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Nota di contenuto	1 Introduction -- 1.1 Introduction -- 1.2 Wide popularity of the SABR -- 1.3 Simple derivation -- 1.4 Modifications and extensions of the SABR -- 1.5 CMS and the SABR -- 1.6 Approximation accuracy and its improvements -- 1.7 About this book -- 2 Exact Solutions to CEV Model with Stochastic Volatility -- 2.1 Introduction -- 2.2 Transforming CEV Process into the Bessel One -- 2.3 Solution behavior near singular point x = 0, integrability, flux -- 2.4 Laplace Transform -- 2.5 Probability distributions -- 2.6 Back to CEV model -- 2.6.1 Option pricing through Chi Square distributions -- 2.7 Alternative expressions for CEV option values -- 2.8 CEV Model with Stochastic Volatility -- 2.9 Conclusion -- 3 Classic SABR Model: Exactly Solvable Cases -- 3.1 Introduction -- 3.2 Probability Density Functions for the Free Normal and Log-Normal SABR, Probabilistic Approach -- 3.3 Deriving PDFs using Kolmogorov equations -- 3.4 Option Value for the Free Normal SABR -- 3.5 Option Value for the Lognormal SABR -- 3.6 The Zero Correlation case -- 4 Classic SABR Model: Heat Kernel

Expansion and Projection on Solvable Models -- 4.1 Introduction -- 4.2 Invariant forms of Diffusion Equations -- 4.3 Heat Kernel Expansion -- 4.4 Non-Zero Correlation General Case -- 4.5 Conclusion -- References.

Sommario/riassunto

Focusing on recent advances in option pricing under the SABR model, this book shows how to price options under this model in an arbitrage-free, theoretically consistent manner. It extends SABR to a negative rates environment, and shows how to generalize it to a similar model with additional degrees of freedom, allowing simultaneous model calibration to swaptions and CMSs. Since the SABR model is used on practically every trading floor to construct interest rate options volatility cubes in an arbitrage-free manner, a careful treatment of it is extremely important. The book will be of interest to experienced industry practitioners, as well as to students and professors in academia. Aimed mainly at financial industry practitioners (for example quants and former physicists) this book will also be interesting to mathematicians who seek intuition in the mathematical finance.