Raymond Chu

Department of Mathematical Sciences CMU
raymondchu@cmu.edu

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 in Arbitrary Dimensions: Ill-posedness, Fractal Freezing, and Regularity of Maximal Solutions*. In preparation.
2. **Chu R.**, Jacobs M. *Guaranteeing Higher Order Convergence Rates for Accelerated Wasserstein Gradient Flow Schemes*. In preparation.
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*

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
– 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*

Undergraduate Mentoring

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

- 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 – Present*

- 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 local volatility model from an academic paper to price zero-coupon bonds in C++.
- Integrated the zero-coupon bonds model to make a hybrid equities model with stochastic interest rates.