2511 Hearst Avenue
Apartment 114
Berkeley, CA 94709

# Andrew Scharf

908-499-7338
math.berkeley.edu/~als
andrewscharf@berkeley.edu

## EDUCATION

**University of California at Berkeley | Berkeley, CA** May 2025

PhD Candidate in Applied Mathematics

*Activities*: Organizer for Seminar on Modeling, Analysis and Simulation in Applied PDEs
Directed Reading Mentoring Program

*Awards:* Math Summer Grant Award

*Presentations*: 7th KUMUNU-ISU Conference in PDE, Dynamical Systems and Applications
UC Berkeley Seminar on Modeling, Analysis and Simulation in Applied PDEs
UC Berkeley Harmonic Analysis and Differential Equations Seminar

**Williams College | Williamstown, MA** June 2018

B.A. Double Major: Mathematics with Honors and Biology, *cum laude*. GPA: 3.8/4.0

*Awards*: Dean's List for all seven semesters
Erastus C. Benedict, Class of 1821, Prize in Mathematics (Second Prize)
Budapest Semester in Mathematics Highest Honors
National Merit Scholar

*Presentations*: Young Mathematicians Conference 2017
Joint Mathematics Meetings 2018
Williams College Senior Math Colloquium (Thesis Defense)

*Publications*: The moduli space of tropical curves with fixed Newton polygon, *Adv. Geom.*
Tropically planar graphs, *Collect. Math*.
Cumulative cultural evolution and mechanisms for cultural selection in wild bird songs, *Nat. Commun*.

## EXPERIENCE

### University of California at Berkeley | Berkeley, CA

**Graduate Researcher in Applied Mathematics under Dr. Sunčica Čanić** June 2022 – present

- Developed a mathematical model for a multilayered poroelastic structure interacting with a fluid.
- Model applications include membrane-encapsulated cell scaffolds used in bioartificial organ design.
- Devised a novel finite element numerical solver for the multiphysics problem using a time-splitting approach.
- Implemented the algorithm in FEniCS and validated simulations with manufactured solutions.

**Graduate Student Instructor** August 2020 – May 2023

- Led in-person and online calculus discussion sections and completed a course on mathematical instruction.
- Lectured to several hundred students in place of professor during absences.

### College Tutors and Nannies | Summit, NJ

**Professional Tutor** September 2018 – June 2021

- Produced independent teaching material for STEM and other subjects for middle school through college levels.
- Spearheaded a transition to remote learning and the adoption of associated online educational tools.

### Williams College | Williamstown, MA

**Undergraduate Researcher in Mathematics under Dr. Ralph Morrison** June 2017 – June 2018

- Engaged in tropical geometry research and wrote an honors thesis with novel results and a mesh-based algorithm.

**Mathematics Senior Seminar Teaching Assistant** February 2018 – May 2018

- Ran discussion sections, held office hours, and reviewed lecture material for a seminar on tropical geometry.

**Undergraduate Researcher in Neuroscience under Dr. Heather Williams** May 2016 – August 2016

- Conducted field work and built a statistical model to analyze the dynamics of song learning behavior in sparrows.

### Northeastern University | Boston, MA

**Undergraduate Researcher in Biology under Dr. James Monaghan** May 2015 – August 2015

- Created and executed an experimental protocol using CRISPR/Cas9 gene editing to study regeneration in axolotls.

## TECHNICAL SKILLS

R, Java, Python, Mathematica, MATLAB, Julia, FEniCS, FreeFEM++