Ajay Srinivasan | Curriculum Vitae

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Education

University of Southern California **Los Angeles, CA**
B.S. Mathematics (Honors Program), CGPA: 3.95 *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 (at Caltech), Topics in Algebraic Geometry (audited, instructor: Joseph Helfer), Seminar in Algebra: Derived ∞-Categories (audited, instructor: Aravind Asok).

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 *2024–Present*
Graded weekly assignments for Calculus III in Fall 2024 and Calculus II (for Engineers and Scientists) in Spring 2025.

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 **2025**
with S. Haas and A. Wirthwein *arXiv link*

Talks

Volunteer Talk, UChicago Math REU 2024 **Chicago, IL**
The Where's Waldo of Infinite Loop Spaces *August 2024*
Based on recent work of J.P. May, H.J. Kong, F. Zou and discussions with J.P. May

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 – Fall 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, derived algebraic geometry, homological mirror symmetry, stable homotopy theory, and motivic homotopy theory. Also, holography and flux compactifications in string theory.