# DESCRIPTION

In recent years, Fourier transform methods have emerged as one of the major methodologies for the evaluation of derivative contracts, largely due to the need to strike a balance between the extension of existing pricing models beyond the traditional Black-Scholes setting and a need to evaluate prices consistently with the market quotes.

*Fourier Transform Methods in Finance* is a practical and accessible guide to pricing financial instruments using Fourier transform. Written by an experienced team of practitioners and academics, it covers Fourier pricing methods; the dynamics of asset prices; non-stationary market dynamics; arbitrage free pricing; generalized functions and the Fourier transform method.

Readers will learn how to:

- compute the Hilbert transform of the pricing kernel under a Fast Fourier Transform (FFT) technique
- characterise the price dynamics on a market in terms of the characteristic function, allowing for both diffusive processes and jumps
- apply the concept of characteristic function to non-stationary processes, in particular in the presence of stochastic volatility and more generally time change techniques
- perform a change of measure on the characteristic function in order to make the price process a martingale
- recover a general representation of the pricing kernel of the economy in terms of Hilbert transform using the theory of generalised functions
• apply the pricing formula to the most famous pricing models, with stochastic volatility and jumps.

Junior and senior practitioners alike will benefit from this quick reference guide to state of the art models and market calibration techniques. Not only will it enable them to write an algorithm for option pricing using the most advanced models, calibrate a pricing model on options data, and extract the implied probability distribution in market data, they will also understand the most advanced models and techniques and discover how these techniques have been adjusted for applications in finance.


ABOUT THE AUTHOR

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