

Special Issue

Advances in Fractional Dynamics: Computational Approaches and Applications in Cosmology, Mechanics, and Complex Systems

Message from the Guest Editor

This Special Issue will highlight recent advances in the theoretical foundations and computational modeling of fractional dynamics, with a particular emphasis on applications in cosmology, classical and quantum mechanics, and the analysis of complex systems. Fractional calculus provides a powerful framework for capturing non-local behaviors, memory effects, and anomalous transport phenomena—features that frequently emerge in physical and mathematical models but remain inadequately addressed by classical differential approaches. We welcome the submission of original research contributions that advance analytical and numerical techniques for solving fractional differential equations, including novel computational algorithms, stability assessments, and geometric formulations. We will particularly focus on studies that demonstrate the applicability of these methods to gravitational systems, particle motion, and emergent structures in nonlinear and multifractal regimes.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

Fractal and Fractional (*Fractal Fract.*) is a scholarly online journal which provides a forum for discussion on new original models and methods in fractals and fractional calculus both from theory and applications. It is a peer-reviewed, open access journal that publishes high quality original research articles, review papers and short communications.

Editor-in-Chief

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