Dana Ferranti

Contact Information

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Current position

- Assistant research professor in the Mathematical Sciences Department 2023 -
  Postdoctoral advisor: Dr. Sarah Olson

Research interests

- Computational methods for viscous-dominated fluids described by the Stokes equations.
- Biological applications of Stokes flow, including modeling of viscoelastic materials and biofilms.

Education

Tulane University, New Orleans, LA 2017–2023

- PhD, Mathematics.
- Thesis: *Regularized Stokeslet surfaces and a coupled oscillator system in Stokes flow*
- Advisor: Dr. Ricardo Cortez.

Clark University, Worcester, MA. 2010–2014

- BA, Mathematics and computer science.

Research Experience

- **Tulane University** 2017-2023
  Center for Computational Science in Mathematics Department.
  - Extending the method of regularized stokeslets by using exact integration over triangulated surfaces. Minimal models of cilia interaction to investigating the potential effect of elastic coupling and inertia on synchronization.
- **Massachusetts General Hospital** 2016–2017
  Physics Research in Department of Radiation Oncology.
  - Using theoretical models to demonstrate the value of prior knowledge in determining causal relationships in complex networks, with applications to machine learning in medicine.
  - Advisor: Dr. David Craft.

Teaching Experience

As instructor

- Calculus IV WPI, Spring 2024
  Intro to multivariable calculus
- Probability & Statistics I (Math 1110). Tulane University, Spring 2023
  Elementary probability theory and statistics
  Recognized with **Outstanding Graduate Instructor award** given annually by Tulane University Math Department.
- Introduction to Applied Math (Math 2240). Tulane University, Fall 2021
  Ordinary differential equations for engineers/physicists

As teaching assistant

- Introduction to Applied Math (Math 2240). 2019, 2020, 2021
- Linear algebra (Math 3090). 2020
- Calculus I (Math 1210). 2017, 2019
- Calculus II (Math 1220). 2018, 2020
- Calculus III (Math 2210). 2018

Service and Outreach

- President of AMS Graduate Student Chapter 2019-2021
- Mathematics department tea time organizer 2018-2022
- Treasurer of AMS Graduate Student Chapter 2017-2019
- Member of Inclusivity in Mathematics Task Force at Tulane (IMTF) 2020-2023

Talks

- *Regularized Stokeslet Surfaces*
  Division of Fluid Dynamics (APS Meetings) in Washington D.C. (November 20, 2023)
- *Simulating bodies immersed in viscous flows: new developments in the Method of Regularized Stokeslets (MRS)*
  Worcester Polytechnic Institute Mathematics Colloquium (September 8, 2023)
- *Regularized Stokeslet Surfaces* Scientific Computing Around Louisiana (March 11, 2023)
- *Regularized Stokeslet Surfaces*
  Math for All in NOLA (February 25,2023)
- *An Extension to the Method of Regularized Stokeslets*
  Special session on Recent Developments in Numerical Methods for PDEs, Joint Math Meetings 2023 (January 4,2023)
- *Computational Modeling of Bodies Immersed in Viscous Fluids*
  Hunter College Applied Math Seminar (November 3,2022)

Conferences

- Division of Fluid Dynamics (APS Meetings) in Washington, D.C. (November 2023)
- Joint Math Meetings in Boston, MA (January 2023)
- SIAM Annual Meetings in Pittsburgh, PA (July 2022)
- Blackwell-Tapia Conference at IMSI in Chicago, IL (Nov 2021)
- Math for All in New Orleans (2020,2021,2023)
- Scientific Computing Around Louisiana (2018, 2019, 2023)

Publications

- *Regularized Stokeslet Surfaces* with Dr. Ricardo Cortez, 2023
  accepted pending minor revisions to *Journal of Computational Physics*
- *The value of prior knowledge in machine learning of complex network systems*
  with David Krane and Dr. David Craft (PI), *Bioinformatics*, 2017