1. Record Nr. UNINA9910254073403321 Autore Swishchuk Anatoliy Titolo Change of Time Methods in Quantitative Finance / / by Anatoliy Swishchuk Pubbl/distr/stampa Cham:,: Springer International Publishing:,: Imprint: Springer,, 2016 **ISBN** 3-319-32408-X Edizione [1st ed. 2016.] Descrizione fisica 1 online resource (140 p.) Collana SpringerBriefs in Mathematics, , 2191-8201 Disciplina 650.01513 Soggetti Social sciences - Mathematics Mathematics in Business, Economics and Finance Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references at the end of each chapters and index. Nota di contenuto Introduction to the Change of Time Methods: History, Finance and Stochastic Volatility -- Change of Time Methods: Definitions and Theory -- Applications of the Change of Time Methods -- Change of Time Method (CTM) and Black-Scholes Formula -- CTM and Variance, Volatility, Covariance and Correlation Swaps for the Classical Heston Model -- CTM and the Delayed Heston Model: Pricing and Hedging of Variance and Volatility Swaps -- CTM and the Explicit Option Pricing Formula for a Mean-reverting Asset in Energy Markets -- CTM and Multi-Factor Levy Models for Pricing Financial and Energy Derivatives --Epilogue. Sommario/riassunto This book is devoted to the history of Change of Time Methods (CTM), the connections of CTM to stochastic volatilities and finance, fundamental aspects of the theory of CTM, basic concepts, and its properties. An emphasis is given on many applications of CTM in financial and energy markets, and the presented numerical examples are based on real data. The change of time method is applied to derive the well-known Black-Scholes formula for European call options, and to derive an explicit option pricing formula for a European call option for a mean-reverting model for commodity prices. Explicit formulas are also derived for variance and volatility swaps for financial markets with a

stochastic volatility following a classical and delayed Heston model. The

CTM is applied to price financial and energy derivatives for one-factor and multi-factor alpha-stable Levy-based models. Readers should have a basic knowledge of probability and statistics, and some familiarity with stochastic processes, such as Brownian motion, Levy process and martingale.