Fractal Calculus an Extension of Ordinary Calculus

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Fractal calculus was formulated recently as an extension of standard calculus. This framework was generalized and applied in several branches of science and engineering. Fractal calculus, like ordinary calculus, has both local and non-local versions. An advantage of this type of fractal calculus is that it is algorithmic, which makes it more suitable for applications like ordinary calculus. Many frameworks for calculus on fractals were formulated, but some of them are ad-hoc or non-algorithmic and, as a result, difficult to utilize in science. Fractal calculus involves fractional derivatives that have geometrical as well as physical meaning. In this work, we present the local and nonlocal fractal calculus and applications in physics such as statistical mechanics and quantum physics.

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