Special Issue

Advances in Fractional Integral Inequalities: Theory and Applications

Message from the Guest Editors

The flexibility of fractional calculus has empowered researchers to develop a wide range of convex integral inequalities that are fundamental in approximation theory. Classical inequalities, such as Jensen's, Simpson's, Ostrowski's, Hermite–Hadamard's, and trapezoidal inequalities, are commonly used to establish error bounds in numerical integration. To derive these inequalities, researchers employ various approaches, including the use of fractional operators, functional maps, relational frameworks, and other advanced analytical techniques, underscoring the significant influence of fractional calculus in contemporary mathematical analysis. For example, self-adjoint operators, which are fundamental in both mathematics and physics, facilitate the extension of classical numerical inequalities to linear operators on Hilbert spaces. These operators, which generalize Hermitian matrices, are defined by their symmetry, guaranteeing real eigenvalues and orthogonal eigenvectors. The analysis of inequalities involving self-adjoint operators has profound applications in functional analysis, quantum mechanics, operator theory, and optimization.

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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.

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