Arpit Babbar

Centre for Applicable Mathematics
Tata Institute of Fundamental Research
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Education

2020-2024 **Ph.D.** Tata Institute of Fundamental Research - Centre for Applicable Mathematics
Supervisor: Prof. Praveen Chandrashekar.

2018–2020 **M.Sc. in Mathematics** Tata Institute of Fundamental Research - Centre for Applicable Mathematics
Percentage - 87.25
First class with distinction

2014-2017 **B.Sc. (Honours) in Mathematics** Sri Venkateswara College, Delhi University
Percentage - 83

2012-2014 **CBSE, AISSCE** Nosegay Public School
Percentage - 92.4

2010-12 **CBSE, AISSCE** Nosegay Public School
CGPA - 9.6/10

Publications

2022 Arpit Babbar, Sudarshan Kumar Kenettinkara, and Praveen Chandrashekar. "Lax-wendroff flux reconstruction method for hyperbolic conservation laws". Journal of Computational Physics 467 (2022) https://doi.org/10.1016/j.jcp.2022.111423

Work in Progress

"Domain-invariant MUSCL-Hancock blending limiter for Lax-Wendroff schemes." with Sudarshan Kumar Kenettinkara, and Praveen Chandrashekar

"**Neural networks** for computing blending coefficient for Lax-Wendroff blending schemes." with Deep Ray, Praveen Chandrashekar, Vaishnavi Sharma

"Lax-Wendroff schemes for viscous problems on unstructured, curvilinear meshes" with Praveen Chandrashekar

"Error based time stepping schemes for single step evolution methods" with Praveen Chandrashekar

Technical skills

Level	Languages	Operating Systems, Softwares and Packages
Advanced	Julia, Python	`Trixi.jl`, `git`, Linux, TEXMACS, LaTeX, Windows
Intermediate	C++	TensorFlow, `Flux.jl`, DEAL.II, `DifferentialEquations.jl`
Basic	Fortran	`clawpack`, `HOHQMesh`, macOS

Academic achievements

Scholarships

2018-Present TIFR-CAM Research fellowship

Institute Awards

2017 Certificate of merit for the best academic performance at IISER Mohali

National competetions

2017 All India Rank (AIR) 55 in Council of Scientific and Industrial Research - National Eligiblity Test (CSIR - NET), thus qualifying for Junior Research Fellowship

2017 AIR 22 in IIT-JAM, the nationwide M.Sc. entrance exam for IITs

Talks

2023 "Error based time stepping for Lax-Wendroff Flux Reconstruction" at Indo-German conference on Computational Mathematics (IGCM), organized by CDS IISc - Bangalore and IWR Heidelberg Germany

2022 "Lax-Wendroff Flux Reconstruction for hyperbolic conservation laws" during visit at IISER-Trivandrum

Teaching Experience

2023 *Numerical Analysis*
Teaching, tutorials, software support, prescribing assignments and exams, grading

2022 *National Centre for Mathematics (NCM) - Numerical Methods for Partial Differential Equations*
Tutorial, software support

2022 *Statistical learning, Summer Workout in Mathematics (SWIM), TIFR-CAM*
Discussions

2022 *Python programming, Summer Workout in Mathematics (SWIM), TIFR-CAM*
Tutorials, recitations, discussions

2022 *Computational Methods of PDEs*
Tutorials, software support, recitation, discussion

2021 *Computational Methods of PDEs*
Recitations, software support, assignment evaluation, discussions

2020 *Real Analysis*
Assignment evaluation, discussions

Referee Service

10^{th} International Congress on Industrial and Applied Mathematics (ICIAM) 2023, Tokyo

Workshops

2022 NCM Workshop - Numerical Methods for Partial Differential Equations, IISER - TVM

2022 IGP/IWR School on *Hardware aware scientific computing*
Mini project - *Performance analysis of the CFD code HiFlow3*

2019 NCM Advanced Instructional School - Geometric analysis, IIT Bombay

2019 NCM Advanced Instructional School - Geometric measure theory, IIT Madras

References

Professor Praveen Chandrashekar

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Professor Sudarshan Kumar Kenettinkara

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