Suraj Kumar Sahu

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Documents and articles mentioned here are available from the author on request.

Education

University of California Merced — Merced, CA, USA
Ph.D. Candidate in Physics — *Jan 2021 – Present*

National Institute of Technology Rourkela — Rourkela, Odisha, India
M.S. in Physics — *Aug 2017 – May 2019*

D.R. Nayapalli College, Utkal University — Odisha, India
Bachelor of Physics (Honors) — *Jul 2014 – Jun 2017*

Experience

Gopinathan Group, Department of Physics — University of California Merced
Graduate Research Assistant — *Jan 2021 – Present*

- Research in agent-based modeling of vasculogenesis in collaboration with Sindi Lab and Kara E. McCloskey Lab.

Department of Physics — University of California Merced
Teaching Assistant — *Jan 2021 – Present*

- Teaching assistant for physics courses in the School of Natural Sciences.

Computational Biophysics Group — NIT Rourkela, India
Graduate Student Researcher — *Aug 2017 – May 2019*

- Research in computational biophysics at Biomoldyn group.

Service

CEMB; GradExcel Peer Mentor
Trainee Leadership Council, GradExcel Peer Mentor — *Aug 2024 – 2025*

- Organized tutorials, workshops, webinars; mentored graduate students.

Graduate Biophysics Club — University of California Merced
President — *Jun 2021 – 2023*

- Led outreach events, journal clubs, science communication.

Awards & Achievements

2025: CEMB Summer Research Fellowship, CCBM Travel Award, Physics graduate group travel fellowship

2024: Physics graduate group travel fellowship, GradExcel Peer Mentor Award

2023: CCBM Outreach Fellowship, CCBM Travel Fellowship, Physics graduate group travel fellowship

2022: Physics graduate group travel fellowship, Bobcat Summer STEM Academy Fellowship

Publications

Suraj, S., M. Biswas, "Modeling protein association from homogeneous to mixed environments: A reaction-diffusion dynamics approach.", *Journal of Molecular Graphics and Modeling*, vol. 107, pp. 107936 (Jan 2021).

Research

In collaboration with Dasbiswas Lab and Saif Lab UIUC

Compaction of Collagen Gel by Multicellular networks of Fibroblasts — *Oct 2024 – Present*

- *In preparation*

Mechanobiology of Cell-Cell Junction Formation and Adhesion stability — *Aug 2024 – Present*

- *In preparation*

In collaboration with Sindi Lab and Kara E. McCloskey Lab

Agent-based modeling of Vasculogenesis — *Jan 2021 – Present*

- APS March Meeting 2022. *In preparation*

DNA Target-Site Search optimization by DNA binding proteins — *Jan 2021 – Jun 2021*

- Lab research rotation project.

Thermodynamics and Kinetics of Macromolecular Crowding effects on Protein Reaction — *Aug 2018 – Dec 2021*

- Master Thesis. Link

Conferences & Workshops

University of California Merced — Spring 2025

Workshop on AI Tools for Research and Data Analysis — Organizer and Instructor

University of Pennsylvania, Philadelphia — Summer 2024

CEMB Boot camp — Project Leader and Instructor

Attendee:

2025 APS March Meeting, Los Angeles — Presentation: Stability of Cell-Cell Junctions

ASCB — EMBO Cell Bio Meeting, San Diego (Dec 2024) — Poster: Balancing Cortical Tension and Adhesive Force for Stable Cell Junctions

2024 APS March Meeting, Minneapolis — Presentation: Cell-cell junction formation and dynamics in vascular networks

2023 APS March Meeting, Las Vegas — Presentation: Assembly and Mechanical Remodeling of Vascular Network

2022 APS March Meeting, Chicago — Presentation: Agent Based Simulation of Vasculogenesis

CEMB Boot-camp, Washington University St. Louis (Jul 2022)

Outreach:

Research in Motion Series (CEMB); Bahujan Scholars Network; Digital Nalanda (2024–25)

Science of Coronavirus (Organizer); NSBE; Emerging Researcher Conference (2023)

Franklin Institute (Planning Committee); Bobcat STEM Academy (Instructor) (2022)

Mother/Daughter Science Camp (Volunteer); Science of Flocks and Swarms (2021)

Science out-of-Junk Program (Organizer) (2019)

Graduate Coursework

Physics: Classical Mechanics, Electrodynamics, Statistical Mechanics, Quantum Mechanics, Non-linear Dynamics and Chaos, Condensed Matter Theory, Atomic and Molecular Physics

Life Science: Cell and Cellular Techniques, Basics in Molecular Medicine, Recombinant DNA Technology, Basic Biophysics

Computational: Computational Physics, Classical Molecular Simulation, Numerical Mathematical Methods for Physics, Machine Learning & Statistics for Physics and Astronomy

Skills

Research & Modeling: Agent-Based Modeling, Particle-Based Simulations, Reaction-Diffusion Systems, Stochastic Modeling, Network Dynamics, Biophysics Theory

Computation: AI Augmented Research Workflow, High-Performance Computing, Coding and Data Analysis, Prompt Engineering

Languages & Tools: Python, LaTeX; NumPy, SciPy, Matplotlib, Pandas, NetworkX

Specialized: ReaDDy (Molecular Dynamics), NetLogo (ABM), Cursor AI

References

Prof. Ajay Gopinathan ✉ — Department of Physics, CCBM, UC Merced
Prof. Suzanne Sindi ✉ — Department of Applied Mathematics, UC Merced
Prof. Kinjal Dasbiswas ✉ — Department of Physics, CCBM, UC Merced