CURRICULUM VITAE: EVAN MILLER

University of Alabama in Huntsville, Department of Mathematical Sciences.

epm0006@uah.edu

EDUCATION

University of Toronto *2019*
Ph.D in Mathematics
Adviser: Robert McCann

Washington University in St. Louis *2014*
B.A. in Mathematics, Minor in Physics
Summa Cum Laude

PROFESSIONAL EXPERIENCE

University of Alabama in Huntsville January 2024- current
Assistant Professor *Huntsville, AL, United States*

· Department of Mathematical Sciences

Institut Mittag-Leffler September 2023-December 2023
Junior Fellow *Stockholm, Sweden*

· Program: Order and Randomness in Partial Differential Equations

University of British Columbia September 2021-August 2023
PIMS Postdoctoral Fellow *Vancouver, BC, Canada*

· Department of Mathematics
· Advisers: Stephen Gustafson and Tai-Peng Tsai

Mathematical Sciences Research Institute January 2021-May 2021
Postdoctoral Fellow *Berkeley, CA, United States*

· Program: Mathematical Problems in Hydrodynamics
· Adviser: Jean-Yves Chemin

Fields Institute July 2020-December 2020
Postdoctoral Fellow *Toronto, ON, Canada*

· Thematic Program on Mathematical Hydrodynamics

McMaster University September 2019-August 2021
McKay Postdoctoral Fellow *Hamilton, ON, Canada*

· Department of Mathematics and Statistics
· Adviser: Eric Sawyer

TEACHING

University of Alabama in Huntsville

- Applied Linear Algebra, Spring 2024

University of British Columbia

- Multivariable Calculus, Fall 2021, Summer 2022

- Linear Programming (linear optimization), Winter 2023

McMaster University

- Multivariable Calculus for Engineering, Winter 2020

- Calculus for the Life Sciences, Fall 2019

University of Toronto

- Introductory Calculus, Summer 2018

- Linear Algebra, Winter 2018

SERVICE

- **Organizer**, Postdoc Seminar for the Fields Institute Program on Mathematical Hydrodynamics

- **Referee** for more than a dozen journal articles, including leading journals, such as Archive for Rational Mechanics and Analysis (twice), Proceedings of the American Mathematical Society, and Annales de l'Institut Henri Poincaré C, Analyse Non Linéaire.

- **Bargaining Committee Member**, postdoctoral fellows union at McMaster University (CUPE 3906)

AWARDS AND FELLOWSHIPS

- Institut Mittag-Leffler junior fellowship, 2023

- PIMS travel grant, 2023

- PIMS postdoctoral fellowship, 2021-2023

- MSRI postdoctoral fellowship, Spring 2021

- Fields Institute postdoctoral fellowship, Fall 2020

- Ontario Trillium scholarship, 2014-2018

- Coxeter graduate Scholarship, 2017-2018

PUBLICATIONS

Journal Articles

1. (with Eric Sawyer) A Helmholtz-type decomposition for the space of symmetric matrices. *Trans. Amer. Math. Soc. Ser. B* **10** (2023), 1449-1493. MR4672124

2. Finite-time blowup for the inviscid vortex stretching equation. *Nonlinearity* **36** (2023), no. 8, 4086–4109. MR4608775.

3. Finite-time blowup for a Navier-Stokes model equation for the self-amplification of strain. *Anal. PDE* **16** (2023), no. 4, 997–1032. MR4605202.

4. Navier-Stokes regularity criteria in sum spaces. *Pure Appl. Anal.* **3** (2021), no. 3, 527–566. MR4379145.

5. A survey of geometric constraints on the blowup of solutions of the Navier-Stokes equation. *J. Elliptic Parabol. Equ.* **7** (2021), no. 2, 589–599. MR4342640.

6. Global regularity for solutions of the Navier-Stokes equation sufficiently close to being eigenfunctions of the Laplacian. *Proc. Amer. Math. Soc. Ser. B* **8** (2021), 129–144. MR4273161.

7. A locally anisotropic regularity criterion for the Navier-Stokes equation in terms of vorticity. *Proc. Amer. Math. Soc. Ser. B* **8** (2021), 60–74. MR4214337.

8. Global regularity for solutions of the three dimensional Navier-Stokes equation with almost two dimensional initial data. *Nonlinearity* **33** (2020), no. 10, 5272–5323. MR4143973.

9. A regularity criterion for the Navier-Stokes equation involving only the middle eigenvalue of the strain tensor. *Arch. Ration. Mech. Anal.* **235** (2020), no. 1, 99–139. MR4062474.

Preprints

1. Finite-time blowup for an Euler and hypodissipative Navier-Stokes model equation on a restricted constraint space (2023). arxiv:2307.03434

2. (with Stephen Gustafson and Tai-Peng Tsai) Growth rates for anti-parallel vortex tube Euler flows in three and higher dimensions (2023). arxiv:2303.12043

3. On the regularity of axisymmetric, swirl-free solutions of the Euler equation in four and higher dimensions (2022). arxiv:2204.13406

TALKS

- AMS Special Session on Dynamics and Regularity of PDEs, Joint Mathematical Meetings 2024, San Francisco, 6 January 2024.

- Order and Randomness in PDE seminar, Institut Mittag-Leffler, 26 October 2023

- Informal analysis seminar, École Normale Supérieure, 19 October 2023

- Applied and Computational Mathematics seminar, University College Dublin, 4 October 2023

- Recent trends in the mathematical theory for incompressible fluids, ICIAM 2023, Tokyo, 25 August 2023

- Fluid Dynamics Reunion Seminar, MSRI, 31 July 2023

- Applied Math Seminar, University of Victoria, 10 May 2023

- Applied Analysis seminar, University of Alabama in Huntsville, 10 February 2023

- Workshop on partial differential equations related to calculus of variations, probability, and fluid dynamics, Max Planck Institute for Mathematics in the Sciences, 1 February 2023

- Mathphys Analysis seminar, Institute for Science and Technology Austria (ISTA), 24 November 2022

- Job talk colloquium, Hausdorff Center for Mathematics, Universität Bonn, 17 November 2022

- Canadian Mathematical Society Summer Meeting, St. John, Newfoundland, 5 June 2022

- SIAM Pacific Northwest Section Annual Meeting, Washington State University, Vancouver, WA, 20 May 2022

- Jean-Morlet Chair 2022 - Conference: Nonlinear PDEs in Fluid Dynamics (short talk), CIRM, Marseille, 10 May 2022

- Emergent Research: The PIMS Postdoctoral Fellow Seminar, Vancouver, BC, 16 February 2022

- Applied PDE Seminar, Imperial College London, 26 February 2021

- Euler/Navier-Stokes seminar, Mathematical Problems in Fluid Dynamics program, MSRI, 25 February 2021

- PDE Seminar, Brown University, 19 February 2021

- Applied Math Seminar, University of Victoria, 4 November 2020.

- Vorticity, Rotation and Symmetry (V) – Global Results and Nonlocal Phenomena, CIRM, Marseille, 26 October 2020.

- Hydrodynamics Seminar, Fields Institute, 10 July 2020

- Online North East PDE and Analysis Seminar, 30 June 2020

- AIMS Lab Seminar, McMaster University, 13 January 2020

- PIMS/AMI seminar, University of Alberta, 16 October 2019

- MSRI Summer School Student Talks, July 2019

- Geometric Analysis Student Seminar, University of Toronto, 21 September 2018

- Canadian Mathematical Society Summer Meeting, Fredericton, NB, 2 June 2018

- Analysis and Applied Math Seminar, University of Toronto, 17 November 2017