

# 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 (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

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### **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

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### **Volunteer Talk, UChicago Math REU 2024**

*The Where's Waldo of Infinite Loop Spaces*

Based on recent work of J.P. May, H.J. Kong, F. Zou and discussions with J.P. May

**Chicago, IL**

August 2024

### **APS March Meeting 2024**

*Single Vortex Dynamics in Binary Bose-Einstein Condensates*

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

**Minneapolis, MN**

March 2024

### **Undergraduate Talk, IAS/Park City Mathematics Institute 2023**

*Billiard Dynamics on the Double Pentagon*

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

**Park City, UT**

August 2023

## Honors and Scholarships

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### **Haltom Sr. Endowed Scholarship and Gleberman Endowed Scholarship**

Awarded by USC Dornsife

**2024**

### **Lick Scholarship**

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

to Strings & Geometry and APS March Meeting

**2023, 2024**

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

USC Undergraduate Research Symposium

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

**2023**

### **USC Dornsife Dean's List**

**Fall 2021 – Fall 2023**

### **USC Department of Mathematics Outreach Award**

**2022**

## Languages (computer and otherwise)

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

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

## Interests

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