Special Issue

Applications of Fractional Calculus in Option Pricing

Message from the Guest Editors

Since the famous Black–Scholes model, several robust generalizations have been introduced, including stochastic volatility models, regime-switching models, or models driven by jump-diffusion and pure jump processes. In the context of pure jump models, particularly important was the pioneering work by Peter Carr and Liuren Wu, who generalized the Black–Scholes setup by considering the totally asymmetric alpha stable Lévy process known as the finite moment log-stable process (FMLS). It was shown, notably in the works of Cartea and Del Castillo Negrete, that Carr and Wu's FMLS model corresponds to the generalized diffusion equation with the fractional differential operator in the spatial coordinates: this was a motivation for further investigations of fractional diffusion and fractional calculus in option pricing, with the introduction of fractional operators in both the spatial and temporal coordinates. (Anti-)differential fractional operators also arose in the context of option pricing via fractional Brownian motion. This Special Issue is therefore dedicated to applications of fractional calculus in option pricing.

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The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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