Deepa F. Chikkamath

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Education

Bachelor of Science - Master of Science (BS-MS) *IISER Mohali*
Integrated Master's degree program with Physics Majors *2021-2026*

Semester Performance Index (SPI) : 9.4/10.0
Cumulative Performance Index (CPI) : 8.7/10.0

Relevant Coursework: Atoms and Molecules, Solid State Physics, Modeling Complex Systems, Quantum Mechanics (I, II), Fluids dynamics, Statistical Physics, Classical Mechanics, Electrodynamics.

Current courses: Quantum Phases of Matter and Phase Transitions, The Physics of Superconductors, Non-linear Optics, Non-linear Dynamics (Click here for more information on the courses)

Pre-University Education *ICS Mahesh Pre-University College*
12th grade, Department of Pre-University Education (DPUE) *2019-2021*
Grade: 100%

School *Shanthi Sadana High School*
10th grade, Karnataka Secondary Education Examination Board (KSEEB) *2006-2019*
Grade: 98%

Experience

The role of compressibility on turbulent fluctuations *OCA, Nice, France*
Supervisor: Prof. Giorgio Krstulovic, Observatoire de la Côte d'Azur *May 2024 - August 2024*

Abstract: Worked on understanding the role of compressibility in turbulent fluctuations in a two-dimensional fluid model (The Navier-Stokes equation). The results we found will be compared to the ones found for quantum turbulence (The Gross-Pitaevskii equation) in two dimensions.
Learnt the theory of turbulence and codes in Matlab for 2D incompressible and compressible fluid models and calculated energy cascades, circulation, palinstrophy and enstrophy.

Sealing dynamics of a drop impact on a liquid film *IIT Dharwad*
Supervisor: Prof. Hiranya Deka, Indian Institute of Technology *May 2023 - July 2023*

Abstract: Theoretical and numerical modelling of the sealing dynamics of a drop impact on a liquid film. Learnt numerical simulations on Basilisk, an open-source Navier Stokes Equation solver (successor of Gerris).
Learnt the theory of fluid dynamics, computational fluid dynamics, drop dynamics.

Random Walks *IISER Mohali*
Supervisor: Prof. Rajeev Kapri, Indian Insitute of Science Education and Research, Mohali *May 2022 - September 2022*

A reading project on diffusion theory, the structure of polymers and modelling them with Random Walks.

Other research: I worked in an experimental Quantum Optics lab for a month in 2023. I learnt foundational techniques used for experimentation while building a Michelson Interferometer.

Awards and Scholarships

France Excellence Charpak Lab Scholarship *May 2024 - July 2024*

I was one of the 35 students awarded the prestigious Charpak Lab Scholarship supporting research projects at leading French laboratories and institutions. This funded my work with Prof. Giorgio Krstulovic. For more information, click here.

DST-INSPIRE Scholar *2021-2026*

Honored with the prestigious Innovation in Science Pursuit for Inspired Research (INSPIRE) scholarship by India's Department of Science and Technology, awarded exclusively to students in the top 1% of academic achievers. For more information, click here.

Academic Excellence Award in Mathematics (2018, 2019, 2020, 2021), Science (2018), Overall (2016, 2017, 2018, 2019, 2021).

Programming and Experimental skills

- ***Matlab***: Worked with Matlab to modify and build the two-dimensional fluid model and as a scripting language for laboratory and a programming language to model complex systems.
- ***Python***: Proficient in working with numerical and scientific computing packages such as Scipy, Numpy and Matplotlib. Used it to model complex systems.
- ***C Programming***: Basic knowledge of the language.
- ***Experimental***: Techniques used in Nuclear Physics, Advanced Optics and Spectroscopy, Advanced Electronics and instrumentation, Electromagnetism, Fluid Dynamics, Condensed matter physics (ongoing).

Explore my repositories and recent projects on my GitHub: GitHub Profile

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Summer schools

Nice Fluid Mechanics Meeting 2024 - Program *May 2024*
Université Côte d'Azur, Laboratoire J.A. Dieudonné, Nice, France

Lecturer: Prof. Colm-Cille Patrick Caulfield (University of Cambridge, DAMTP)
Lecture Topic: Recent Developments in Modelling Stratified Turbulence and Mixing

The Fascinating World of Flows *June 2023*
International Centre for Theoretical Sciences, Tata Institute of Fundamental Research (ICTS-TIFR)

Speakers: Prof. Rama Govindarajan and Prof. Samriddhi Sankar Ray (ICTS-TIFR)

Interests

- Interpreting and creating contemporary art, abstract art, impressionism, and surrealism.
- Junior editor for the Manthan Magazine.
- I enjoy playing chess.