

Ben Wilfong

1 Basic Information

Title: Graduate Research Assistant

Institution: Georgia Institute of Technology

Email: bwilfong3@gatech.edu

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Research Interests: Computational fluid dynamics, bubble dynamics, hydrodynamic instability, multiphase fluid dynamics, high performance computing, GPU accelerated modeling and simulation

2 Education

- Georgia Institute of Technology
(In Progress) Doctor of Philosophy, Computational Science and Engineering
Advisor: Dr. Spencer Bryngelson
Relevant coursework: High Performance Computing (S24), Turbulent Fluid Flows (S24), Iterative Methods for Systems of Equations (F23), Numerical Linear Algebra (S23), Viscous Fluid Flows (F22)
- Rose-Hulman Institute of Technology
(2022) Bachelor of Science, Mechanical Engineering and Computational Science

3 Experience

- Weapons and Complex Integration Intern June 2022 – August 2022
Institution: Lawrence Livermore National Laboratory
Supervisor: Dr. Kyle Sinding
Duties: Perform finite element simulation using LLNL's HPC resources using ALE3D, generate case files and input data, post-process data to gather useful quantities of interest
- EERE High Performance Computing for Manufacturing Intern June 2021 – August 2021
Institution: Lawrence Livermore National Laboratory in collaboration with Oak Ridge Institute for Science and Education (ORISE)
Supervisor: Dr. John Karnes
Duties: Perform molecular dynamics simulations using LLNL's HPC resources using LAMMPS, generate case files and input data, post-process data to gather useful quantities of interest

4 Awards

- (2024) CRNCH Fellowship for Novel Computing Paradigms and Hierarchies
- (2022) Georgia Tech Presidents Fellowship
- (2018-22) Deans List, Rose-Hulman Institute of Technology

5 Service and Outreach

- (2023-Present) PURA Award Reviewer
- (2023-Present) CSE Graduate Student Association vice-president
- (2022-23) CSE Graduate Student Association events officer

6 Publications

6.1 Archival, heavily referred papers

- [P1] A. Radhakrishnan, H. Le Berre, B. Wilfong, J.-S. Spratt, M. Rodriguez Jr., T. Colonius, and S. H. Bryngelson. “Method for portable, scalable, and performant GPU-accelerated simulation of multiphase compressible flow”. In: *Computer Physics Communications* 302 (2024), p. 109238. DOI: [10.1016/j.cpc.2024.109238](https://doi.org/10.1016/j.cpc.2024.109238)

6.2 Conference papers

- [C2] B. A. Wilfong, R. McMullen, T. Koehler, and S. H. Bryngelson. “Instability of Two-Species Interfaces via Vibration”. In: *AIAA AVIATION FORUM AND ASCEND 2024*. DOI: [10.2514/6.2024-4480](https://doi.org/10.2514/6.2024-4480)
- [C1] B. Wilfong, A. Radhakrishnan, H. A. Le Berre, S. Abbott, R. D. Budiardja, and S. H. Bryngelson. “OpenACC offloading of the MFC compressible multiphase flow solver on AMD and NVIDIA GPUs”. arxiv: 2409.10729. 2024

6.3 Abstracts

- [A1] B. Wilfong and S. H. Radhakrishnan A. and Bryngelson. *Multiphase flow numerics: Perspectives from exascale simulation*. Reykjavik, Iceland, 2024