

Sami Davies

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Department of Mathematics
University of Washington

EDUCATION

University of Washington

2016 - 2021 (expected)

M.S. in Mathematics, 2019

Ph.D. in Mathematics

University of Illinois at Chicago

2015-2016

M.S. in Mathematics

Carnegie Mellon University

2011-2015

B.S. in Mathematical Sciences, Minor in Economics

RESEARCH INTERESTS

I design algorithms for a wide range of problems, including combinatorial optimization questions in scheduling and resource allocation, as well as statistical reconstruction problems.

PUBLICATIONS

1. Sami Davies, Arya Mazumdar, Soumyabrata Pal, Cyrus Rashtchian. “New Lower Bounds on the Total Variation Distance Between Mixtures of Two Gaussians,” in submission.
2. Sami Davies, Janardhan Kulkarni, Thomas Rothvoss, Sai Sandeep, Jakub Tarnawski, Yihao Zhang. “On the Hardness of Scheduling with Non-Uniform Communication Delays,” arXiv 2021, <https://arxiv.org/abs/2105.00111>.
3. Sami Davies, Miklós Z. Rácz, Benjamin Schiffer, Cyrus Rashtchian. “Approximate Trace Reconstruction: Algorithms,” ISIT 2021. Full version: <https://arxiv.org/abs/2012.06713>.
4. Sami Davies, Janardhan Kulkarni, Thomas Rothvoss, Jakub Tarnawski, Yihao Zhang. “Scheduling with Communication Delays via LP Hierarchies and Clustering II: Weighted Completion Times on Related Machines,” SODA 2021.
5. Sami Davies, Janardhan Kulkarni, Thomas Rothvoss, Jakub Tarnawski, Yihao Zhang. “Scheduling with Communication Delays via LP Hierarchies and Clustering,” FOCS 2020.
6. Sami Davies, Thomas Rothvoss, Yihao Zhang. “A Tale of Santa Claus, Hypergraphs and Matroids,” SODA 2020.
7. Sami Davies, Miklós Z. Rácz, Cyrus Rashtchian. “Reconstructing Trees from Traces,” COLT 2019. Full version to appear in the Annals of Applied Probability
8. Sami Davies, Chenxiao Xue, Carl R. Yeger, “Algorithms for finding knight’s tours on Aztec diamonds,” *Involve, a Journal of Mathematics*, Vol. 10 (2017), No. 5, 721-734.

INVITED PARTICIPATION AND INTERNSHIPS

Microsoft Research Intern

Summer 2020

Redmond, WA (virtual)

Hosted by Janardhan Kulkarni and Jakub Tarnawski in the Algorithms group

Dagstuhl Seminar in Scheduling

February 2020

Shloss Dagstuhl

Nebraska Conference for Women in Mathematics February 2019
University of Nebraska Lincoln

Women in Theory June 2018
Harvard University

Leadership Alliance Summer Research Program Summer 2014
Brown University
Examining Euler Equations. Joint work with Johnny Guzman, Gopal Yalla

Summer Undergraduate Applied Mathematics Institute Summer 2013
CMU
Patterns of the Bhargava Defined Factorial. Joint work with Joe Gault and Gregory Johnson.

AWARDS AND FELLOWSHIPS

Tanzi-Egerton Fellow 2020
University of Washington
Awarded to an outstanding female, senior graduate student in mathematics

Microsoft Research Dissertation Grant 2020
Microsoft Research
Awarded to 10 graduate students in computer science across the US to support them in finishing their Ph.D. work

McKibben and Merner Endowed Fellowship in Mathematics 2017-2019
University of Washington
Awarded to two students who were exceptional in their preliminary exams and first year courses

Department of Mathematics, Statistics, and Computer Science Fellowship 2015
University of Illinois at Chicago
Awarded to outstanding incoming first year students in the department of MSCS at UIC

Senior Leadership Recognition Award 2015
Carnegie Mellon University
One of 40 students honored for making significant contributions to CMU's community

College and University Honors 2015
Carnegie Mellon University

Leadership Alliance Scholar 2014

TEACHING

I taught the following courses:

Math 107	Math in Society	FEPPS Summer 2018
CSE 311	Foundations of Computing I	UW Spring 2020

I served as a teaching assistant for the following courses:

Math 111	Algebra with Applications	UW Fall 2017
Math 124	Calculus I	UW Winter & Spring 2017
Math 126	Multivariable Calculus	UW Fall 2016
Math 121	Pre-Calculus	UIC Fall 2015 & Spring 2016
21-241	Matrices and Linear Transformations	CMU Spring 2015

External Reviewer

SODA 2020, ICALP 2020, *IEEE Transactions on Information Theory*, MFCS 2020, ISAAC 2020, *Operations Research*, PODS 2021, WADS 2021, ICALP 2021

Washington Directed Reading Program

2018-present

Mentor for the WDRP, which pairs undergraduate students with mathematics graduate student mentors for quarter-long independent reading project, in the spring of 2019, fall of 2020, and winter of 2021. Helped conceive and write grants for the WDRP in the summer of 2018.

Mastery Learning Hour

2021-present

Math tutor for K-12 students. Provide support to students remotely during COVID-19 pandemic.

Freedom Education Project Puget Sound (FEPPS)

2017-2019

Tutor during fall and winter of 2017. Course instructor during the summer of 2018 at the Washington Corrections Center for Women.

Math Circle

2018

Instructor spring of 2018.

Association for Women in Math

2016-present

Member since 2016. Secretary of the UW student chapter 2018-2019 academic year.