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Stefan Dawydiak

Education

2022 **Ph.D. Mathematics**, *University of Toronto*
Advisor: Alexander Braverman

2017 **M.Sc. Mathematics**, *University of Toronto*

2016 **B.Sc. (Hons.) Mathematics, Minor in Russian**, *University of British Columbia*, *With Distinction*

Employment

2023– **Postdoctoral Fellow**, *Mathematical Institute, University of Bonn*

2022–2023 **Postdoctoral Fellow**, *Max Planck Institute for Mathematics, Bonn*

Publications and preprints

5. **S. Dawydiak**, *The asymptotic Hecke algebra and rigidity*, with an appendix by D. Rumynin (2023), available at `https://arxiv.org/abs/2312.11092`. Submitted.
4. **S. Dawydiak**, *A coherent categorification of the based ring of the lowest two-sided cell* (2021), available at `https://arxiv.org/abs/2111.15648`. Submitted.
3. **S. Dawydiak**, *Denominators in Lusztig's asymptotic Hecke algebra via the Plancherel formula* (2023), available at `https://arxiv.org/abs/2110.07148`. To appear in J. Inst. Math. Jussieu.
2. R. Bezrukavnikov, **S. Dawydiak**, G. Dobrovolska, *On the structure of the affine asymptotic Hecke algebras*, with an appendix by R. Bezrukavnikov, A. Braverman, and D. Kazhdan. Transform. Groups **28** (2023) 1059–1079.
1. **S. Dawydiak**, *On Lusztig's asymptotic Hecke algebra for* SL_2, Proc. Amer. Math. Soc. **149** (2021), no. 1, 71–88.

Research Interests

Affine Hecke algebras; geometric representation theory; Representation theory of p-adic groups; the Langlands program

Awards and Fellowships

2022 NSERC Postdoctoral Fellowship—$115,000

2020 Program Level Fellowship, University of Toronto Mathematics Department—$6,000

2020 Margaret Isobel Elliott Graduate Scholarship, University of Toronto Mathematics Department—$3,828

2019 NSERC PGS-D Scholarship—$42,000

2019 Ontario Graduate Scholarship—$15,000 (declined)

2018 Blyth Fellowship, University of Toronto Mathematics Department—$5,000

2018 Ontario Graduate Scholarship—$15,000

2018 Skolkovo Institute of Science and Technology, Center for Advanced Studies, visiting student scholarship—$5,297

2016 Ontario Graduate Scholarship—$15,000

2016 NSERC-USRA Award—$5,852

2014 NSERC-CMS Math in Moscow Scholarship—$9,000

Talks

2025 Semiorthogonal decompositions for representations of algebraic groups, Universität Bielefeld, *The Steinberg basis and the asymptotic Hecke algebra*

2025 Geometry and Representation Theory around the Langlands programs, Clermont-Ferrand, *Positivity properties for the lowest summand of the asymptotic Hecke algebra*

2025 Number Theory seminar, Johns Hopkins University *Affine and asymptotic Hecke algebras*

2025 Séminaire GAGALie, Université de Poitiers *Affine and asymptotic Hecke algebras and p-adic groups*

2025 Academia Sinica, *Affine and asymptotic Hecke algebras and p-adic groups*(Online)

2024 Representations of p-adic Groups and the Langlands Correspondence, in honor of Colin Bushnell, King's College London *The asymptotic Hecke algebra and p-adic groups* (Poster)

2024 Representation Theory and Related Geometry: Progress and Prospects, University of Georgia, Athens, *Central extensions in Lusztig's asymptotic Hecke algebra, lower modifications, and tempered representations* (Contributed)

2024 BIREP Seminar, University of Bielefeld, *Central extensions in Lusztig's asymptotic Hecke algebra, lower modifications, and tempered representations*

2024 Oberseminar Algebra and representation theory, University of Bonn, *Tensor categories, central extensions, and tempered representations*

2023 Algebra seminar, University of Edinburgh, *Tensor categories, central extensions, and tempered representations*

2023 5th Nisyros Conference on Automorphic Representations & Related Topics, *The asymptotic Hecke algebra and rigidity.*

2023 Minicourse on p-Kazhdan-Lusztig bases, Ghent University, *Towards a coherent categorification of the based ring of the lowest two-sided cell*

2023 Institute Oberseminar, MPIM Bonn, *Analytic and algebraic aspects of p-adic groups*

2023 Arbeitsgemeinschaft Arithmetische Geometrie, MPIM Bonn, *Denominators in the asymptotic Hecke algebra and parahoric-fixed vectors*

2023 Representation theory and number theory seminar, National University of Singapore, *Towards a coherent categorification of the based ring of the lowest two-sided cell*

2022 Non-commutative algebras, representation theory, and special functions, Centre de Recherches Mathématiques, Montreal *Denominators in Lusztig's asymptotic Hecke algebra* (Contributed)

2022 Representation theory and number theory seminar, National University of Singapore *Denominators in Lusztig's asymptotic Hecke algebra* (Online)

2021 Geometric Representation Theory seminar, University of Toronto, *Denominators in Lusztig's asymptotic Hecke algebra*

Teaching

2024– **Instructor**, *Mathematisches Institut der Universität Bonn*

- Graduate credit seminar on Hecke algebras (with J. Fintzen and D. Schwein), Winter semester 2024.
- Graduate credit seminar on perverse sheaves, Summer semester 2024.

2022 **Mentor**, *University of Toronto Math+ Mentorship Program*, Student project: Cayley degrees of complex reflection groups

2020–2022 **Instructor**, *University of Toronto Mathematics Department*

- MAT 136 Calculus II, approximately 110 students. Served as co-coordinator, Summer 2022.
- MAT 334 Complex Variables, approximately 200 students. Served as co-coordinator, Winter 2022
- MAT 235 Multivariable Calculus, approximately 200 students. Fall 2020.

2016–2020 **Teaching Assistant**, *University of Toronto Mathematics Department*

Calculus and Linear Algebra for Commerce, Linear Algebra I, Linear Algebra II, Advanced Calculus, Applied Linear Algebra, Elements of Analysis

2013–2016 **Undergraduate Teaching Assistant**, *UBC Mathematics Department*

MATH 110: Differential Calculus, MATH 100: Differential Calculus, ScienceOne mathematics

Conferences and Workshops attended

2024 D-modules, local systems, and applications, Centre de recherches mathématiques, Montréal, September 16–20

2024 Ramification in geometric Langlands and non-abelian Hodge theory, University of Heidelberg, September 9–13

2023 Representation Theory and Non-Commutative Geometry/ARTIG 3, Paderborn University, December 1–2

2023 Automorphic forms, endoscopy and trace formulas, CIRM, Luminy, September 18–22

2023 Thematic program: The Arithmetic of the Langlands Program, Hausdorff Research Institute for Mathematics, May 2–August 18

2023 Number theory meets p-adic representations, Münster, February 13–17

2023 Workshop on interactions between representation theory, combinatorics, and geometry, National University of Singapore, January 3–7

2022 Community Building in the Langlands Program, 2 (CLAP), Hausdorff Research Institute for Mathematics, August 14–19.

2022 Workshop on Algebra and Representation Theory, Held on Oregonian Grounds, University of Oregon, June 26–30.

2022 L.A. Workshop in Representation Theory and Geometry, University of Southern California, June 5–10.

2022 Conference "On the the crossroads of algebra, geometry, and physics" dedicated to Alexander Goncharov, Yale University, May 16–20.

2022 Midwestern Representation Theory Conference, University of Michigan, March 11–13.

2021 Summer School - Enumerative Geometry, Physics and Representation Theory, IHES, Online, July 5–16.

2021 75th+1 CMS Summer Meeting, Online, June 7–1.

2020 Paul J. Sally, Jr. Midwest Representation Theory Conference, Online, October 16–18.

2020 Conference on Representation Theory and Algebraic Analysis in honour of Joseph Bernstein on the occasion of his 75th birthday, Online, May 11–14.

2020 Thematic trimester program on Representation theory, Institut Henri Poincaré, Paris, January 24–March 31.

2019 Quantum Structures in Algebra and Geometry, Northeastern University, Boston, USA, August 26–30.

2019 Thematic Program: Quiver Varieties and Representation Theory, Centre de Recherches Mathématiques, Montreal, Canada, August 1–31.

2019 International Summer School on Mathematical Physics, Skolkovo Institute of Science and Technology, Center for Advanced Studies, Moscow, Russia, July 1–12.

2019 Workshop Groups and Group Rings, St. Petersburg State University, St. Petersburg, Russia, June 3–8.

2019 Hot Topics Workshop: Recent Progress in the Langlands program, MSRI, Berekely, USA, April 8–12.

2018 Summer School on Geometric Representation Theory, IST Austria, Klosterneuburg, Austria, July 9–13.

2018 CIME School on Geometric Representation Theory and Gauge Theory, Cetraro, Italy, June 25–29.

2018 Algebraic Geometry and its Applications, PDMI, St. Petersburg, Russia, May 28–June 2.

Service

Seminars

2022 **Organizer**, *Learning Seminar: Quantum groups*, University of Toronto

2019 **Organizer**, *Learning Seminar: Beilinson-Bernstein localization, the Riemann-Hilbert correspondence, perverse sheaves, and a proof of the Kazhdan-Lusztig conjectures*, Fields Institute

2018 **Organizer**, *Learning Seminar: Harmonic analysis on p-adic groups*, University of Toronto

2017–2019 **Organizer**, *Graduate Student Seminar*, University of Toronto

Refereeing

Referee, Pure and Applied Mathematics Quarterly, Journal of Pure and Applied Algebra

Reviewing

2021– **Reviewer**, zbMATH Open

Committees

2020–2022 **Member**, *Graduate Course Committee*, University of Toronto

References

Research

- Prof. Alexander Braverman, University of Toronto and Perimeter Institute for Theoretical Physics. Email: `braval@math.toronto.edu`
- Prof. Roman Bezrukavnikov, MIT. Email: `bezrukav@math.mit.edu`
- Prof. Maarten Solleveld, Radboud Universiteit Nijmegen. Email: `m.solleveld@science.ru.nl`
- Prof. Dan Ciubotaru, University of Oxford. Email: `dan.ciubotaru@maths.ox.ac.uk`

Teaching

- Prof. Joe Repka, University of Toronto. Email: `repka@math.toronto.edu`

Personal Information

Citizenship Canadian

Languages English, French, Russian, very basic German

Professional Memberships

- Canadian Mathematical Society (CMS): member since 2017
- American Mathematical Society (AMS): member since 2016

Last updated: September 14, 2025