

Computational Financial Mathematics using MATHEMATICA®

Optimal Trading in Stocks and Options

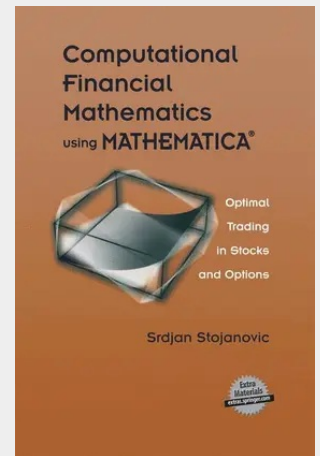
Given the explosion of interest in mathematical methods for solving problems in finance and trading, a great deal of research and development is taking place in universities, large brokerage firms, and in the supporting trading software industry. Mathematical advances have been made both analytically and numerically in finding practical solutions.

This book provides a comprehensive overview of existing and original material, about what mathematics when allied with Mathematica can do for finance. Sophisticated theories are presented systematically in a user-friendly style, and a powerful combination of mathematical rigor and Mathematica programming. Three kinds of solution methods are emphasized: symbolic, numerical, and Monte-- Carlo. Nowadays, only good personal computers are required to handle the symbolic and numerical methods that are developed in this book.

Key features: * No previous knowledge of Mathematica programming is required * The symbolic, numeric, data management and graphic capabilities of Mathematica are fully utilized * Monte--Carlo solutions of scalar and multivariable SDEs are developed and utilized heavily in discussing trading issues such as Black--Scholes hedging * Black--Scholes and Dupire PDEs are solved symbolically and numerically * Fast numerical solutions to free boundary problems with details of their Mathematica realizations are provided * Comprehensive study of optimal portfolio diversification, including an original theory of optimal portfolio hedging under non-Log-Normal asset price dynamics is presented

The book is designed for the academic community of instructors and students, and most importantly, will meet the everyday trading needs of quantitatively inclined professional and individual investors.

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