Runzhang Zhong

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Research Interests

Partial differential equations; fluid dynamics; mathematical physics.

Appointments

Postdoctoral Fellow, Department of Mathematics, University of Missouri Aug. 2025 – present
Mentor: Samuel Walsh

Education

Ph.D. in Mathematics, Vanderbilt University May 2025
Advisor: Marcelo Disconzi
Thesis: *The Linearized Israel–Stewart Equations with a Physical Vacuum Boundary*

B.S. in Mathematics, University of Minnesota, Twin Cities May 2019

Publications and Preprints

4. **The relativistic Euler equations with a physical vacuum boundary and an ideal gas equation of state**. In preparation.
3. **The Israel–Stewart equations with a physical vacuum boundary**. Preprint, 2026, 88 pp. arXiv:2610.26533.
2. (With Gregory Slease and Samuel Walsh)
   Existence and stability of capillary-gravity wave-borne vortices. Submitted, 2026, 39 pp. arXiv:2609.29791.
1. **The linearized Israel–Stewart equations with a physical vacuum boundary**. Lett. Math. Phys. 115 (2025), no. 2, Paper No. 44.

Talks

- SIAM Conference on Analysis of Partial Differential Equations (PD25), Pittsburgh, PA Nov. 2025
- PDE Seminar, University of Missouri Sept. 2025
- AMS Spring Southeastern Sectional Meeting, Clemson University Mar. 2025

Teaching

Instructor of Record — University of Missouri

- MATH 4100 Differential Equations, two sections — Fall 2026
- MATH 4100 Differential Equations — Spring 2026
- MATH 4100 Differential Equations, two sections — Fall 2025

Teaching Assistant — Vanderbilt University

- Differential Equations with Linear Algebra (MATH 2400) — Fall 2024
- Calculus I & II (MATH 1200/1201/1300/1301) — 2021 – 2023, Spring 2025
- Introduction to Probability and Mathematical Statistics (MATH 2820) — Fall 2020

Service and Professional Activities

- Co-organizer (with T. Christiansen and S. Walsh), *KUMUNU+ISU Conference on PDEs, Dynamical Systems and Applications*, University of Missouri — planned for Apr. 2027