Dr. Keerthana S.

M.Sc., B.Ed., Ph.D.

3.6 years of Academic Experience

keerthanas@tjohngroup.com

Dr. Keerthana S holds a Ph.D. in Fluid Mechanics from CHRIST (Deemed to be University), Bengaluru, where she also completed her Bachelor's and Master's degrees in Mathematics. Her research focuses on fluid mechanics, with a particular emphasis on convection problems and stability analysis.

With over three years of academic and five years of research experience, Dr. Keerthana has taught various mathematics courses to a diverse group of students, including undergraduate, pre-university, and school students. She is passionate about fostering mathematical thinking and bridging the gap between theoretical concepts and real-world applications.

Her research contributions include publications in peer-reviewed journals and presentations at national and international conferences. Dr. Keerthana's academic interests also extend to heat and mass transfer, non-Newtonian fluid flows, and the integration of technology into mathematics education.

Areas of expertise (subjects handled):

- Fluid Mechanics
- Heat and Mass Transfer
- Linear and Non-linear Stability Analysis
- Numerical Methods
- Differential Equations
- Introduction to Python programming – I
- Python programming for Mathematics
- Integral Transforms using Python

FDP, Seminars, Webinars and Workshops Attended:

- Participated in the "5-Day Faculty Development Programme on Artificial Intelligence: From Fundamentals to Advanced Reasoning from 10th to 15th July 2025 at T. John Institute of Technology, Bangalore, India.

- Participated in "A Five-Day Online FDP on Mathematical Modeling in Biological Systems" organized by the Division of Mathematics, School of Advanced Sciences, Vellore Institute of Technology, Chennai, by virtual mode from 19th to 23rd June 2023.
- Participated in 3-days International FDP on "Computational Mathematics for Engineers and Researchers" organized by Department of Mathematics, Poornima Institute of Engineering & Technology, Jaipur held from 10-12 July, 2020.
- Seminar on Chaos in confinement: How to make shear-thinning fluids flow thicken, organized by the Journal of Fluid Mechanics on 3rd November 2023.
- Participated in the National Seminar on "Applied Fluid Dynamics" organized by Division of Mathematics, School of Advance Sciences on 23rd May 2023 at Vellore Institute of Technology, Chennai.
- Attended Peer Review 101: Build Expertise, Become a Peer Reviewer, organized by Taylor and Francis Group on 24th September 2024.
- Attended "Introduction to Maple 2020" organized by BINARY SEMANTICS on 29th June 2020.
- Participated in the "Two Days National webinar on Fluid Mechanics" organised by Department of Science and Humanities, KGiSL Institute of Technology, Saravanampatti, Coimbatore held on 29th – 30th June 2020.
- Attended National Level webinar on "Fluid Mechanics," organized by St. Francis College, Koramangala, Bengaluru, on 27th June 2020.
- Participated in the webinar organized by the Faculty of Science, Annamalai University in collaboration with ELSEVIER on "Basic Author Workshop Research Article Writing & Reference Management Using Mendeley" on 22nd June 2020.
- Participated in the two-day webinar on "Applications of Mathematics in Mechanical Engineering" conducted by Department of Mathematics, KPR Institute of Engineering and Technology, Arasur, Coimbatore from 11 to 12 June 2020.

- Participated in webinar on "Introduction to FEM" Organised by Department of Mechanical Engineering, Faculty of Engineering & Technology, AKS University Satna by the Prof. Mukul Shukla of Motilal Nehru National Institute of Technology Allahabad (U.P.) on June 08, 2020.
- Attended two days' International webinar on "FLUID DYNAMICS AND ITS APPLICATIONS", Organised by the Department of Mathematics, Government First Grade College, Vijayanagara, Bengaluru on 28th and 29th May 2020, in association with Department of Mathematics, Bangalore University, Bengaluru.
- Participated in National level workshop on "Python for Beginners" organized by Department of Mathematics, Government First Grade College, Kolar Gold Filed, Kolar on 27th June 2020.
- Two-day workshop on 'Advanced topics in Mathematics', organized by the Department of Mathematics, Christ University, Bengaluru, and sponsored by KSTA, Government of Karnataka, held during 13th - 14th November 2017.
- Science Academies' Lecture workshop on 'Ordinary differential Equations: an overview of its applications and various methods of solutions' held at Christ University, Bengaluru, from 30th to 31st of January 2014.

Conferences attended/presented:

- "Triple-Diffusive Convection in a Bi-viscous Bingham Fluid Layer with Temperature Modulation" was presented at the 69th Congress of the Indian Society of Theoretical and Applied Mechanics (ISTAM), organized by the Centre for Mathematical Needs, Department of Mathematics, CHRIST (Deemed to be University), Bengaluru, India, from 19-21 December 2024.

- “Linear and Non-linear Stability Analyses of Triple-Diffusive Convection in a Bi-viscous Bingham Fluid Layer with Different Wave Types of Gravity-Modulation” was presented at the International Conference on Advances in Applied Mathematics (ICAAM-2024) organized by Department of Mathematics University college of science in association with Department of studied and Research in Mathematics, Tumkur University during 10-11 January 2024.
- “Triple Diffusive Convection in a Bi-viscous Bingham Fluid layer with Cross diffusion Effects” was presented at the International Conference on “Modeling, Simulation and Optimization of Energy Systems" (MSOES 2023) jointly organized by the Canadian University Dubai, UAE, United Arab Emirates University, UAE and Dr B. R. Ambedkar National Institute of Technology Jalandhar, India during 17-18 June 2023.
- “Rayleigh-B\'{e}nard Convection in a Bi-viscous Bingham Fluid with Gravity Modulation” was presented at the National Conference of Mathematics and its Application in Science (NCMAS) organized by the Department of Mathematics, Uttarakhand Open University, Haldwani, Uttarakhand, India, during 22-23 December 2022.
- “Analytical Study of Triple-Diffusive Convection in a Bi-viscous Bingham Fluid layer using Ginzburg-Landau Model” was presented at the International Conference on Emerging Trends in Applied Mathematics (ICETAM) organized by the Department of Mathematics, Mount Carmel College, Autonomous, Bengaluru, during 21-22 April 2022.
- “Rayleigh-B\'{e}nard Convection in a Bi-viscous Bingham Fluid with Weak Vertical Harmonic Oscillations: Linear and Non-linear Analyses” was presented at the 6^{th} Coastal Bend Mathematics and Statistics Conference (CBMSC) organized by the Department of Mathematics and Statistics, Texas A and M University-Corpus Christi on 9^{th} April 2022.
- “Linear Stability Analysis on the Onset of Rayleigh-B\'{e}nard Convection in A Second-Order Fluid With Maxwell-Cattaneo Law Under the Effect of Non-Uniform Temperature Gradients" was presented at the

National Conference on Mechanical Engineering and Emerging Technologies held on 23-24 February 2018 at the Faculty of Engineering, CHRIST University, Bengaluru.

- Attended the 9th Annual Conference of the KSTA on 'Science, Technology, and Innovations in the 21st Century' jointly organized by the Karnataka Science and Technology Academy and Christ University held during 20th - 21st December 2016.

List of Publications

Journal Papers

- Keerthana S, P. G. Siddheshwar, and Sameena Tarannum, "Linear and Non-linear Stability Analyses of Triple-Diffusive Convection in a Bi-viscous Bingham Fluid Layer with Different Wave Types of Gravity Modulation," Numerical Heat Transfer, Part A: Applications (Taylor and Francis), 2024. (Submitted the Revision)
- Keerthana S, P. G. Siddheshwar, and Sameena Tarannum, "Weakly Non-linear Stability Analysis of Triple-Diffusive Convection in a Bi-viscous Bingham Fluid Layer with Cross-Diffusion Effects," International Journal of Applied and Computational Mathematics (Springer), vol. 10, no. 5, 2024. DOI: 10.1007/s40819-024-01774-w
- Keerthana S, P. G. Siddheshwar, and Sameena Tarannum, "Analytical Study of Triple Diffusive Convection in a Bi-viscous Bingham Fluid Layer using Ginzburg-Landau Model," Numerical Heat Transfer, Part A: Applications (Taylor and Francis), vol. 85, no. 18, 2024. DOI: 10.1080/10407782.2024.2368752
- Keerthana S, P. G. Siddheshwar, Sameena Tarannum, and Ruwaidiah Idris, "Rayleigh-B\'{e}nard Convection in a Bi-viscous Bingham Fluid with Weak Vertical Harmonic Oscillations: Linear and Non-linear Analyses," International Journal of Applied and Computational Mathematics

(Springer), vol. 9, no. 3, 2023. DOI: 10.1007/s40819-023-01495-6

- Keerthana S and Smita S. Nagouda, “Linear Stability Analysis on the Onset of Rayleigh-B\'{e}nard Convection in A Second-Order Fluid with Maxwell-Cattaneo Law under the Effect of Non-Uniform Temperature Gradient,” Recent Trends in Fluid Mechanics, vol. 5, no. 1, 2018. DOI: 10.37591/rtfm.v5i1.632

Internship

- Numerical Methods for PDE (Partial Differential Equations) Using MATLAB under Prof. G. D. Veerappa Gowda, TIFR, Center of Applied Mathematics, Bengaluru, during April- May 2017 at Christ University.