Special Issue

Fractional Differential and Fractional Integro-Differential Equations: Qualitative Theory, Numerical Simulations, and Symmetry Analysis

Message from the Guest Editors

In the last three decades, fractional calculus, fractional differential and fractional integro-differential equations, and qualitative theory of these equations have been broken into the field of mathematical analysis. In essence, the theory of fractional calculus, the qualitative theory of fractional differential and fractional integro-differential equations, their numerical simulations, and symmetry analysis are mathematical analysis tools applied to the study of integrals and derivatives of arbitrary order, which unifies and generalizes the classical notions of differentiation and integration. Qualitative theory of fractional differential equations, fractional integro-differential equations, and fractional order operators can occur in numerous scientific fields, such as fluid mechanics, viscoelasticity, physics, biology, chemistry, dynamical systems, signal processing, entropy theory... One of the most recently developed studies is the use of different types of kernels. Singular and non-singular kernels have been used in recent studies for the analysis of dynamical models, and their results are comparable to those of classical work.

Guest Editors

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

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