Raymond Chu

Department of Mathematics
University of California, Los Angeles
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Education

University of California, Los Angeles (UCLA) Los Angeles
– Ph.D. in Mathematics *Sep 2020 – Present*
Cumulative GPA 4.00
Qualification Exams Passed: Analysis and Applied Differential Equations
– Bachelor of Science in Applied Mathematics *Sep 2016 – Jun 2020*

Research Interest

Analysis of Partial Differential Equations, Probability Theory, Stochastic Processes, Mathematical Modeling, and Applied Mathematics

Publication

R. Chu. *A Hele-Shaw Limit with a Variable Upper Bound and Drift*. Submitted. *2022*

S. Christensen, **R. Chu**, C. Anderson, M. Roper. *Fast Asymptotic-Numerical Method For Coarse Mesh Particle Simulation In Channel Of Arbitrary Cross Section*. Submitted. *2021*

Awards

National Science Foundation (NSF) GRFP, Honorable Mention, **NSF** *2022*
– The Only Honorable Mention for the NSF Graduate Research Fellowship Program for Mathematical Analysis in 2022

Horn-Moez Prize, **UCLA** *2021*
– Awarded to 3 Ph.D. mathematics students per cohort for academic excellence during first year of graduate studies

Summer Mentored Research Fellowship, **UCLA** *2021*
– A merit based summer research fellowship

Undergraduate Research Fellowship, **UCLA** *2020*
– A merit based scholarship for my undergraduate research

Research Experience

Partial Differential Equations, **UCLA** *2020-Present*
– Researching the well posedness of various Partial Differential Equations arising in physical settings using tools such as Analysis, Optimization, and Probability Theory

The Mycofluidics Lab, **UCLA** *2018-2020*
– Mathematical modeling of inertial migration of particles across micro-channels

– Used our model to derive new asymptotic scalings of forces in inertial migration, which we validated with numerical simulations

– Wrote a numerical solver in MATLAB for a linearized Navier-Stokes system

Applied Math REU, **UCLA** *2019*
– Used machine learning in MATLAB on a data set of 15 million entries to understand deforestation in Brazil

– Constructed a mathematical model on deforestation based on the data set

– Wrote numerical solvers for the resulting model in MATLAB

Presentation

The Stiffness Limit of Porous Medium Type Equations, *UCLA Participating Analysis Seminar*, Los Angeles, California, 2022.

inFocus Fast Inertial Lift Velocity Calculation In Arbitrary Geometry, *72nd Annual Meeting of the American Physical Society's Division of Fluid Dynamics*, Seattle, Washington, 2019.

A Model of Deforestation for Agricultural Land Clearance in the Brazilian Rainforest, *4th Annual Intelligence Community Academic Research Symposium*, Washington DC, 2019.

Professional Service

Departmental Reading Program Committee Member, **UCLA** *2021-Present*
- Match 45 undergraduates per year with a graduate student mentor on a 1 on 1 reading course on advanced mathematical topics

Undergraduate Studies Committee Representative, **UCLA** *2021-Present*
- Help the undergraduate studies committee decide on educational policy and curriculum matters for undergraduates

Undergraduate Mentoring

Departmental Reading Program Mentor, **UCLA** *2021-Present*
- Stochastic Calculus and Probability Theory *Spring 2022*
- Stochastic Processes and Optimization *Winter 2022*
- Fourier Analysis *Fall 2021*
- Calculus of Variations for Fluid Mechanics *Summer 2021*
- Linear Algebra Applied to Machine Learning and Optimization *Spring 2021*

Teaching Experience

Teaching Assistant, **UCLA** *2020-Present*
- Math 142: Mathematical Modeling *Spring 2022*
- Math 266B: Applied PDEs (Graduate course) *Winter 2022*
- Math 266A: Applied ODEs (Graduate course) *Fall 2021*
- Math 131B: Real Analysis *Spring 2021*
- Math 142: Mathematical Modeling *Winter 2021*
- Math 31A: Differential Calculus *Fall 2020*

Graduate Course

- Probability Theory: Math 275A, Math 275B, Math 275C
- Numerical Analysis: Math 269A, Math 269B, Math 269C
- Differential Equations: Math 266A, Math 266B, Math 266C, Math 251A, Math 251B, Math 251C
- Continuum Mechanics: Math 272A, Math 272B
- Real Analysis: Math 245A, Math 245B, Math 245C, Math 254A, Math 285G
- Harmonic Analysis: Math 247A, Math 247B
- Complex Analysis: Math 246A, Math 246B