

Vinay VAIBHAV

POSTDOCTORAL RESEARCHER



Get in Touch!

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Education

The Institute of Mathematical Sciences

PhD in Physics (2017-2022)

PhD Thesis: Thermo-mechanical Response of Glassy Systems

Supervisor: Prof. Pinaki Chaudhuri

The Institute of Mathematical Sciences

Master of Science in Physics (2015-2017)

Grades: 8.67/10

Central University of Jharkhand

Bachelor of Science (Honours) in Applied Physics (2012-2015)

Grades: 9.56/10

Employment

Postdoctoral Fellow (Mar. 2025 - Present)

Institute for Theoretical Physics, University of Göttingen, Germany. In the group of Prof. Peter Sollich

Postdoctoral Fellow (Mar. 2023 - Feb. 2025)

Dept. of Physics, University of Milan, Italy
Funding: ERC project 'Multimech' of Prof. Alessio Zaccane

Skills and Expertise

Numerical modeling and simulations

— Molecular dynamics, Monte Carlo

High performance computing

Serial and Parallel programming in C/C++

Python, Mathematica, Shell scripting

LAMMPS, LATEX, gnuplot, VMD, Ovito

Research Interests

Broadly interested in the field of Statistical Physics and Soft Matter Systems

- Thermal response of glass-forming systems
- Mechanical response of amorphous materials
- Dynamic heterogeneity in supercooled liquids
- Flow through a porous glassy matrix
- Topological defects in amorphous materials
- Active glass
- Rheology of complex fluids
- Flow under confinement
- Mechanics of atomistic polymers

Selected Publications

- *Experimental identification of topological defects in 2D colloidal glass*
V. Vaibhav, A. Bera, A. C.Y. Liu, M. Baggioli, P. Keim, and A. Zaccane
Nature Communications, 16, 55 (2025)
- *Time-scale bridging in atomistic simulations of epoxy polymer mechanics using non-affine deformation theory*
V. Vaibhav, T.W. Sirk, and A. Zaccane; Macromolecules 57(23), 10885 (2024)
- *Entropic Timescales of Dynamic Heterogeneity in Supercooled Liquid*
V. Vaibhav, and S. Dutta; Phys. Rev. E 109, L062102 (2024)
- *Controlled Mechanical Failure in Heterogeneous Glasses*
V. Vaibhav, J. Horbach, and P. Chaudhuri; Phys. Rev. Materials 7, 095601 (2023)
- *Rheological response of a glass-forming liquid having large bidispersity*
V. Vaibhav, J. Horbach, and P. Chaudhuri; Soft Matter 18, 4427 (2022)
- *Influence of thermalisation protocol on Poiseuille flow of confined soft glass*
V. Vaibhav, and P. Chaudhuri; Physics of Fluids 33, 053103 (2021)

Teaching

Teaching Assistant — University of Göttingen

Advanced Computational Physics (Oct. 2025.-Mar. 2026)

Mathematical Methods I (Oct. 2026.-Mar. 2027)

Quantum Mechanics I (Apr.-Jul. 2025, 2026)

Teaching Assistant — The Institute of Mathematical Sciences, Chennai

Advanced Condensed Matter Physics (Jan.-Apr. 2019)

Statistical Mechanics I (Jan.-Apr. 2018)

Academic Accomplishments/Experiences

- 15+ Talks in various workshops/conferences
- 10+ Poster presentations
- 10+ Academic visits to different research groups
- Invited reviewer in various peer review journals
- Co-supervised bachelor and master students
- Seal of Excellence, MSCA Postdoctoral Fellowship, European Commission
- SERB-international travel grant in 2022 for attending workshop in Germany
- Fellowship from Department of Atomic Energy (GOI) to support PhD research
- 2014: Full-freeship from Central University of Jharkhand
- 2007: Represented the state at national level to present a project titled "Conservation through tradition" in Children's Science Congress, Baramati Pune