# Mathilde Gerbelli-Gauthier

*Curriculum Vitae*

Department of Mathematics and Statistics
Burnside Hall, McGill University
805 Sherbrooke Street West, Montreal, QC, H3A 0B9
✉ mathilde.gerbelli-gauthier@mcgill.ca
🌐 mgerbelli.github.io/website/

## Positions Held

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

## Education

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| 2020 | **Ph.D. in Mathematics**, *University of Chicago*, Advisor: Matthew Emerton<br>Thesis: Growth of Cohomology of Arithmetic Groups and the Stable Trace Formula. |
| 2017 | **M.Sc. in Mathematics**, *University of Chicago* |
| 2014 | **B.Sc. in Mathematics**, *McGill University*, First Class Honours |

## Publications and Preprints

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| 2021 | **Limit multiplicity for unitary groups and the stable trace formula**<br>Submitted. ArXiv:2105.09834 |
| 2019 | **Growth of cohomology of arithmetic groups and the stable trace formula: the case of $U(2,1)$**<br>ArXiv:1910.06900 |
| 2016 | **The order of nilpotence of Hecke operators mod 2: a new proof**<br>Research in Number Theory, **2**:7. |

## Awards

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| 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

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| 2022 | 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

2022    **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**

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**

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

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**

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.

### Other

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

2022    **Mathematical Conversations**, *Institute for Advanced Study*, Co-organizer
Organized a weekly informal mathematics seminar for members in the School of Mathematics.

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.

2020    **CRM Women's Seminar**, *Centre de Recherche Mathématiques*, Co-organizer
Organized a bi-weekly seminar for women participating in the special semester.

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.

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

2013-2014 **Program in Mathematics for Young Scientists**, *Boston University*, Counselor
Mentorship of high-school students in a 6-week number theory summer camp.