

BRIAN MORTON

CONTACT

Brian Morton
Vanderbilt University
Department of Mathematics
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RESEARCH INTERESTS

- Partial Differential Equations
- Fluid Mechanics
- Mathematical Physics
- Rarefied Gas Dynamics

EDUCATION

Vanderbilt University, Nashville, TN
Doctorate of Philosophy in Mathematics
Advisors: Professor Marcelo Disconzi and Professor Jared Speck

May 2028

Purdue University, West Lafayette, IN
Bachelor of Science in Aeronautical & Astronautical Engineering
Bachelor of Science in Honors Mathematics

May 2023

May 2023

EMPLOYMENT

Vanderbilt University, Nashville, TN
Graduate Research Assistant, Department of Mathematics
Graduate Teaching Assistant, Department of Mathematics

August 2024-Present

August 2023-Present

Johns Hopkins University Applied Physics Laboratory, Laurel, MD
Intern, Air and Missile Defense Sector and Force Projection Sector

May 2022-January 2024

Purdue University, West Lafayette, IN
Researcher, Department of Aeronautical and Astronautical Engineering
REU, Department of Mathematics
Grader, Department of Aeronautical and Astronautical Engineering
Grader, Department of Mathematics

May 2021-October 2023

May 2021-August 2021

January 2022-August 2023

January 2020-May 2023

PREPRINTS

1. Vorozhbit, E., **Morton, B.**, Adhikari, N., Alexeenko, A., & Hu, J. Dgfs-Be Solver: An Open-Source Discontinuous Galerkin Fast Spectral Solver for the Full Boltzmann Equation

PUBLICATIONS

1. Adhikari, N., **Morton, B.**, Alexeenko, A. A., & Hu, J. (2024, February). Verification of a discontinuous Galerkin fast spectral solver for the full Boltzmann equation. In AIP Conference Proceedings (Vol. 2996, No. 1). AIP Publishing.

INVITED TALKS

1. 21st Century Mathematics: What Do Mathematicians Do?, D205 University, July 2025
2. Introductory talk on mathematical fluid mechanics, Graduate Student Seminar, Vanderbilt University, November 2025

TEACHING

- Fall 2023: Calculus Tutor for Vanderbilt Calculus Cafe
- Spring 2024: Calculus Tutor for Vanderbilt Calculus Cafe
- Fall 2024: Not Teaching
- Spring 2025: Not Teaching
- Fall 2025: Math 1301 Accelerated Calculus 2 (Teaching Assistant)

FELLOWSHIPS AND AWARDS

- Russell G. Hamilton Scholar Fellowship *August 2023-Present*
- Warren G Koerner Scholarship Award *June 2022*
- Thomas Arai Scholarship Award *April 2022*
- Columbian Club Scholarship Award *August 2021 and August 2022*
- OUR Scholars Scholarship Award *August 2021 and January 2022*
- Swaminathan and Garg Scholarship Award *June 2021*
- Alton and Juanita Andrews Scholarship Award *April 2021, and April 2022*
- Hugh W and Edna M Donnan Scholarship Award *August 2020, 2021, and 2022*
- Lorraine K Lawton Scholarship Award *May 2020*
- Guglielmo Marconi Engineering Scholarship Award *November 2019*
- Helen Bertucci Pelnarsh Memorial Scholarship Award *November 2019*
- Dupage Community Foundation Scholarship Award *June 2019*
- Frank J. Vigante Scholarship Award *June 2019*
- Amici Club Scholarship Award *May 2019*
- HFMA Scholarship Award *April 2019*
- Dr. Erik K Lossin Memorial Scholarship Award *May 2018*

SERVICE

- Vanderbilt Department of Mathematics Directed Reading Program *August 2024-Present*
- PU Aeronautical and Astronautical Student Advisory Council *January 2021-May 2023*

CONFERENCES ATTENDED

- 3rd Simons Math Summer Workshop: Partial Differential Equations of Classical Physics, July 7-25, 2025,
- Foundations and Applications of Relativistic Hydrodynamics, May 12-16, 2025, The Galileo Galilei Institute For Theoretical Physics, Firenze (IT)
- Particles, Fluids and Patterns: Analytical and Computational Challenges: Intensive Trimester, March 31-July 4, 2025, Gran Sasso Science Institute, L'Aquila (IT)
- Winter School: Boundary and Singularity in Fluid Mechanics, January 6-10, 2025, Simons Center for Geometry and Physics - Stony Brook, Stony Brook, NY
- Boundary Analysis for Dispersive and Viscous Fluid, October 28-31, 2024, Gran Sasso Science Institute, L'Aquila (IT)
- DSMC 2023 Conference, September 24-28, 2023, Santa FE, NM
- Geometry and Analysis of Fluid Flows, January 16-20, 2023, Stony Brook University, Stony Brook, NY
- 32nd International Symposium in Rarefied Gas Dynamics (RDG32), Korea, online, July 2022