Deepak Bhoriya

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Education

- **Ph.D. Applied Mathematics** 9.0 C.G.P.A. 2017-2022
  Department of Mathematics, IIT-Delhi, New Delhi, India.
- **M.Sc. Mathematics** 7.75 C.P.I. 2015-2017
  Department of Mathematics, IIT-Bombay, Mumbai, India.
- **B.Sc. Mathematics** 94.89 % 2012-2015
  Sri Venkateswara College (DU), New Delhi, India.
- **Intermediate/+2** 86.50 % 2011-2012
  SDR Public School (CBSE), New Delhi, India.

Doctoral thesis details

- **Title:** Entropy Stable Schemes for Relativistic Flows.
- **Supervisor:** Prof. Harish Kumar

Employment

- **Postdoctoral Researcher (April, 2022 to present):** Department of Physics & Astronomy, University of Notre Dame, IN 46556 USA.

Research/Publications

- Bhoriya, D., Kumar, H., Entropy-stable schemes for relativistic hydrodynamics equations, Z. Angew. Math. Phys. (ZAMP) 71, 29 (2020). https://doi.org/10.1007/s00033-020-1250-8
- Biswas, B., Kumar, H., Bhoriya, D., Entropy stable discontinuous Galerkin schemes for the special relativistic hydrodynamics equations, Computers & Mathematics with Applications, 112, 55-75 (2022), https://doi.org/10.1016/j.camwa.2022.02.019
- Bhoriya, D., Kumar, H., Chandrashekhar, P., High-order finite-difference entropy stable schemes for two-fluid relativistic plasma flow equations [SUBMITTED]https://doi.org/10.48550/arXiv.2210.08568.

Research Interest

- Hyperbolic Conservation Laws, Systems with non-conservative products, Relativistic Flows, Plasma Flows, Entropy Stable numerical schemes, Divergence free techniques, GPU computing.

Teaching Assistant-ship

- **Department of Mathematics, IIT-Delhi.**
  - Real Analysis, M.Sc. 1st year 2018, Even Semester
  - Calculus, B.Tech. 1st year Multiple Semester (thrice)
  - Linear Algebra, B.Tech. 1st year Multiple Semester (twice)

Research Visits

- **University of Notre Dame, USA** 2^{nd}August – 2^{nd}December, 2019
  - Collaborative work with Prof. Dinshaw S. Balsara for a duration of 4 months.
  - Worked on "Multidimensional HLLI Generalized Riemann Problem Solver for Conservation Laws – The Two-Dimensional Case for Structured Meshes".

Scholastic Achievements

- Secured **1st Rank (AIR)** in Ph.D. Entrance Exam. + Interview, South Asian University, New Delhi.
- Secured **1st Rank (AIR)** (Among 3435 students) in **M.Sc. Maths. Entrance** Exam. (Delhi University), 2015
- Secured a job (as a **STA-B-Mathematics**) in Defence Research & Development Organisation **(DRDO)**.
- Secured **AIR 39** in NET-JRF (UGC-CSIR) – 2016 (Dec). and **AIR 59** in NET (UGC-CSIR) – 2015 (Dec).
- Qualified **Gate 2017** with **AIR 280**.
- Secured **AIR 73** in **IIT-JAM Maths.** and **AIR 155** in **IIT-JAM-Stats.** 2015 (Among 7765 & 1721 Students).

Programs/Internships

- **AIS Differential-Equations (2018),** 28-days June – July, 2018
  University of Hyderabad, Hyderabad.
- **Computational Solution of Hyperbolic PDEs for Scientists, Engineers, and Mathematicians,** 12-days December, 2017
  IIT-Delhi, New Delhi.
- **SPIM (Summer Programme In Mathematics),** 28-days June – July, 2016
  Harish-Chandra Research Institute (HRI), Allahabad.
- **MTTS (Mathematics Training and Talent Search),** 28-days June – July, 2014
  IIT-Guwahati, Assam.

Scientific computing/Technical Skills

Scientific Programming Languages: Fortran | C | C++ | Python | Matlab
Parallel Computing Libraries: **GPU:** OpenACC | **CPU:** PETSc | OpenMP
Graphical Frameworks & Libraries: Gnuplot | VisIt | Matplotlib | Numpy | Pandas | Scikit-learn
Web Designing: Basic HTML

Personal Details

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Language Known: English | Hindi