Dr. Nitish Gupta

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Summary

I am currently working as a Postdoctoral Research Fellow in the School of Basic Sciences at the Indian Institute of Technology Bhubaneswar (IIT BBS). Prior to this, I served as an Assistant Professor in the Department of Mathematics at Lovely Professional University (LPU), Punjab, India, from July 2024 to May 2025. My expertise lies in applied engineering mathematics, with a focus on fluid dynamics and heat transfer, particularly in thermally developing regions and local thermal non-equilibrium (LTNE) phenomena. I specialize in analyzing thermal behavior under axial conduction and viscous dissipation effects. My work involves solving complex thermal energy equations using the finite difference method, with applications in heat exchangers, electronics cooling, and porous media. I am deeply committed to academic excellence and impactful research. Moving forward, I aim to incorporate Artificial Neural Networks (ANN) and Physics-Informed Neural Networks (PINN) to enhance modeling and simulation capabilities in engineering systems.

Education

- **Doctor of Philosophy (Ph.D.) in Mathematics**, National Institute of Technology (NIT) Warangal (2019–2024), Specialization: Fluid mechanics, Numerical heat transfer
  Advisor: Prof. D. Bhargavi
  Thesis: *Enhancing Heat Transfer in the Developing Thermal Field in a Fluid Saturated Porous Filled Duct with Local Thermal Non-equilibrium*
- **Master of Science (M.Sc.) in Mathematics**, National Institute of Technology (NIT) Warangal (2015–2017), CGPA: 8.13/10
  Thesis: *Study of Fluid Flow in Wavy Wall Channel*
- **Bachelor of Science (B.Sc.)**, Chhatrapati Shahu Ji Maharaj University, Kanpur, Uttar Pradesh (2011–2014), 60.17%
- **Intermediate (12^th Standard)**, Board of High School and Intermediate Education Uttar Pradesh (2010–2011), 73.0%
- **Intermediate (10^th Standard)**, Board of High School and Intermediate Education Uttar Pradesh (2008–2009), 64.5%

Computer Skills

Software and Math Packages: FORTRAN, Mathematica, Origin, LaTeX, Python, MATLAB; **Operating Systems:** Windows, Linux

Achievements

- Received the **Best Paper Award** at the International Conference on Advancements in Materials, Manufacturing, and Automation, for the paper "An Analytical Study of the Impact of an Inclined Magnetic Field on Couette Flow with Jeffrey Fluid under Local Thermal Non-Equilibrium (LTNE) and Viscous Dissipation", (during 7-9 Apr 2023)
- Ministry of Education (MoE) Scholarship for Ph.D. Research (2019–2024)
- Qualified GATE-2019 and IIT JAM-2015

Research Interests

Porous Structures, Thermal Analysis, Geothermal Convection, Biofluid Mechanics, Stability Analysis, Neural Networks, Numerical Methods

Academic Experience

- **Postdoctoral Fellow**, IIT Bhubaneswar Present
- **Assistant Professor**, Lovely Professional University (LPU), Punjab Jul 2024 – May 2025
- **During Ph.D. at NIT Warangal:**
  - Guided 3 M.Sc. projects (1 published)
  - Assisted in grading, viva, lectures, organizing academic events

Teaching Experience

UG course (Subject taught in LPU): Probability and Statistics (MTH-302) with practical applications using Excel for data analysis and visualization (July 2024- May 2025)
UG/PG courses (Subject taught during PhD): Complex Analysis, Numerical Analysis, Algebra
Laboratory Courses (Lab. taken during PhD): Mathematica, FORTRAN, MATLAB

Publications (21 Published/Accepted)

Articles In Peer-reviewed International Journals (SCI/SCIE/SCOPUS/WoS Indexed: 14 Published/Accepted)

1. **Nitish Gupta**, D. Bhargavi, and K. Vajravelu. "Comparative investigation of axial conduction and viscous dissipation in the entry area: a computational analysis within the local thermal non-equilibrium structure." *Numerical Heat Transfer, Part A: Applications.* **[SCI/SCIE and SCOPUS: Q2, IF 2.8] (ACCEPTED)**
2. **Nitish Gupta**, D. Bhargavi, and K. Vajravelu. "Viscous dissipation impacts on a developing thermal field in a saturated porous medium" *Physics of Fluids*, 2024; 36(12). **[SCI/SCIE and SCOPUS: Q1, IF 4.1]**
3. **Nitish Gupta**, K. Vajravelu. "Maximal transport of non-Newtonian fluid in an anisotropic rotating porous channel with an inclined magnetic field" *Physics of Fluids*, 2024; 36(9). **[SCI/SCIE and SCOPUS: Q1, IF 4.1]**
4. **Nitish Gupta**, D. Bhargavi, O. D. Makinde. "Heat transfer in a MHD couple-stress fluid in a channel filled with porous material: A computational analysis" *International Communications in Heat and Mass Transfer*, 2024; 155:107586. **[SCI/SCIE and SCOPUS: Q1, IF 6.4]**
5. D. Bhargavi, Rishav Aich, and **Nitish Gupta**. "Thermal enhancement of couple stress fluid flow through anisotropic porous media" *Physics of Fluids*, 2024; 36(4). **[SCI/SCIE and SCOPUS: Q1, IF 4.1]**
6. **Nitish Gupta**, D. Bhargavi, K. Vajravelu, and P.A.L. Narayana."A study on MHD Couette flow in a duct filled with porous materials at the thermal entrance and local thermal non-equilibrium effects" *The European Physical Journal Plus*, 2024; 139:681. **[SCI/SCIE and SCOPUS: Q2, IF 2.8]**
7. **Nitish Gupta**. "Computational Analysis of Magnetic Field and Porous Fraction Interactions on Developing Thermal Field in Parallel Plate Channels: Featuring a Central Porous Layer Under a Non-Linear Flow Framework." *Numerical Heat Transfer, Part B: Fundamentals.* **[SCI/SCIE and SCOPUS: Q2, IF 1.7] (ACCEPTED)**
8. **Nitish Gupta**, D. Bhargavi. "Numerical investigation of heat transfer in a developing thermal field in the porous-filled duct under local thermal nonequilibrium: Constant wall heat flux" *Special Topics and Reviews in Porous Media*, 2023; 13:49–81.**[ESCI and SCOPUS:**

Q3, IF 2.1]

9. D. Bhargavi, **Nitish Gupta**, O. D. Makinde. "A numerical study of axial conduction in a fluid-saturated porous-filled duct under a local thermal non-equilibrium model" *Special Topics and Reviews in Porous Media*, 2023; 14:73–89. [**ESCI and SCOPUS: Q3, IF 2.1**]
10. **Nitish Gupta**, D. Bhargavi. "Effect of Magnetic Field on the Developing Thermal Field in a Duct Filled with Porous Media under Local Thermal Non-Equilibrium with a Nonlinear Flow Model" *Journal of Advance Research in Fluid Mechanics and Thermal Sciences*, 2023; 103:87–104. [**SCOPUS: Q3**]
11. A. Gupta, R. S. Reddy, B. M. Girish, **Nitish Gupta**. "Nonlinear Transient Analysis of the Plate with Active Constrained 0-3 Viscoelastic Composite Layer Using Fractional Order Derivative Model" *NanoWorld Journal*, 2023; 9(S1):S508–S512. [**SCOPUS: Q4**]
12. **Nitish Gupta**, D. Bhargavi. "An Analytical Study of the Impact of an Inclined Magnetic Field on Couette Flow with Jeffrey Fluid under Local Thermal Non-Equilibrium (LTNE) and Viscous Dissipation" *Applied Mechanics and Materials*, 2024: 919. [**SCOPUS/WoS**]
13. **Nitish Gupta**, D. Bhargavi. "Impact of magnetic field on heat transfer with viscous dissipation at the conduction limit in a channel with a centred porous layer: constant wall temperature" *Multidisciplinary Science Journal*, 2024; 6:e2024ss0109. [**SCOPUS: Q4**]
14. D. Bhargavi, A. Kumar, P.A.L. Narayana, **Nitish Gupta**. "An Analytical Study of Fluid Flow Through a Porous Filled Channel with Permeable Wall: Suction/Injection Wall Conditions" *Journal of Nanofluids*, 2024; 13:371–380. [**ECIE and SCOPUS: Q2, IF 2.7**]

Book Chapters (SCOPUS Indexed: 5 Published/Accepted)

1. **Nitish Gupta**, D. Bhargavi, "The Influence of Magnetic Effect in a Channel Partially Filled with Porous Material: A Numerical Investigation" *Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy* (pp. 415-426), Springer, Singapore, 2023.
   Hardcover ISBN 978-981-19-9905-5, eBook ISBN 978-981-19-9906-2.
2. **Nitish Gupta**, D. Bhargavi, "Effect of Magnetic Field on Couette Flow in a Fluid-Saturated Porous-Filled Duct Under the Local Thermal Non-equilibrium with Viscous Dissipation", *Advances in Mechanical Engineering and Material Science* (pp. 57-68), Springer, Singapore, 2023.
   Hardcover ISBN 978-981-99-5612-8, eBook ISBN 978-981-99-5613-5.
3. **Nitish Gupta**, D. Bhargavi, "Casson Fluid Flow in a Duct with Iso-Thermal Walls Under the Local Thermal Non-equilibrium Framework: Temperature Distribution", *Springer Proceedings in Physics*, Springer, Singapore, 2024.
   Hardcover ISBN 978-3-031-69133-1.
4. D. Bhargavi, Shantanu, **Nitish Gupta**, "The Investigation of Squeezing Flow Through a Porous Medium Between Parallel Plates Using the Homotopy Perturbation Method", *Springer Proceedings in Physics*, Springer, Singapore, 2024.
   Hardcover ISBN 978-3-031-69133-1.
5. **Nitish Gupta**, "Impact of magnetic field at the entrance region of porous filled duct under the LTNE model with viscous dissipation and axial conduction", *Springer Proceedings in Mathematics and Statistics*, Springer, Singapore. (In Press)

Articles In Conference Proceeding (2 Published)

1. **Nitish Gupta**, D. Bhargavi, "Impact of magnetic field on heat transfer in a parallel plate channel with a centered porous layer: Darcy-Brinkman model", *AIP Conference Proceedings*, 2768, 020014 (2023). [SCOPUS/WoS]
2. **Nitish Gupta**, D. Bhargavi, "Influence of local thermal non-equilibrium on forced convection heat transfer in a duct packed with porous medium: iso-thermal walls", *Proceedings of the 27th National and 5th International ISHMT-ASTFE Heat and Mass Transfer Conference*,

pp. 137-143 (2024).

Research Talks in International Conference/Symposium

1. 66th Congress of Indian Society of Theoretical and Applied Mechanics (66th ISTAM-2022)
   VIT AP, Andhra Pradesh, India 04th-06th Dec., 2022
2. 3rd International Conference on Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy (3rd MMCITRE-2022)
   UTS, Australia and PDEU, India 04th-06th March, 2022
3. 1st International Conference on Recent Advances in Fluid Mechanics (ICRAFM 2022)
   MIT Manipal, Karnataka, India 04th-06th Oct., 2022
4. 1st International Conference on Advancements in Materials, Manufacturing & Automation (AMMA 2023)
   Chennai, India 07th-08th April, 2023
5. 1st International Conference on Advances in Mechanical Engineering and Material Science
   VIT AP, Andhra Pradesh, India 20th-22nd April, 2023
6. 68th Congress of Indian Society of Theoretical and Applied Mechanics (68th ISTAM-2023)
   NIT Warangal, India 07th-09th Dec., 2023
7. 27th National and 5th International ISHMT-ASME Heat and Mass Transfer Conference
   IIT Patna, India 14th-17th Dec., 2023
8. 1st International Conference on Emerging Frontiers in Nonlinear Complex Systems, Computational Intelligence and their Applications
   VIT Chennai, India 07th-09th Feb., 2024
9. 2nd International Conference on Nonlinear Dynamics and Applications (2nd ICNDA 2024)
   Sikkim Manipal University, India 21st-23rd Feb., 2024

Workshops Attended

1. Attended a five-day FDP program on "LaTeX" held on May 19–23, 2020, organized by Anand International College of Engineering in association with Spoken Tutorial Project, IIT Bombay, India.
2. e-Colloquium on "Recent Advancement in Fluid Flow and Heat Transfer" from October 19–25, 2020, organized by Department of Mathematics, Indian Institute of Technology (IIT) Roorkee, India.
3. Five-day FDP program on "Teaching and Learning Strategies of Differential Equations & Applications in Science and Engineering" from December 28, 2020 – January 1, 2021, organized by Department of Mathematics, National Institute of Technology (NIT) Warangal, Telangana, India.
4. Short-term course titled "Applications of CFD to Engineering Problems with Hands-on Practice" held October 17–21, 2022, organized by NIT Rourkela, India.
5. Participated in a workshop on "Recent Advances in Differential Equations and Applications" held October 27–31, 2023, organized by VIT-AP University.
6. Participated in workshop on "International Symposium on Complete Flux Scheme for Convection Diffusion Reaction Models, Fluid Flow and Allied Topics" held January 18–21, 2024, organized by Indian Institute of Technology Kanpur, India.

GIAN Courses Attended

- "Linear and Non-linear Hydrodynamic Stability: Theory and Computation" offered by the Department of Mathematics, NIT Warangal, from April 11–24, 2022

References

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