



# Computational Methods for Option Pricing (Frontiers in Applied Mathematics)

By Yves Achdou, Olivier Pironneau



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This book is a must for becoming better acquainted with the modern tools of numerical analysis for several significant computational problems arising in finance. Important aspects of finance modeling are reviewed, involving partial differential equations and numerical algorithms for the fast and accurate pricing of financial derivatives and the calibration of parameters. The best numerical algorithms are fully explored and discussed, from their mathematical analysis up to their implementation in C++ with efficient numerical libraries. This is one of the few books that thoroughly covers the following topics: mathematical results and efficient algorithms for pricing American options; modern algorithms with adaptive mesh refinement for European and American options; regularity and error estimates are derived and give strong support to the mesh adaptivity, an essential tool for speeding up the numerical implementations; calibration of volatility with European and American options; the use of automatic differentiation of computer codes for computing greeks.



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About the Author

Yves Achdou is a Professor at the Université Denis Diderot, Paris. He was awarded the Prix Blaise Pascal de l'Académie des Sciences in 1998.

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