

Claire Murphy

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EDUCATION

UC Santa Barbara, Santa Barbara, CA - **Ph.D. in Mathematics** 09/22 - Present

- GPA: 4.0
- Advisor: Dr. Katy Craig
- Advanced to candidacy April 2025, expected graduation June 2027

Santa Clara University, Santa Clara, CA - **B.S. in Mathematics, B.S. in Computer Science** 09/18 - 06/22

- GPA: 3.933, graduated Summa Cum Laude
- Member of University Honors Program and Phi Beta Kappa

PREPRINT

Craig, Katy, and Claire Murphy. "Random Blob Methods for Diffusion." arXiv:2608.14914 (2026).

GRANTS

UCSB Graduate Division Dissertation Fellowship 01/27 - 03/27 (upcoming)

- One-quarter award available to UCSB doctoral students
- Awarded competitively by the Graduate Division to support dissertation research

ICERM Partial Differential Equations for Many Particle Systems 08/26

- AMS Backstop Grants Program Travel Award

2026 SIAM Annual Meeting 07/26

- UCSB Graduate Student Association Conference Travel Grant
- UCSB Academic Senate Doctoral Student Travel Grant
- SIAM Student Travel Award

INVITED TALKS

Random Blob Methods for Diffusion

- 2026 AMS Western Sectional Meeting, Tempe, Arizona 11/7/26 (upcoming)
- 2026 SIAM Annual Meeting, Cleveland, Ohio 7/10/26

Optimal Transport on Graphs

- Gradient Flows Reading Group, Zoom 3/31/26

Wasserstein Distances and Empirical Measures

- Women in OT Reading Group, Zoom 7/2/25

Sampling via Nonlinear Diffusion Equations

- Statistical Optimal Transport (SLMath), Berkeley, California 6/20/25
- Women in Optimal Transport, Vancouver, Canada 4/18/24

A Particle Approximation of the Jeans-Vlasov Equation

- Particle Interactive Systems (SLMath), Berkeley, California 6/28/24

TEACHING AND MENTORSHIP EXPERIENCE

UC Santa Barbara, Santa Barbara, CA - **Teaching Associate** 09/22 - Present

- TA for various UCSB undergraduate courses, including Calculus with Applications, Linear Algebra, Differential Equations, Vector Calculus, and Numerical Analysis

AAUW Tech Trek, Santa Barbara, CA - Core Class Instructor**06/26**

- Taught a “Math You’ve Never Seen Before” course at AAUW Tech Trek Camp Blackwell, a free week-long STEM summer camp for middle school girls in underserved communities
- Developed a fifteen-hour curriculum from scratch, designed for middle school girls who had not previously been exposed to modern mathematics
- Oversaw a group of twenty-five students for three hours a day, five days a week

UC Santa Barbara, Santa Barbara, CA - Senior Thesis Co-Supervisor**09/24 - 06/25**

- Supervised UCSB undergraduate Vidushi Mittal’s senior thesis, investigating a Wasserstein-like metric on two-node graphs, leading weekly meetings to assess progress and answer questions
- Edited a 12-page survey paper on a metric over finite weighted graphs that preserves heat flow as the gradient flow of the entropy

Society of Women Engineers++, Santa Clara University - Co-Chair**10/19 - 06/22**

- Led weekly Saturday sessions to teach middle school girls Python and Scratch
- Successfully adapted to remote work after one year of leading and teaching in-person
- Restructured student recruitment, resulting in a 129% increase in sign-ups for the program

LEADERSHIP EXPERIENCE**LLM Seminar, UC Santa Barbara - Co-organizer****07/26 - Present**

- Develop a six-week introductory LLM course for UCSB students and faculty
- Build the seminar schedule and recruit speakers alongside a co-organizer, coordinating topics and availability across a six-week series
- Delivered two lectures on Transformer architecture and mixture of experts

SIAM Student Chapter, UC Santa Barbara - Vice President**06/25 - Present**

- Facilitate the chapter's weekly seminar series by recruiting and scheduling speakers from across the math department and visiting institutions
- Delivered eight lectures on random matrices, mean field games, optimal control, optimal transport, and other topics in applied mathematics

TECHNICAL SKILLS

- **Math:** SageMath, LaTeX, Mathematica, Manim (an animation engine that runs on Python)
- **Programming:** Java, C++, Python, Scala, Plotly, Pandas, Numpy

ADDITIONAL HONORS AND AWARDS

- Recipient of Darin Butz Scholarship, awarded to a single female student in SCU's math department each year
- Recipient of SCU Presidential Scholarship, awarded to ten undergraduates out of 1,300 students