Mathilde Gerbelli-Gauthier

Curriculum Vitae

Department of Mathematics and Statistics
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Positions Held

2020-present	**Postdoctoral Fellow**, *Centre de Recherches Mathématiques and McGill University*, Montréal
2021-2022	**Member**, *Institute for Advanced Study*, Princeton

Education

2020	**Ph.D. in Mathematics**, *University of Chicago*, Advisor: Matthew Emerton Thesis: Growth of Cohomology of Arithmetic Groups and the Stable Trace Formula.
2014	**B.Sc. in Mathematics**, *McGill University*, First Class Honours

Publications and Preprints

2023	**Large sums of Fourier coefficients of cusp forms**, *with C Frechette, A. Hamieh, and N. Tanabe* ArXiv: 2308.06311
	Mod ℓ gamma factors and a converse theorem for finite general linear groups, *with J. Bakeberg, H. Goodson, A. Iyengar, G. Moss, and R. Zhang* Submitted. ArXiv:2307.07593
2022	**Statistics of cohomological automorphic representations via the endoscopic classification**, *with R. Dalal* Submitted. ArXiv: 2212.12138
2021	**Limit multiplicity for unitary groups and the stable trace formula** To appear in *Algebra and Number Theory*. ArXiv: 2105.09834
2019	**Growth of cohomology of arithmetic groups and the stable trace formula: the case of $U(2,1)$** ArXiv: 1910.06900
2016	**The order of nilpotence of Hecke operators mod 2: a new proof** *Research in Number Theory*, **2**:7

Awards

2020	**Postdoctoral Fellowship**, NSERC **Kowalsky Fellowship**, Department of Mathematics, University of Chicago
2018	**Lawrence and Josephine Graves Prize for Excellence in Undergraduate Teaching**, Department of Mathematics, University of Chicago
2016	**Postgraduate Scholarship - Doctoral**, NSERC **Alexander Graham Bell Canada Graduate Scholarship**, NSERC, *declined* **Doctoral Scholarship**, FRQNT, *declined*
2014	**Masters Scholarship**, FRQNT **McCormick Fellowship**, University of Chicago

Talks

2023 International Automorphic Forms Seminar, *Online.*

Group, Lie, and Number Theory Seminar, University of Michigan.

Number Theory Seminar, Northwestern University.

Number Theory Seminar, University of Chicago.

AMS Spring Sectional Meeting: Special Session on Arithmetic Statistics, Cincinnati.

Number Theory Speaker Series, Ohio State University.

Automorphic Forms and Arithmetic Seminar, Columbia University.

Automorphic Forms and Arithmetic Seminar, Columbia University.

Princeton-IAS Number Theory Seminar, Princeton University.

COGENT Seminar, *Online.*

Joint Mathematics Meeting: Automorphic Forms and Representation Theory, Boston.

2022 Modern Math Workshop, San Juan.

Québec-Maine Number Theory Conference, Université Laval.

Connecticut Summer School in Number Theory, University of Connecticut.

"What is..." Seminar, Institute for Advanced Study.

Philadelphia Area Number Theory Seminar, Bryn Mawr College.

Mathematics Colloquium, Dalhousie University, *Remote*

2021 Automorphic Forms and Number Theory Seminar, Purdue University. *Remote*

Members' Colloquium, Institute for Advanced Study.

Workshop on Cohomology of Arithmetic Groups: Duality, Stability, and Computations, Banff.

Boston University Number Theory Seminar. *Remote*

Séminaire représentations des groupes réductifs, Institut Mathématique de Marseille. *Remote*

CMS 75th+1 Anniversary Summer Meeting, Ottawa. *Remote*

Séminaire de géométrie arithmétique et motivique, Université Sorbonne-Paris-Nord. *Remote*

Arbeitsgemeinschaft: Derived Galois Deformation Rings and Cohomology of Arithmetic Groups, Oberwolfach. *Remote.*

Joint IAS/Princeton Number Theory Seminar, *Remote.*

(w/ Clara del Junco) CONSTRAIN Researcher Forum, University of Leeds. *Remote.*

2020 CMS Virtual Winter Meeting, University of Ottawa. *Remote.*

Number Theory Seminar, University of Oregon. *Remote.*

Québec-Vermont Number Theory Seminar, McGill University. *Remote.*

Members' Seminar, CRM Special Semester on Cohomology in Arithmetic. *Remote*

Number Theory Seminar, University of Wisconsin-Madison.

Representation Theory and Number Theory Seminar, University of Utah.

Group, Lie, and Number Theory Seminar, University of Michigan.

2019 Junior Number Theory Days, Johns Hopkins University.

Number Theory Seminar, MIT.

Number Theory Seminar, Johns Hopkins University.

AMS Fall Sectional Meeting: Special Session on Automorphic Forms and L-functions, University of Wisconsin–Madison.

Linfoot Seminar, University of Bristol.

2018 Women in Automorphic Forms, Technische Universität Darmstadt.

Selected Workshops and Conferences

2023 **Women in Numbers 6**, *Banff*

Joint Mathematics Meeting, *Boston*

2022 **Modern Math Workshop and National Diversity in STEM Conference**, *San Juan*

Québec-Maine Number Theory Conference, *Québec*

Connecticut Summer School in Number Theory, *Storrs*

Arizona Winter School: Automorphic Forms Beyond GL_2, *Tucson*

2021 **Cohomology of Arithmetic Groups: Duality, Stability, and Computations**, *Banff*

Rethinking Number Theory, *Online*

CMS 75th+1 Anniversary Summer Meeting, *Ottawa*, Remote

Arbeitsgemeinschaft: Derived Galois Deformation Rings and Cohomology of Arithmetic Groups, *Oberwolfach*, Remote

2020 **CMS Winter Meeting**, *Ottawa*, Remote

CRM Workshop: Arithmetic Quotients of Symmetric Spaces and Their Cohomology, *Montreal*

2019 **CMO Workshop: Modularity and Moduli Spaces**, *Oaxaca*

A Conversation on Professional Norms in Mathematics, *Baltimore*

AMS Fall Sectional Meeting: Special session on Automorphic Forms and L-functions, *Madison*

2018 **Sixth Abel Conference: A Mathematical Celebration of Robert P. Langlands**, *Minneapolis*

Women in Automorphic Forms, *Darmstadt*

IAS Workshop: Representation Theory and Analysis on Locally Symmetric Spaces, *Princeton*

2017 **IAS Workshop: Motives, Galois Representations and Cohomology Around the Langlands Program**, *Princeton*

MSRI Summer School: Automorphic Forms the Langlands Programme, *Berkeley*

Arizona Winter School: Perfectoid Spaces, *Tucson*

Barcelona Graduate School of Mathematics: p-adic Methods in Galois Representations and Modular Forms, *Barcelona*

Teaching

Instructor of Record

McGill University

2022-2023 Linear Algebra and Geometry, *Fall*.

University of Chicago

2019-2020 Calculus III, *Fall*.

2018-2019 Mathematical Methods for the Social Sciences, *Fall*.

2017-2018 Mathematical Methods for the Social Sciences, *Fall and Summer*.

2016-2017 Calculus III, *Fall*, Mathematical Methods for the Social Sciences, *Spring*.

Teaching Assistant

Arizona Winter School

2022 Automorphic Forms and the Theta Correspondance, Study Group Leader. *Arizona Winter School on Automorphic Forms Beyond GL_2.*

University of Chicago

2018-2019 Mathematics Study Abroad at the University of Chicago Center in Paris: Arithmetic in Function Fields, Introduction to p-groups, Random Walks and The Heat Equation, *Spring*.

2015-2016 Calculus I-II-III, Inquiry-Based Learning, *Fall, Winter, and Spring*.

Workshops Attended

2022 Pedagogy Discussion Group, *Department of Mathematics and Statstics, McGill University*.

2019 Fundamentals of Teaching Mathematics, *Chicago Center for Teaching*.

2018 Inclusive Teaching in STEM, *Race and Pedagogy working group at the University of Chicago*.

Service and Outreach

Refereeing

I have served as a referee for Transactions of the American Mathematical Society and GAFA.

Volumes Edited

2021 **A Conversation on Professional Norms in Mathematics**, *American Mathematical Society*, ISBN: 978-1-4704-6780-7

Burnout: a zine about academia, travel, and climate change, *self-published*, knowledge.uchicago.edu/record/2773

Conferences and Seminars Organized

2023 **AMS Special Session: Women in Automorphic Forms**, *Joint Mathematics Meeting*, Co-organizer.

2022 **Mathematical Conversations**, *Institute for Advanced Study*, Co-organizer

2020 **CRM Women's Seminar**, *Centre de Recherche Mathématiques*, Co-organizer

2016-2017 **Student Number Theory Seminar**, *University of Chicago*, Organizer
Fall-Winter 2016: p-adic geometry, Summer 2017: the Local Langlands correspondance for GL_2

Other

2022 **Lunch in the Time of Covid**, Panelist
Discussion on the role and responsibility of academics in climate change.

2022- **Part B Exam**, *McGill University*, Secondary Examiner
Topics: Growth in the torsion of cohomology of arithmetic groups, Hilbert modular forms.

2021-2022 **Women's Lunches**, *Institute for Advanced Study*, Co-organizer
Organized a monthly lunch meeting for female members at the Institute's School of Mathematics.

2019-2020 **Arts + Science Collaboration Grant**, *University of Chicago*, Fellow
Recipient of a $3000 grant for an interdisciplinary arts and science project with two students at the School of the Art Institute of Chicago. Title: *Numerical Alternatives*

2018-2020 **Lunchtime Ado with Female Speakers**, *University of Chicago*, Co-organizer
Organized and moderated a series of biquarterly lunchtime conversations with women speaking in the department's research seminars. Recipient of an $800 grant in 2019-2020.

2017-2020 **Directed Reading Program**, *University of Chicago*, Co-organizer
Managed a program pairing undergraduate and graduate students for quarter-long reading projects.

2018-2019 **Graduate Students United**, *University of Chicago*, Steward
Union representative for graduate workers in the mathematics department.

2018 **Department of Mathematics Climate Survey**, *University of Chicago*
Co-development of a climate survey to assess the experiences of graduate students.

2016-2018 **Directed Reading Program**, *University of Chicago*, Mentor
Projects: Class field theory, Pythagorean triples, Fermat's theorem on the sum of two squares, Algebraic Varieties, Fourier Series, Arithmetic of Elliptic Curves.
2013-2014 **Program in Mathematics for Young Scientists**, *Boston University*, Counselor
Mentorship of high-school students in a 6-week number theory summer camp.