

Ajay Srinivasan | Curriculum Vitae

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Education

University of Southern California

Los Angeles, CA

B.S. Mathematics, CGPA: 3.97

August 2021 – May 2025

Minor in Physics

Graduate Coursework: Algebra I-II, Algebraic Topology, Differential Geometry, Complex Analysis, Thermodynamics and Statistical Mechanics, Quantum Field Theory II (taken at Caltech), Topics in Algebraic Geometry (audited).

Experience

Academic

Department of Mathematics, The University of Chicago

Chicago, IL

Visiting Participant, Mathematics REU 2024

Summer 2024

Worked on infinite loop spaces in motivic homotopy theory

Dept. of Physics and Astronomy, University of Southern California

Los Angeles, CA

Undergraduate Researcher

2022–2024

Worked on the theory of binary Bose-Einstein condensates in two dimensions.

IAS/Park City Mathematics Institute, Institute for Advanced Study

Park City, UT

Undergraduate Summer School Participant

Summer 2023

Learned about quantum algorithms. Also worked on computing the number of holonomy vectors of at most a certain length on a Veech surface.

Vocational

Department of Mathematics, University of Southern California

Los Angeles, CA

Grader, MATH 226 (Calculus III)

2024–Present

Graded weekly assignments for calculus III.

Student-Athlete Academic Services, University of Southern California

Los Angeles, CA

Undergraduate Tutor, Mathematics and Physics

2023–Present

Tutored student-athletes at USC in a variety of math and physics classes including the calculus sequence, the intro to physics sequence, number theory, and probability theory.

Community

SC Math Club

Los Angeles, CA

President

2023–Present

Rebuilt the e-board for Spring 2024. Organized events for the undergraduate math community like the departmental BBQ, the integral bee, and weekly general meetings.

Integral Bee Committee, USC

Los Angeles, CA

Chair

2022–Present

Founded the integral bee at USC. Worked alongside the undergraduate math associations at UCLA and Caltech to co-organize the first annual inter-university integral bees between these institutions.

Writing

A motivic homotopical monadicity theorem

with J.P. May. Based on work done at the UChicago Mathematics REU 2024 (In progress)

Vortex stability in interacting Bose-Einstein condensates

with S. Haas and A. Wirthwein 2024

Talks

APS March Meeting 2024

Minneapolis, MN

Single Vortex Dynamics in Binary Bose-Einstein Condensates

March 2024

Based on work done with S. Haas and A. Wirthwein

Undergraduate Talk, IAS/Park City Mathematics Institute 2023

Park City, UT

Billiard Dynamics on the Double Pentagon

August 2023

Delivered with H. Malik, S. Rothstein, N. Ringrose, and E. Brodsky. Advised by A. Artiles.

Honors and Scholarships

Haltom Sr. Endowed Scholarship and Gleberman Endowed Scholarship

2024

Awarded by USC Dornsife

Lick Scholarship

2023, 2024

Awarded by the USC Dept. of Physics & Astronomy for conference travel

to Strings & Geometry and APS March Meeting

Honorable Mention in the Physical Sciences, Math, and Engineering Category

2023

USC Undergraduate Research Symposium

for *Collision Dynamics of Bose-Einstein Condensates in Two Spatial Dimensions*

USC Dornsife Dean's List

Fall 2021 – Spring 2023

USC Department of Mathematics Outreach Award

2022

Languages (computer and otherwise)

Computer: Python, Mathematica, C++, MATLAB, Arduino.

Human: English (native), Tamil (native), French (proficient).

Interests

Birational geometry, homological mirror symmetry, and stable homotopy theory. Also, holography and flux compactifications in string theory.