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Nonlinear Option Pricing (Chapman and Hall/CRC Financial Mathematics Series)

Julien Guyon, Pierre Henry-Labordere
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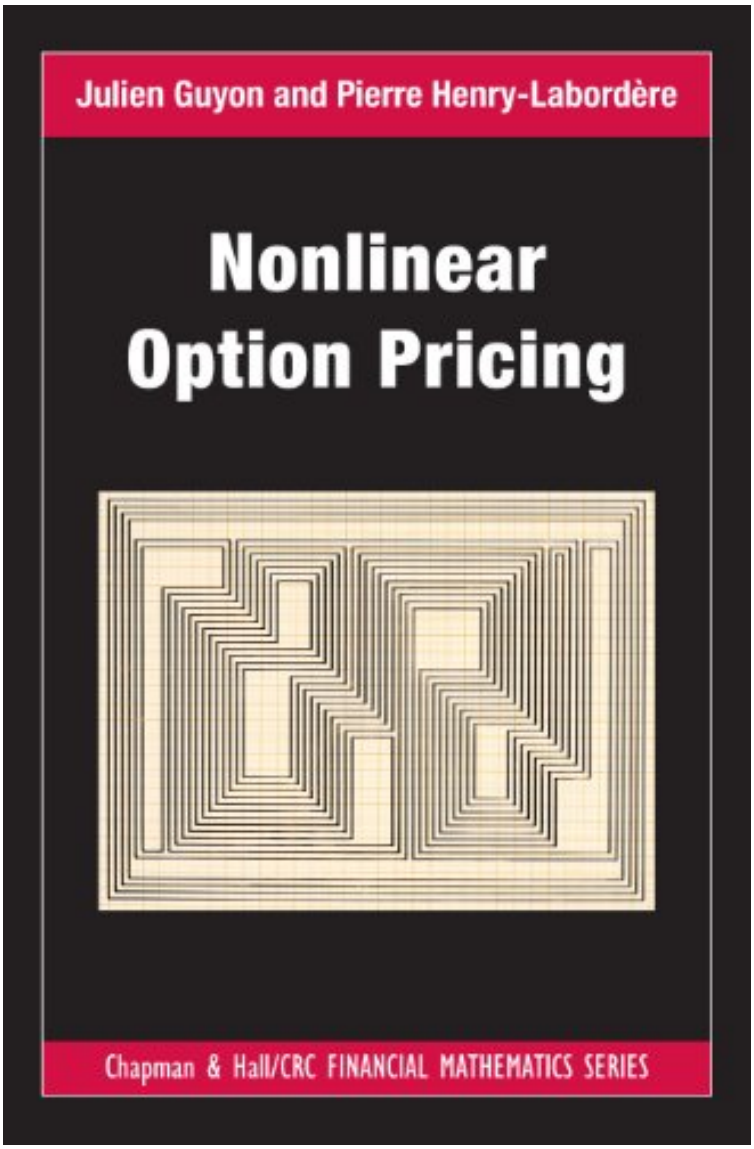

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Julien Guyon, Pierre Henry-Labordere : Nonlinear Option Pricing (Chapman and Hall/CRC Financial Mathematics Series) before purchasing it in order to gage whether or not it would be worth my time, and all praised Nonlinear Option Pricing (Chapman and Hall/CRC Financial Mathematics Series):

New Tools to Solve Your Option Pricing ProblemsFor nonlinear PDEs encountered in quantitative finance, advanced probabilistic methods are needed to address dimensionality issues. Written by two leaders in quantitative researchmdash;including Risk magazinersquo;s 2013 Quant of the Yearmdash;Nonlinear Option Pricing compares various numerical methods for solving high-dimensional nonlinear problems arising in option pricing. Designed for practitioners, it is the first authored book to discuss nonlinear Black-Scholes PDEs and compare the efficiency of many different methods. Real-World Solutions for Quantitative Analysts The book helps quants develop both their analytical and numerical expertise. It focuses on general mathematical tools rather than specific financial questions so that readers can easily use the tools to solve their own nonlinear problems. The authors build intuition through numerous real-world examples of numerical implementation. Although the focus is on ideas and numerical examples, the authors introduce relevant mathematical notions and important results and proofs. The book also covers several original approaches, including regression methods and dual methods for pricing chooser options, Monte Carlo approaches for pricing in the uncertain volatility model and the uncertain lapse and mortality model, the Markovian projection method and the particle method for calibrating local stochastic volatility models to market prices of vanilla options with/without stochastic interest rates, the a + b? technique for building local correlation models that calibrate to market prices of vanilla options on a basket, and a new stochastic representation of nonlinear PDE solutions based on marked branching diffusions.

"... provides a wide overview of the advanced modern techniques applied in financial modeling. It gives an optimal combination of analytical and numerical tools in quantitative finance. It could provide guidance on the development of nonlinear methods of option pricing for practitioners as well as for analysts."?Nikita Y. Ratanov, from Mathematical s Clippings, January 2015 "hellip; anyone with interest in quantitative finance and partial differential equations/continuous time stochastic analysis will not only greatly enjoy this book, but he or she will find both many numerical ideas of real practical interest as well as material for academic research, perhaps for years to come."?Peter Friz, The Bachelier Finance Society "This textbook provides a comprehensive treatment of numerical methods for nonlinear option pricing problems."?Zentralblatt MATH 1285 "It is the only book of its kind. hellip; The contribution of this book is threefold: (a) a practical, intuitive, and self-contained derivation of various of the latest derivative pricing models driven by diffusion processes; (b) an exposition of various advanced Monte Carlo simulation schemes for solving challenging nonlinear problems arising in financial engineering; (c) a clear and accessible survey of the theory of nonlinear PDEs. The authors have done a brilliant job providing just the right amount of rigorous theory required to understand the advanced methodologies they present. hellip; Julien Guyon and Pierre Henry-Labordegrave;re, as befitting their reputations as star quants, have done an excellent job presenting the latest theory of nonlinear PDEs and their applications to finance. Much of the material in the book consists of the authorsrsquo; own original results. I highly recommend this book to seasoned mathematicians and experienced quants in the industry hellip; Mathematicians will be able to see how practitioners argue heuristically to arrive at solutions of the toughest problems in financial engineering; practitioners of quantitative finance will find the book perfectly balanced between mathematical theory, financial modelling, and schemes for numerical implementation."?Quantitative Finance, 2014 "Ever since Black and Scholes solved their eponymous linear PDE in 1969, the complexity of problems plaguing financial practitioners has exploded (non-linearly!). How fitting it is that nonlinear PDEs are now routinely used to extend the original framework. Written by two leading quants at two leading financial houses, this book is a tour de force on the use of nonlinear PDEs in financial valuation."?Peter Carr, PhD, Global Head of Market Modeling, Morgan Stanley, New York, and Executive Director of Masters in Mathematical Finance, Courant Institute of Mathematical Sciences, New York University "Finance used to be simple; you could go a long way with just linearity and positivity but this is not the case anymore. This superb book gives a wide array of modern methods for modern problems."?Bruno Dupire, Head of Quantitative Research, Bloomberg L.P. "In this unique and impressive book, the authors apply sophisticated modern tools of pure and applied mathematics, such as BSDEs and particle methods, to solve challenging nonlinear problems of real practical interest, such as the valuation of guaranteed equity-linked annuity contracts and the calibration of local stochastic volatility models. Not only that, but sketches of proofs and implementation details are included. No serious student of mathematical finance, whether practitioner or academic, can afford to be without it."?Jim Gatheral, Presidential Professor, Baruch College, CUNY, and author of The Volatility Surface "Guyon and Henry-Labordegrave;re have produced an impressive textbook, which covers options and derivatives pricing from the point of view of nonlinear PDEs. This book is a comprehensive survey of nonlinear techniques, ranging from American options, uncertain volatility, and uncertain correlation models. It is aimed at graduate students or quantitative analysts with a strong mathematical background. They will find the book reasonably self-contained, i.e., discussing both the mathematical theory and the applications, in a very balanced approach. A must-read for the serious quantitative analyst."?Marco Avellaneda, Courant Institute of Mathematical Sciences, New York University