Adam Brown

Mathematical Institute
Oxford University
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Citizenship

USA, Republic of Ireland

Education

University of Utah, Salt Lake City, UT — May 2019
PhD, Mathematics, Advisor: Peter Trapa
University of Maryland College Park, College Park, MD — May 2013
Bachelor of Science, Mathematics

Appointments

Mathematical Institute, University of Oxford:
Centre for Topological Data Analysis — Oct. 2022 -
Postdoctoral Research Associate
Institute of Science and Technology Austria:
Edelsbrunner Research Group — June 2019 - Sept. 2022
Postdoctoral Research Fellow
University of Utah:
Department of Mathematics — Sept. 2013 - May 2019
Graduate Student
Scientific Computing and Imaging Institute — Jan. 2017 - May 2019
Graduate Research Assistant
Pacific Northwest National Lab:
National Security Internship Program — June 2018 - Aug. 2018

Research Interests

Representation theory, computational topology, applied sheaf theory, applied category theory

Publications & Preprints

Discrete Microlocal Morse Theory,
A. Brown and O. Draganov. Submitted. arxiv:2209.14993 (2022).

Contravariant pairings between standard Whittaker modules and Verma modules,
A. Brown and A. Romanov. Journal of Algebra (2022).
https://doi.org/10.1016/j.jalgebra.2022.06.017

Probabilistic convergence and stability of random mapper graphs,
A. Brown, O. Bobrowski, E. Munch, and B. Wang. J. of App. and Comp. Topology (2021).
https://doi.org/10.1007/s41468-020-00063-x

Contravariant forms on Whittaker modules,
A. Brown and A. Romanov. Proceedings of the American Mathematical Society (2020).
https://doi.org/10.1090/proc/15205

Sheaf-Theoretic Stratification Learning from Geometric and Topological Perspectives,

A. Brown and B. Wang. Discrete & Computational Geometry (2020).
https://doi.org/10.1007/s00454-020-00206-y

Arakawa-Suzuki functors for Whittaker modules,
A. Brown. Journal of Algebra (2019).
https://doi.org/10.1016/j.jalgebra.2019.07.027

Sheaf-Theoretic Stratification Learning,
A. Brown and B. Wang. International Symposium on Computational Geometry (2018).
https://doi.org/10.4230/LIPIcs.SoCG.2018.14

Awards & Fellowships

Institute of Science and Technology Austria — June 2019 - May 2021
ISTplus (MSCA-Cofund) Postdoctoral Fellowship

University of Utah Mathematics Department — May 2018
Summer Research Fellowship

Conference Talks

Representation Theory XVII — Oct. 2022
The local Langlands correspondence and unitary representations of GL(n)

Austrian Topological Data Analysis Meeting — Aug. 2022
Microlocal Morse Theory

Joint Mathematics Meetings, AMS — Apr. 2022
Computing Injective Resolutions of Cellular Sheaves

Computational Persistence Workshop, Purdue University — Nov. 2021
Computing Injective Resolutions of Cellular Sheaves

Midwest Representation Theory Conference — Oct. 2020
Unitary representations of GL(n) and the geometry of Langlands parameters

Österreichische Mathematische Gesellschaft — Sept. 2019
Convergence and stability of random mapper

Young Topologists Meeting, EPFL — July 2019
Probabilistic convergence and stability of random mapper

Representation Theory XVI, Inter University Centre, Croatia — June 2019
Arakawa–Suzuki functors for Whittaker modules

Southeastern Lie Theory Workshop, LSU — May 2019
The geometric foundation of Arakawa-Suzuki functors

The 34th International Symposium on Computational Geometry — June 2018
Rényi Institute of Mathematics, Budapest, Hungary
Sheaf-theoretic stratification learning

Seminar Talks

University of Oxford, Algebra/Rep. Theory Seminar — Sept. 2019 & Oct. 2022
IST Austria, Geometry/Topology Seminar — July 2019, Dec. 2019, June 2021, & Sept. 2022
University of Manchester, Algebra Seminar — March 2022
Persistence, Sheaves, and Homotopy Theory Seminar — Feb. 2022
Heidelberg University, Topological Data Analysis Seminar — June 2021
University of Vienna, Rep. Theory/Auto. Forms Seminar — Nov. 2020
University of Utah, Number/Rep. Theory Seminar — Sept. 2018 & Jan. 2020
University of Georgia, Algebra Seminar — Nov. 2018
University of Maryland, CP, Rep. Theory Seminar — Sept. 2018
U. of Utah Graduate Colloquium — 2013, 2014, 2016, 2017, 2018
U. of Utah Rep. Theory Student Seminar — 2014 (2), 2015 (3), 2016

U. of Utah Undergraduate Colloquium 2015

Teaching

Stipendiary Lecturer:

· Metric Spaces and Complex Analysis (Somerville College) Michaelmas Term 2022

Graduate Courses:

· Cellular Sheaves and Persistent Homology (IST Austria) Spring 2021
· Sheaf Theory and Applications (IST Austria) Spring 2020

Undergraduate Courses:

· Intermediate Algebra Review (U Utah) Spring 2017
· Calculus I (U Utah) Fall 2014, Fall 2016
· Intermediate Algebra (U Utah) Fall 2013, Fall 2015
· Discrete Mathematics (U Utah) Summer 2014
· Trigonometry (U Utah) Spring 2014

Professional Service & Outreach

Referee, *SIAM Journal on Applied Algebra and Geometry*, *Advances in Mathematics*, *Discrete & Computational Geometry*, *Symposium on Computational Geometry*, *Journal of Applied and Computational Topology*, *Foundations of Computational Mathematics.*

Co-Supervisor, *IST Austria Internship.* 2020
Co-supervised (with Prof. Christoph Lampert) an interdisciplinary research project for a PhD student internship at IST Austria.

Organizer, *Graduate Student Seminar.* Sept. 2018 - May 2019
Organized a graduate seminar on Schur–Weyl duality and Deligne–Lusztig theory.

Mentor, *Undergraduate Mentorship Network,* 2018 - 2019
University of Utah Chapter of the AWM.

Co-Chair, *Graduate Student Recruitment Committee.* 2017 - 2018
Organized the recruitment of mathematics graduate students.

Chair, *Graduate Student Advisory Committee,* 2015 - 2017
Retention Promotion and Tenure Subcommittee. Led a committee of graduate students tasked with producing reports evaluating the teaching performance of professors under review for retention, promotion, and tenure.

Speaker, Oct. 2017
Society for Advancement of Chicanos/Hispanics and Native Americans in Science. Poster presentation for an outreach event at the University of Utah.

Speaker/Organizer, *The Leonardo Museum.* March 2017
Organized and gave a general audience lecture for an outreach event at the Leonardo Museum in Salt Lake City.

References

· Prof. Herbert Edelsbrunner, edels@ist.ac.at, Postdoctoral Supervisor
· Prof. Primoz Skraba, p.skraba@qmul.ac.uk
· Prof. Bei Wang, beiwang@sci.utah.edu
· Prof. Peter Trapa, ptrapa@math.utah.edu, PhD Advisor
· Prof. David A. Vogan, Jr., dav@math.mit.edu