



fractal and fractional



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Fractional Differential Equations

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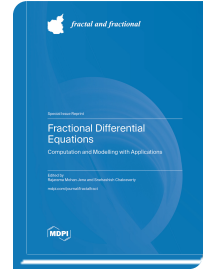
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In recent times, researchers across various fields have become interested in the topic of fractional calculus based on integrals and derivatives of fractional order. This area has numerous and widespread applications in fields of science and engineering, including wave and fluid dynamics, mathematical biology, financial systems, structural dynamics, robotics, and artificial intelligence, among others. Therefore, fractional models have become relevant in the context of phenomena with memory effects, in place of the conventional reliance on ordinary or partial differential equations. Fractional calculus offers superior tools for addressing time-dependent effects compared to integer-order calculus, which forms the foundation of most mathematical systems. As a result, fractional calculus is crucial to modeling real-life problems, and finding mathematical solutions is a great challenge in this regard.



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