali Taqi, Spectral Statistics of Random Matrices

- 2020 - 2021 Alan Moore, Inference on Latent Structure Random Graphs: Context, Theory and Applications
- 2020 Matthew Yancheff, Statistical Inference on Brownian Motion with Drift
- 2019 - 2020 Collin Guo, Linearizing Quadratic Stochastic Processes for Metagame Mixing Time Analysis
- 2019 - 2020 Zeki Kazan, The Longest Increasing Subsequence as a Test Statistic
- 2019 - 2020 Shulav Neupane, Citation and Collaboration Behavior at the University Level in Agricultural Sciences
- University of Oregon, Directed Reading Program
- 2019 Alex Vischner, Differential Forms and Multivariate Calculus
- University of Oregon, AWM Undergraduate Reading Program
- 2018 Cory Risinger, The Semicircle Law in Random Matrix Theory
- 2018 Shahden Barghout, The Mathematics of Sudoku Puzzles
- 2017 Shahden Barghout, Problem Solving Strategies in Mathematics
- 2016 Kelsey Clausen, Isaac Newton's Differential Calculus

Publications and Reports

Peer-reviewed journal articles

Gordon, R., Wells, J. "On the Perimeter of Integral Triangles", *International Journal of Pure and Applied Mathematics* 2010. vol. 64, no. 4, 541

Reviews

Wells, J. "Surprises in Probability: Seventeen Short Stories," *The American Statistician*, 2020.74:3, 311

In preparation

Wells, J., Wolff, E. "The Partition Function of Log-Gases with Multiple Odd Charges," 2021. *Submitted*.

Wells, J., Li, J. "A collection of hyperpfaffian identities in the exterior algebra," 2021. *In Preparation*.

Presentations and Invited Talks

- 2021 Contributed Poster "Virtual Tactile Resampling for Permutations and Bootstraps." USCOTS 2021. Virtual Conference
- 2020 Invited Talk. "Eigenvalues of Random Matrices" Mathematics Enthusiast Series. University of Washington, Tacoma. Tacoma, WA
- Presentation. "PrettyR graphics with ggplot2" Empirical Research Workshop Series. Reed College. Portland, OR
- Presentation. "A ShortR Introduction to R" Empirical Research Workshop Series. Reed College. Portland, OR
- Contributed Paper. "Hyperpfaffian descriptions of β -ensembles when β is a perfect square," Joint Mathematics Meeting 2020. Denver, CO

2019 Invited Talk. "Shuffle algebra techniques for partition functions of Selberg-type integrals in random matrix theory," Mathematics Department. Oregon State University. Salem, OR

Invited Talk. "On the distribution of eigenvalues of a random matrix," Mathematics Department. Reed College. Portland, OR

Grants

2010 Perry Summer Research Grant. Whitman College, in collaboration with Russell Gordon

Honors and Awards

2017 Anderson Distinguished Graduate Teaching Award, University of Oregon

2011 Phi Beta Kappa

Conference and Research Programs Attended

2021 Joint Statistical Meeting 2021. Virtual

2021 USCOTS 2021. Virtual

2020 Joint Statistical Meeting 2020. Virtual

2020 Joint Mathematics Meeting 2020. Denver, CO

2019 Joint Mathematics Meeting 2019. Baltimore, MD

2018 Joint Mathematics Meeting 2018. San Diego, CA

2018 Michigan Summer School in Random Matrix Theory. Ann Arbor, MI

2017 PCMI Summer Session on Random Matrices. Park City, UT

2016 Michigan Summer School in Random Matrix Theory. Ann Arbor, MI

Service

Professional Service

2020 - 2021 Judge: Undergraduate Statistics Research Project (USRESP) sponsored by CAUSE and the American Statistical Association

College and Departmental Service

2020 - Faculty Adviser to 18 students

Other Service Activities

2021 Co-organizer for USCOTS 2021 book club on *Data Feminism*

2014 - 2019 Member of the University of Oregon Chapter of the Association for Women in Mathematics

2015 - 2017 Treasurer thereof

2017 Activity Coordinator for Eugene Youth Math Festival at the University of Oregon

2015- 2017 Activity Coordinator for Afterschool Science Program at Malabon Elementary School

2015, 2018 Grader and logistical support for Oregon Invitational Mathematics Tournament

Computing

R/RStudio (base and tidyverse), Git/Github, markdown, L^AT_EX
Python, SageMath, shiny, Mathematica, Excel

Memberships

American Statistical Association

Association for Women in Mathematics