# Rahul Chajwa

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**RESEARCH INTERESTS:** Soft Condensed Matter, Biological Physics, Complex Systems

## ACADEMIC POSITION

- **Research Scientist** — Department of Bioengineering, **Stanford University**
  Mar 2026 – Present
- **Postdoctoral Scholar** — Department of Bioengineering, **Stanford University**
  Mar 2021 – Feb 2026
  former Human Frontier Science Program Cross Disciplinary Fellow
  **Advisor:** Manu Prakash

## EDUCATION

- **PhD in Physics** — **International Centre for Theoretical Sciences, TIFR** Bangalore, India
  May 2015 - Feb 2021

  Mar 2017 – Sep 2017 — **University of Massachusetts Amherst**, Short-term Scholar

  TIFR Best Thesis Award Physics 2021
  **Advisors:** Sriram Ramaswamy, Rama Govindarajan, Narayanan Menon

- **BS-MS in Physics** — **Indian Institute of Science Education and Research**, Mohali, India
  Aug 2010 - May 2015

## PUBLICATIONS

[9] **R. Chajwa**, A. Sharma, M. Prakash, *Dynamics and Physical Selection of Microbes around Marine Snow*. [To be submitted]

[8] S. Bürger, H. Joshi, S.G. Prasath, **R. Chajwa**, R. Govindarajan, *Viscous Settling of Bravais Unit-Cells*. Invited paper in the **Proceedings of the Royal Society A** [under review]. arXiv:2604.26189v1 [cond-mat.soft] (2026).

[7] **R. Chajwa**, Rajarshi, Rama Govindarajan, Sriram Ramaswamy, *Active Caustics*, **Phys. Rev. Fluids** 00, 003100 doi:10.1103/m3v2-bdvj (2026).

[6] H. Joshi, **R. Chajwa**, S. Ramaswamy, N. Menon, R. Govindarajan. *Dynamics and clustering of sedimenting disc lattices.* ***Journal of Fluid Mechanics*** 1017:A1. doi:10.1017/jfm.2025.10467 (2025).

[5] **R. Chajwa**, E. Flaum, K.D. Bidle, Benjamin Van Mooy, Manu Prakash, *Hidden Comet-Tails of Marine Snow Impede Ocean-based Carbon Sequestration,* ***Science*** 386, eadl5767 (2024). 10.1126/science.adl5767

*Perspective:* B. B. Cael, Lionel Guidi, *Tiny comets under the sea*. ***Science*** 386, 149-150(2024). 10.1126/science.ads5642

*Featured in:* ScienceNews, Stanford Report, The New York Times

[4] A.G. Larson*, **R. Chajwa***, Hongquan Li, Manu Prakash, *Inflation induced motility for long distance vertical migration*, **Current Biology** 34, 1-15 (2024). * Equal Contribution

*Perspective*: Clotilde Cadart, *Cell Biology: Wanderers that balloon towards light*, Current Biology vol. 34, 22 (2024)

*Featured in:* ***Nature*** 634, 1021 (2024), ScienceNews, BBC

[3] **R. Chajwa**, N. Menon, S. Ramaswamy, R. Govindarajan, *Waves, Algebraic Growth, and Clumping in Sedimenting Disk Arrays*, **Phys. Rev. X** 10, 041016 (2020).

[2] L.P. Dadhichi, J. Kethapelli, **R. Chajwa**, A. Maitra and S. Ramaswamy, *Nonmutual torques and the unimportance of motility for long-range order in two-dimensional flocks*, **Phys. Rev. E** 101, 052601 (2020).

[1] **R. Chajwa**, N. Menon and S. Ramaswamy, *Kepler Orbits in Pairs of Disks Settling in a Viscous Fluid*, **Phys. Rev. Lett.** 122, 224501 (2019).

## HONOURS & AWARDS

- **Invited Panelist with the Science and Technology Advisor to the Secretary of State** This was a high-level panel to discuss the lights and shadows of multilateral scientific collaboration at the 23rd HFSP Awardees Meeting, Washington DC (2024).
- **Stanford Bio-X Travel Award**, Stanford University (2023). **500 USD** for APS March Meeting travel 2023.
- Selected for Participation in the **10th Global Young Scientists Summit** organized by the National Research Foundation, Singapore (2022).
- **HFSP Cross Disciplinary Fellowship**, International Human Frontier Science Program Organization (2021). Award amount: **203000 USD** for the period 1 May 2021 – 30 April 2024.
  HFSPO further highlighted me in their annual report 2021.
- **TIFR Best Thesis Award in Physics 2021**, Tata Institute of Fundamental Research, Mumbai. This is a highly competitive award that selects one PhD thesis across all TIFR centers.
- **Infosys Foundation ICTS Excellence Grant**, International Centre for Theoretical Sciences TIFR (2020).
- **IAS Summer Research Fellowship**, Indian Academy of Sciences, Bangalore (2013).
- **Innovation in the Pursuit of Scientific Excellence (INSPIRE) Scholarship** (2010 - *5 years*) awarded by the Department of Science and Technology, India to meritorious students with aggregate marks within the top 1% of the Class XII Board Exam, upon qualifying IISER Aptitude Test.

## INVITED TALKS

- Invited contributor of the **Living Futures** Essay: *Towards a Physics of the Living Ocean*. This is a physics community effort to complement and contrast the talks in Living Histories.

- Cellular Slingshots and Hidden Comet-tails in the Ocean's Biological Pump, CDR Coffee Talk, Yale Centre for Natural Carbon Capture, Earth & Planetary Sciences, **Yale University** 2025.
- Suspensions with Internal Degrees of Freedom, Physics Colloquium, **University of Oregon**, 2025.
- Cellular Slingshots and Hidden Comet-tails in the Ocean, **SLAAM (Soft, Living, Active and Adaptive Matter) Seminar**, American Physical Society (DBIO, DSOFT) 2025.
- Suspensions with Internal Degrees of Freedom, James Franck Institute, **University of Chicago** 2025.
- Systems Biology Seminar, **Institute for Advanced Study, Princeton** 2024.
- Flow and Self-Organization in the Biological Pump, **Kavli Institute for Theoretical Physics** 2024.
- Hidden Comet-tails in Marine Snow Impede Ocean-based Carbon Sequestration, International Human Frontier Science Program Organization Meeting 2024, **National Academy of Sciences**, **Washington DC**.
- Surprises in Driven Stokesian Suspensions: on land and sea, Physics Seminar, **Indian Institute of Technology Gandhinagar** 2024.
- Cellular Slingshots and Hidden Comet-Tails in the Oceans, Fluid and Turbulence Seminar, **International Center for Theoretical Sciences TIFR** 2024
- Surprises in Driven Stokesian Suspensions: on land and sea, Physics Seminar, **Tata Institute of Fundamental Research Hyderabad** 2024.
- Surprises in Driven Stokesian Suspensions, Soft Matter Seminar, **Indian Institute of Science Education and Research Mohali** 2024.
- Active Caustics, Active matter in complex environments conference, **Aspen Center for Physics** 2023.
- Motile particles without inertia form caustics in vortical flows, **APS March Meeting 2022**.

## TEACHING & MENTORING

- **TA for Physiology Course at the Marine Biological Laboratory, 2024**
  with Prof. Manu Prakash
  Two weeks long course in which I mentored three grad students on a project on the experiment al and theoretical aspects of marine snow in coastal ecosystems.

- **TA for Statistical Mechanics at TIFR Hyderabad, 2016**
  with Prof. Mustansir Barma
  Mandatory PhD level Physics Course carrying 4 credits
  My duties involved making and evaluating assignment and exam questions; and holding tutorials.

- **TA for SageMath Programming at IISER Mohali, 2014**
  with Prof. Kapil Paranjape, Mathematics Department
  Mandatory Undergraduate Semester-long course carrying 4 credits
  My duties involved organizing hands-on programming sessions twice a week.

**MENTORING:** TA for Physiology Course at the Marine Biological Laboratory, 2024 with Prof. Manu Prakash. Two weeks long course in which I mentored 3 grad students (Anissa Dea, Sajjad Norouzi, Debraj Ghose). 1 grad student (Harshit Joshi with Prof. Rama Govindarajan), 3 undergraduates (Sebastian Burger and Farid Zaheer with Prof. Rama Govindarajan and Rintaro Kirikawa with Prof. Narayanan Menon). This included mentoring through the DAAD RISE program, for which I submitted the proposal.

## SERVICE & OUTREACH

- Reviewer for APS: Physical Review journals and Reviews of Modern Physics, AIP: Physics of Fluids, AGU: Geophysical Research Letters
- Presented in Pint of Science, Palo Alto May 2025. Title: *Sinking Snacks and Ocean Hacks*.
- Organized Magnifying Science in Field Settings outreach event as part of Promise in Science and Mathematics (PRISM) at the International Center for Theoretical Sciences TIFR, May 2024.
- Organized a Squishy Science at Sea event as part of the American Physical Society (DSOFT) Squishy Science Sunday outreach at the APS March Meeting 2024.
- Teaching in the Building UP Developing Scientist (BioBUDS) at Stanford University, Mar 2024.
- Teaching in Stanford Splash Fall 2022.

## CONTACT REFERENCES

**[1]** Prof. **Sriram Ramaswamy**, FRS (sriram@iisc.ac.in) — PhD Advisor
Department of Physics, Indian Institute of Science.
https://physics.iisc.ac.in/~sriram/

**[2]** Prof. **Manu Prakash**, McArthur Fellow (manup@stanford.edu) — Postdoctoral Advisor
Department of Bioengineering, Stanford University.
https://profiles.stanford.edu/manu-prakash

**[3]** Prof. **Narayanan Menon,** (menon@physics.umass.edu) — PhD Advisor
Department of Physics, University of Massachusetts Amherst.
https://people.umass.edu/nmenon/

**[4]** Prof. **Rama Govindarajan**, (rama@icts.res.in), — PhD Advisor
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https://www.icts.res.in/people/rama-govindarajan