Ben Wilfong

1 Basic Information

Title: Graduate Research Assistant
Institution: Georgia Institute of Technology
Email: bwilfong3@gatech.edu
Website: benwilfong.com
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 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

- EERE High Performance Computing for Manufacturing Intern — July 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 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

4 Awards

- (2022) Georgia Tech Presidents Fellowship
- (2024) CRNCH Fellowship for Novel Computing Paradigms and Hierarchies

5 Service and Outreach

- (2023-Present) PURA Award Reviewer

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

6.2 Conference papers

[C2] Benjamin A. Wilfong, Ryan McMullen, Timothy Koehler, and Spencer H. Bryngelson. "Instability of Two-Species Interfaces via Vibration". In: *AIAA AVIATION FORUM AND ASCEND 2024*. DOI: 10.2514/6.2024-4480

[C1] Benjamin Wilfong, Anand Radhakrishnan, Henry A. Le Berre, Steve Abbott, Reuben D. Budiardja, and Spencer H. Bryngelson. "OpenACC offloading of the MFC compressible multiphase flow solver on AMD and NVIDIA GPUs". arxiv: 2409.10729. 2024

6.3 Abstracts

[A1] Benjamin Wilfong, Anand Radhakrishnan, and Spencer H. Bryngelson. *Multiphase flow numerics: Perspectives from exascale simulation.* Reykjavik, Iceland, 2024