

Joshua L. Flynn

CONTACT INFORMATION	McGill University Department of Mathematics and Statistics 805 Rue Sherbrooke Ouest Montreal, Quebec H3A 0B9 Canada	joshua.flynn@mcgill.ca jlflynn.com
EMPLOYMENT	McGill University CRM-ISM Postdoctoral Fellow	2022 - present
RESEARCH INTERESTS	Analysis on flat and curved geometries (e.g., hyperbolic spaces) and noncommutative groups (e.g., the Heisenberg group) using Fourier analysis, geometric analysis and PDE methods. Recent works focus on sharp geometric and functional inequalities and problems in several complex variables.	
EDUCATION	University of Connecticut Ph.D. Mathematics, 2022 <ul style="list-style-type: none">• Dissertation Topic: sharp geometric inequalities on noncompact rank one symmetric spaces and their boundaries.• Advisor: Guozhen Lu University of Washington B.Sc. in Mathematics, 2015	
PAPERS	C. Cazacu, J. Flynn and N. Lam, <i>Sharp second order uncertainty principles</i> , to appear in the Journal of Functional Analysis, arXiv:2012.12667. A. Burchard, J. Flynn, G. Lu and M.-C. Shaw, <i>Extendability and the $\bar{\partial}$ Operator on the Hartogs Triangle</i> , Math. Zeit (2021), 1-22. arXiv:2106.09867. C. Cazacu, J. Flynn and N. Lam, <i>Short proofs of refined sharp Caffarelli-Kohn-Nirenberg inequalities</i> , Journal of Differential Equations, 302, 533-459 (2021). J. Flynn, N. Lam and G. Lu, <i>Sharp Hardy Identities and Inequalities on Carnot Groups</i> , Advanced Nonlinear Studies, 21(2), 281-302 (2021). J. Flynn, <i>Sharp L^2-Caffarelli-Kohn-Nirenberg inequalities for Grushin vector fields</i> , Nonlinear Analysis, 199, 111961 (2020). J. Flynn, <i>Sharp Caffarelli-Kohn-Nirenberg-Type Inequalities on Carnot Groups</i> , Advanced Nonlinear Studies, 20(1), 95-111 (2020).	
PREPRINTS	J. Flynn, G. Lu and Q. Yang, <i>Sharp Hardy-Sobolev-Maz'ya, Adams and Hardy-Adams inequalities on quaternionic hyperbolic spaces and the Cayley hyperbolic plane</i> , submitted (2021), arXiv:2106.06055. J. Flynn, N. Lam, G. Lu and S. Mazumdar, <i>Hardy's Identities and Inequalities on Cartan-Hadamard Manifolds</i> , submitted (2021), arXiv:2103.12788. C. Cazacu, J. Flynn and N. Lam, <i>Sharp Caffarelli-Kohn-Nirenberg Inequalities for Curl-</i>	

Free Vector Fields and Second Order Derivatives, submitted (2021), arXiv:2111.15067.

J. Flynn, N. Lam and G. Lu, *L^p -Hardy Identities and Inequalities with Respect to the Distance and Mean Distance to the Boundary*, preprint (2021).

J. Flynn, N. Lam, G. Lu, *Hardy-Poincaré-Sobolev type inequalities on hyperbolic spaces and related Riemannian manifolds*, submitted (2021).

J. Flynn, N. Lam and G. Lu, *L^p -Hardy identities and inequalities on manifolds*, preprint (2021).

TALKS

Hardy-Sobolev-Maz'ya and Adams Inequalities on Quaternionic Hyperbolic Spaces, Spring Western Sectional Meeting Special Session on Geometric and Functional Inequalities and Applications to PDEs, formerly University of Denver. (May 2022)

Some Sharp Uncertainty Principles and Related Geometric Inequalities, Ghent Methusalem Junior Seminar. (May 2022)

Sharp Hardy-Sobolev-Maz'ya, Adams and Hardy-Adams inequalities on quaternionic hyperbolic spaces and the Cayley hyperbolic plane, 2022 Joint Mathematics Meeting, formerly at Seattle, WA. (April 2022)

Hardy-Sobolev-Maz'ya inequalities on Siegel domains, Mathematics Seminar, Bridgewater State University. (March 2022)

Sharp Hardy-Sobolev-Maz'ya, Adams and Hardy-Adams inequalities on quaternionic hyperbolic spaces and the Cayley hyperbolic plane, 17th Prairie Analysis Seminar, Kansas State University. (November 2021)

Sharp Caffarelli-Kohn-Nirenberg Inequalities for the Grushin operator and Iwasawa Groups, Annual New York State Regional Graduate Mathematics Conference, Syracuse University. (April 2021)

Hardy Identities on Domains, Spring Eastern Sectional Meeting Special Session on Metric techniques in Analysis, Brown University. (March 2021)

Sharp Caffarelli-Kohn-Nirenberg Inequalities for Grushin Vector Fields and Iwasawa Groups, Tenth Ohio River Analysis Meeting, University of Kentucky. (March 2021)

Hardy-Sobolev-Maz'ya and Adams Inequalities on Quaternionic Hyperbolic Spaces, Spring Eastern Sectional Meeting Special Session on Geometric and Functional Inequalities and Nonlinear Partial Differential Equations, Brown University. (March 2021)

Algebraic Aspects of Dunkl Theory, Binghamton University Graduate Conference in Algebra and Topology, Binghamton University. (November 2020)

Sharp Caffarelli-Kohn-Nirenberg Inequalities for Grushin Vector Fields and Iwasawa Groups, Geometric and Functional Inequalities and Applications, international virtual seminar. (November 2020)

Sharp L^2 -Caffarelli-Kohn-Nirenberg-Type Inequalities for the Grushin operator and Iwasawa Groups, Fall Central Sectional Meeting Special Session on Geometric Inequalities and Nonlinear Partial Differential Equations, University of Texas. (September 2020)

Sharp Caffarelli-Kohn-Nirenberg Type Inequalities on Iwasawa Groups, 2020 Joint Mathematics Meeting, Denver, CO. (January 2020)

Some Geometric Inequalities by Algebraic Trickery, Mathematics Continued Conference, University of Connecticut. (November 2019)

CONFERENCES
AND SEMINARS
ORGANIZED

2022-present Co-organizer of the *Geometric Analysis Seminar* at McGill University.

2020-present Co-organizer of the international virtual seminar *Geometric and Functional Inequalities and Applications*. geometricinequalities.com

2023 Co-organizing the JMM Special Session on *Advances in Partial Differential Equations, Numerical Analysis, and their Applications* at the 2023 Joint Mathematics Meetings in Boston, MA

2022 Co-organized the AMS Special Session on *Geometric and Functional Inequalities and Applications to PDEs* at the Spring Western Sectional Meeting (formerly at the University of Denver).

2021 Co-organized the AMS Special Session on *Geometric and Functional Inequalities and Nonlinear Partial Differential Equations* at the Spring Eastern Sectional Meeting (formerly at Brown University).

2020 Co-organized the AMS Special Session on *Geometric Inequalities and Nonlinear Partial Differential Equations* at the Fall Central Sectional Meeting (formerly at University of Texas at El Paso).

2020 Co-organized a virtual learning seminar on *Analysis on Groups of Polynomial Growth*.

AWARDS

2022 Michael Neumann Dissertation Award

2021 Conference Participation Award

2021 Summer Doctoral Dissertation Fellowship

2020 Predoctoral Fellowship

2019 Provost Excellence in Teaching

REFeree
SERVICES

Communications on Pure and Applied Analysis, Acta Mathematica Sinica

MENTORSHIP AND
MISC.

2017-2022 TA Mentor Network Volunteer

- Mentored incoming graduate students in the mathematics Ph.D. program at the UConn.

2021 Directed Reading Program Volunteer

- Mentored an undergraduate of mathematics at UConn and guided them in completing a project and presentation on the finite element method and Matlab.

2020 Prelim Review Summer Position

- Paid Summer position at UConn to hold weekly review sessions and guide graduate students to prepare for the analysis preliminary exam.

TEACHING
EXPERIENCE

Spring 2022 Teaching Assistant, Calculus I

Fall 2021 Instructor, Technical Writing in Mathematics

Spring 2021 Teaching Assistant, Elementary Differential Equations

Fall	2020	Teaching Assistant, Elementary Differential Equations
Spring	2020	Instructor, Elementary Differential Equations
Fall	2019	Instructor, Calculus for Business and Economics
Spring	2019	Instructor, Elementary Differential Equations
Fall	2018	Teaching Assistant, Calculus I
Spring	2018	Instructor, Elementary Differential Equations
Fall	2017	Teaching Assistant, Calculus I
Spring	2017	Instructor, Calculus for Business and Economics
Fall	2016	Instructor, Calculus for Business and Economics
Spring	2016	Instructor, Calculus for Business and Economics
Fall	2015	Instructor, Problem Solving