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Special Issue on

**Advances in Modern Mathematics and Computational
Methods (Part-A)**

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FOREWORD

In this special issue titled “Advances in Modern Mathematics and Computational Methods”, we explore how mathematical concepts relate to their applications across various fields, including Nonlinear Analysis and Modeling, Nonlinear Dynamics and Applications, and Computational Nonlinear Mathematics. The theme unites efforts across various branches of mathematics, demonstrating the field’s diversity and evolution.

This issue primarily concerns Numerical Analysis, Differential Equations, and Optimization, focusing on numerical methods, solutions to differential equations, and optimization techniques for problems of practical and theoretical interest. In addition, we consider fundamental aspects of Real Analysis, Functional Analysis, and Complex Analysis, which provide the theoretical basis for many mathematical results.

In Algebra, Topology, and Geometry, contributions concern structural properties of mathematical objects and their use. The topic also falls within the scope of Applied and Computational Mathematics, which focuses on using computational methods to solve mathematical problems.

A section on fractional differential equations is also included, wherein the theoretical findings as well as applications that have recently become significant in the field are presented. On the same note, the textbook Fuzzy Logic and Its Applications for the study of problems involving uncertainty and approximate reasoning is also included.

The importance of Mathematical Modeling and Probability Theory is emphasized in the understanding and analysis of complex systems. The issue also features recent work in mathematical applications, where mathematical methods are applied to problems in science and engineering. Furthermore, Information Theory and Signal Processing are also discussed,

and their significance in data representation and communication systems is highlighted.

We received 179 paper submissions from researchers worldwide for this special issue, reflecting a broad spectrum of innovative ideas related to the special issue topics. After a rigorous peer-review process that ensured each paper met the highest standards of quality and relevance, 82 papers were selected for this special issue, which are being published in two parts : JIM 29#5-A and JIM 29#5-B. This acceptance rate highlights our commitment to excellence in the research we publish, ensuring that only the most impactful contributions are included in this special issue.

The guest editors of this special issue would like to express their gratitude to the authors for sharing their valuable research. The guest editors especially thank Prof. B. K. Dass, Chief Editor, who supported us in bringing out this special issue of *Journal of Interdisciplinary Mathematics*, published by Taru Publications, New Delhi, India.

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