Special Issue

Fractional Calculus and Fractional Differential Equations: Theory and Applications

Message from the Guest Editors

In recent decades, generalizations of the derivative and the integral, the two fundamental operators of ordinary calculus, have gained great relevance; the set of mathematical results generated from these generalizations is called fractional calculus. As a natural consequence, the theory of differential equations has also become generalized and the scientific community from areas such as mathematics, physics, chemistry, biology, economy, and engineering have witnessed how the models governed by these equations have great flexibility in describing and predicting various processes inherent to the corresponding areas of knowledge; this generalization is called fractional differential equations. This Special Issue aims to collate original articles with contributions in all areas of science and engineering, such as new definitions and properties of fractional operators; new inequalities with fractional operators; fractional partial differential equations; fractional stochastic differential equations; applications of fractional ordinary, partial, or stochastic differential equations; and neural network methods for solving fractional differential equations.

Guest Editors

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Deadline for manuscript submissions

20 September 2025

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About the Journal

Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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