Love Grover

Curriculum Vitae

Department of Physics, IISER Mohali
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Education

2017–Present **Ph.D. in Physics**, *Indian Institute of Science Education and Research (IISER) Mohali*, Mohali, India, *Advisor: Dr. Abhishek Chaudhuri*

2011–2016 **BS-MS in Physics**, *Indian Institute of Science Education and Research (IISER) Mohali*, Mohali, India, CPI: 6.5/10

Relevant coursework

Statistical Mechanics, Modelling complex systems, Statistical Physics of Fields, Field Theory, Physics of Fluids, Non-linear dynamics, Chaos & Complex Systems, Computational Methods in Physics.

Research Interests

Non-equilibrium Statistical Physics, Active Matter, Polymer Dynamics, Interfacial Phenomena, Computational Simulations.

Research Experience

1. **Non-equilibrium interface growth**: Extensive Monte Carlo investigations of dynamic roughening in the Kardar-Parisi-Zhang and Edwards-Wilkinson universality classes, extracting growth and roughness exponents and benchmarking discrete height fluctuations against continuum theories.
2. **Polymer in different environments:** Designed and executed large-scale LAMMPS simulations of semiflexible polymer chains immersed in baths of self-propelled particles, systematically varying activity strength and chain stiffness to analyze emergent conformational and dynamical behaviors.
3. **Ornstein-Uhlenbeck Noise applied and studied on different objects:** Architected and integrated a discrete-time Ornstein-Uhlenbeck (OU) driving force module—implemented in C++ and interfaced with LAMMPS—to generate time-correlated active noise with tunable persistence times.
4. **Modelling Biological Membranes:** Developed a minimal statistical model of biological membranes incorporating multiple species of membrane-bound proteins; implemented large-scale Monte Carlo simulations to investigate how heterogeneous protein interactions modulate membrane morphology, stability, and the emergent spatial organization of protein clusters.

Recent Publications

[1] Love Grover, Rajeev Kapri, Abhishek Chaudhuri, **Spatial organization of multiple species of active particles interacting with an interface**. *Phys. Rev. E*, **111**, 045412 (2025).

Technical Skills

Languages	Python, MATLAB, Fortran.
Simulation Tools	LAMMPS.
Computing	Linux (Arch, Debian), HPC, Git.
Other	LaTeX, Mathematica, Data Visualization.

Teaching and Mentorship

2018-19	Mentored undergraduate summer students on Vicsek Model simulations.
2017-19	Teaching Assistant in Optics Lab, Condensed Matter Physics Lab, Advanced Optics and Spectroscopy Lab, Modern Physics Lab.

Scholarship and Achievements

2011-2016	Inspire Fellowship
2016	JEST qualified
2011	IIT-JEE qualified

Summary

Academically driven PhD candidate in Physics at IISER Mohali with a strong foundation in non-equilibrium statistical mechanics, active matter, and computational simulations. Demonstrated ability to design and execute novel research methodologies, publish in peer-reviewed journals, and mentor undergraduate students. Committed to advancing scientific knowledge through rigorous experimentation, interdisciplinary collaboration, and clear scholarly communication.

References

1. Prof. Abhishek Chaudhuri
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2. Prof. Rajeev Kapri
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