Love Grover

Ph.D. Candidate in Physics

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Professional Profile

Academically driven Ph.D. candidate in Physics with a strong foundation in non-equilibrium statistical mechanics, active matter, and computational simulations. Proven track record of designing novel research methodologies, publishing in peer-reviewed journals, and mentoring students. Skilled in modeling complex systems and translating theoretical concepts into robust computational frameworks.

Education

2017 – Present   **Ph.D. in Physics**
IISER Mohali, Mohali, India
Advisor: Dr. Abhishek Chaudhuri

2011 – 2016   **BS-MS in Physics**
IISER Mohali, Mohali, India
CPI: 6.5/10

Research Experience

Key Projects   **Non-equilibrium Interface Growth**

Conducted extensive Monte Carlo investigations of dynamic roughening in Kardar-Parisi-Zhang and Edwards-Wilkinson universality classes. Successfully extracted growth and roughness exponents and benchmarked discrete height fluctuations against continuum theories.

Polymer Dynamics in Active Baths

Designed and executed large-scale LAMMPS simulations of semiflexible polymer chains in self-propelled particle baths. Systematically varied activity strength and chain stiffness to analyze emergent conformational and dynamical behaviors.

Stochastic Driving Forces

Architected and integrated a discrete-time Ornstein-Uhlenbeck (OU) driving force module in C++ for LAMMPS. Enabled the generation of time-correlated active noise with tunable persistence times for advanced simulation studies.

Modeling Biological Membranes

Developed a minimal statistical model of biological membranes incorporating

multiple protein species. Implemented large-scale Monte Carlo simulations to investigate how heterogeneous protein interactions modulate membrane morphology and stability.

Selected Publications

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

Technical Skills

LANGUAGES Python, MATLAB, Fortran, C++

SIMULATIONS LAMMPS

COMPUTING Linux (Arch, Debian), HPC, Git

TOOLS LaTeX, Mathematica, Data Visualization

Teaching & Mentorship

2018 – 2019 **Undergraduate Mentor**
IISER Mohali
Mentored summer students on Vicsek Model simulations.

2017 – 2019 **Teaching Assistant**
IISER Mohali
Assisted in Optics Lab, Condensed Matter Physics Lab, Advanced Optics and Spectroscopy Lab, and Modern Physics Lab.

Achievements

2016 JEST Qualified

2011 – 2016 INSPIRE Fellowship

2011 IIT-JEE Qualified

References

1. **Prof. Abhishek Chaudhuri**, Professor, Dept. of Physical Sciences, IISER Mohali. abhishek@iisermohali.ac.in

2. **Prof. Rajeev Kapri**, Professor, Dept. of Physical Sciences, IISER Mohali. rkapri@iisermohali.ac.in

3. **Dr. Anil Kumar Dasanna**, Asst. Professor, Dept. of Physical Sciences, IISER Mohali. adasanna@iisermohali.ac.in