Fractional Calculus and Fractals in Mathematical Physics

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Message from the Guest Editors

Dear Colleagues,

Fractional calculus is widely used to describe various non-local dynamic processes and systems. Nonlocality or heredity is the property of dynamic systems to preserve their prehistory. Heredity can be described using derivatives of fractional orders, and the orders of fractional derivatives are responsible for the intensity of the process under study. From the point of view of mathematical modeling, the introduction of derivatives of fractional orders gives a more flexible description of the process under study due to an additional degree of freedom—the order of the fractional derivative. In this Special Issue, we focus on the applications of fractional calculus and fractal theory to mathematical physics and related sciences. Topics that may be featured in the Special Edition may include (but are not limited to):

1. Application of fractional calculus in the theory of diffusion-wave processes;
2. Application of fractional calculus to describe fractional-order oscillatory systems;
3. The use of fractional calculus to describe the transfer processes.

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