

EDUCATION

University of California, Los Angeles (UCLA)

Los Angeles, CA

- Ph.D. in Mathematics

Sep 2020 – Jun 2025

Cumulative GPA: 3.99/4.00

Honors & Awards:

- Pacific Journal of Mathematics Dissertation Award (2025)
- Dissertation Year Fellowship (2024, ~\$20,000 + Tuition)
- Liggett Teaching Fellowship (2023)
- Honorable Mention for NSF GRFP (2022)
- Horn-Moez Prize for First Year Academic Excellence (2021)

• Bachelor of Science in Applied Mathematics

Sep 2016 – Jun 2020

ACADEMIC EMPLOYMENT

Carnegie Mellon University (CMU)

Pittsburgh, PA

NSF RTG Postdoctoral Researcher, Department of Mathematical Sciences

August 2025 – Present

PUBLICATIONS

1. **Chu R.**, Kim I., Munoz S. *The Supercooled Stefan Problem: Fractal Freezing and the Fine Structure of Maximal Solutions.*
2. **Chu R.**, Jacobs M. *Guaranteeing Higher Order Convergence Rates for Accelerated Wasserstein Gradient Flow Schemes.*
3. **Chu R.**, Kim I., Kim Y., Nam K. *The Nonlocal Stefan Problem via a Martingale Transport. Probability Theory and Related Fields* (2025).
4. **Chu R.** *A Hele-Shaw Limit with a Variable Upper Bound and Drift. SIAM Journal on Mathematical Analysis* (2023).
5. Christensen S., **Chu R.**, Anderson C., Roper M. *Fast Asymptotic-Numerical Method for Coarse Mesh Particle Simulation in Channels of Arbitrary Cross Section. Journal of Computational Physics* (2022).

RESEARCH TALKS

- Guaranteeing Higher Order Convergence for Minimizing Movement Schemes in Optimal Transport*, SIAM Conference on Analysis of Partial Differential Equations (PD25) 2025
- The Fractional Stefan Problem*, CMU Center of Non-linear Analysis Seminar 2025
- Stochastic Optimal Transport and the Stefan Problems*, University of Michigan Financial/Actuarial Mathematics Seminar 2024
- The Fractional Stefan Problem*, UCLA Participating Analysis Seminar 2024
- The Stefan Problem via Stochastic Variational Methods*, AMS Fall Southeastern Sectional Meeting 2023
- The Stiffness Limits of Porous Medium Type Equations*, Auburn University Applied and Computational Mathematics Seminar 2022
- The Stiffness Limits of Porous Medium Type Equations*, UCLA Participating Analysis Seminar 2022

TEACHING EXPERIENCE

Instructor of Record, Carnegie Mellon University

- Numerical Methods (Math 21-369) Winter 2025
- Matrices and Linear Transformations (Math 21-241) Fall 2024

Instructor of Record, University of California, Los Angeles

- Masters Real Analysis (Graduate Course, Math 204) Winter 2023 & Winter 2024

Teaching Assistant, University of California, Los Angeles

- Advanced Topics in Financial Mathematics (Math 179) Spring 2024
- Introduction to Statistics (Math 170S) Fall 2023
- Introduction to Data-Driven Mathematical Modeling (Math 42) Spring 2023

- Mathematical Finance (Math 174E) *Fall 2022*
- Mathematical Modeling (Math 142) *Spring 2022 & Winter 2021*
- Applied Partial Differential Equations (Graduate Course, Math 266B) *Winter 2022*
- Applied Ordinary Differential Equations (Graduate Course, Math 266A) *Fall 2021*
- Real Analysis (Math 131B) *Spring 2021*
- Differential and Integral Calculus (Math 31A) *Fall 2020*

MENTORING

Departmental Reading Program Co-Organizer, UCLA *Fall 2021 – June 2025*

- Co-organized the UCLA Mathematics Department Reading Program, pairing approximately 45 undergraduates annually with graduate student mentors for one-on-one reading courses on advanced mathematical topics.

Departmental Reading Program Mentor, UCLA *Fall 2021 – June 2025*

- Mentored undergraduates in quarter-long reading projects on advanced topics including:
 - Mathematical Statistics
 - Optimization and Linear Algebra
 - Stochastic Calculus (3 iterations)
 - Fourier Analysis
 - Measure Theory

INDUSTRY EMPLOYMENT

Morgan Stanley *New York City, NY*

Quantitative Strategist Intern, Equity Derivatives Team *Summer 2024*

- Implemented a C++ local-volatility model with stochastic rates and integrated it into the production pricing library.
- Derived the model-implied risk-free rate and used it as the interest-rate component for pricing equity options.