

# Ankush G. K.

📍 ACS 238C, University of California Merced, 5200 Lake Rd, Merced, CA 95343

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🔗 <https://ankushgk.github.io/>

## Education

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### Ph. D. in Physics

University of California, Merced • Expected 2028

Grade Point Average (GPA): **3.85/4**

Advisor: [Prof. Ajay Gopinathan](#)

### M. Sc. in Physics and B. Engg. in Mechanical Engineering

Birla Institute of Technology and Science Pilani (BITS Pilani) - Hyderabad • Graduated 2022

Cumulative Grade Point Average (CGPA): **7.86/10**

Thesis 1 advisor: [Dr. Yong Wang](#)

Thesis 2 advisor: [Dr. Aravinda Raghavan](#)

## Fellowships/Awards

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- Department of Physics Summer Fellowship at University of California, Merced • (2024)

## Research Experience

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### Graduate Student University of California, Merced

Project: Single Microtubule Rotation on a Gliding Assay • Fall 2023 - present

Guided by: [Prof. Ajay Gopinathan](#)

» Building an image analysis pipeline to analyze movies from dilute Microtubule (MT) gliding assays. Quantifying the different rotation rates based on the structural chirality of MTs prepared under different experimental conditions to compare with the theoretical results. Why do individual MTs rotate, when the Kinesin motors walking on them provide only an off-axis force which should lead to translational motion? How is this rotation connected to the structural chirality of a MT?

### Visiting Student International Centre for Theoretical Sciences (ICTS-TIFR), India

Project: Active Nematics Patterns on Manifolds • Fall 2022 - Spring 2023

Guided by: [Dr. Vijaykumar Krishnamurthy](#)

» Built a framework for modelling self-organization in an Active Nematic system that represents a biologically relevant objects like the actomyosin cytoskeleton. Used FEniCS (a finite-element solver) to solve nematodynamics equation with a 2nd rank tensor order parameter on different geometries: 2D flat manifold, and 2D curved manifold embedded in 3D space.

### Undergraduate Thesis 1 (online) Max Planck Institute for Dynamics and Self-Organization

🔧 Project: Electromechanics of Heart Muscle • Fall 2021

Guided by: [Dr. Yong Wang](#)

» Explored how different types on electrical stimulus deforms a 2D and 3D excitable domain. Combined electrophysiology and continuum mechanics to simulate a one-way coupled system in COMSOL where the electrical impulse dictates how the tissue deforms. Part of the group that worked on building an Engineered Heart Muscle Patch to treat diseased hearts.

**Undergraduate Student** BITS Pilani Hyderabad Campus, India

⚙ *Project:* Low Reynolds Number Mixing of fluids in a Microfluidic channel

*Guided by:* [Dr. Aravinda Raghavan](#)

» Established a connection between the topological features of the flow and the onset of chaotic behaviour to quantify mixing in small-scale open flows. Simulated two different flow fields in COMSOL with different obstacles to quantify the stretching and rotation that leads to mixing.

## Teaching Experience

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**Teaching Assistant** University of California, Merced

*Course:* PHYS 008D - Introductory Physics I for Physical Sciences • Fall 2024

*Course:* PHYS 009L - Introductory Physics II for Physical Sciences • Fall 2023, Spring 2024

» Guiding undergraduates to perform simple lab experiments that cover concepts in Kinematics and Electrostatics.

## Schools/Worskshops

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- "Bangalore School on Statistical Physics - XIII", International Centre for Theoretical Sciences (ICTS-TIFR), Bengaluru, India • July 2022

## Activities

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**President** Biophysics Graduate Club at University of California, Merced • 2024

**Captain** Campus Ultimate Frisbee Team, Hyderabad. • 2020