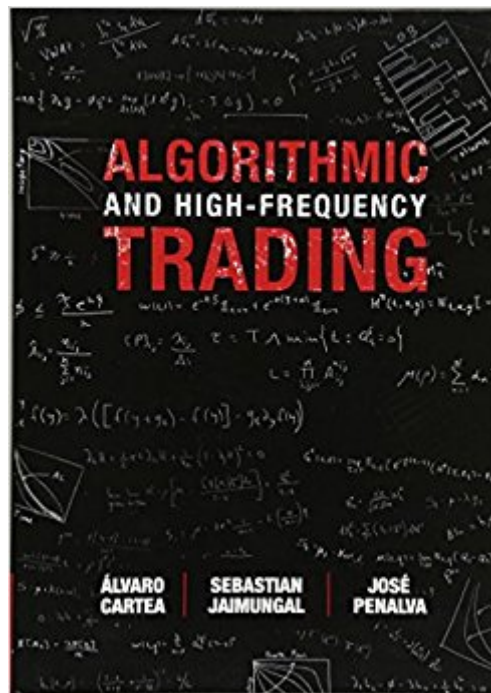




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# Algorithmic And High-Frequency Trading (Mathematics, Finance And Risk)



## Synopsis

The design of trading algorithms requires sophisticated mathematical models backed up by reliable data. In this textbook, the authors develop models for algorithmic trading in contexts such as executing large orders, market making, targeting VWAP and other schedules, trading pairs or collection of assets, and executing in dark pools. These models are grounded on how the exchanges work, whether the algorithm is trading with better informed traders (adverse selection), and the type of information available to market participants at both ultra-high and low frequency. *Algorithmic and High-Frequency Trading* is the first book that combines sophisticated mathematical modelling, empirical facts and financial economics, taking the reader from basic ideas to cutting-edge research and practice. If you need to understand how modern electronic markets operate, what information provides a trading edge, and how other market participants may affect the profitability of the algorithms, then this is the book for you.

## Book Information

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## Customer Reviews

"[This book] is an important and timely textbook on algorithmic trading. Human traders in financial markets are an endangered species, gradually replaced by computers and algorithms. In this new world, designing and coding trading strategies requires knowledge of market microstructure, basic economic principles governing price formation in financial markets, and stylized facts about price dynamics and trading activity. It also requires specific mathematical tools, such as stochastic control, and understanding of how these tools are used to solve trading problems. *Algorithmic and*

High-Frequency Trading is unique in that it provides a unified treatment of these topics. I enjoyed reading it and recommend it highly to students or practitioners interested in mathematical models used in algorithmic trading." Thierry Foucault, HEC Paris

"This book is the first to give a thorough coverage of optimal strategies in algorithmic and high-frequency trading, from the very modern point of view of dynamic stochastic optimization and based on cutting-edge work, much of which is by these authors. Other books cover the mechanics and statistics of high-frequency market dynamics, but none covers the mathematical aspects to this depth. It would be a great textbook for a graduate course in optimal trading." Robert Almgren, Quantitative Brokers

"This textbook is a welcome addition to the literature on algorithmic trading and the high-frequency markets. It fills a significant gap by bringing cutting-edge mathematical models to bear on the analysis and implementation of practical algorithms. Using a unique blend of microstructure theory, financial data analysis, and mathematical models, the authors walk the reader through the maze of the high-frequency markets, detailing how the exchanges work, and what kind of data they generate. Trading algorithms and their practical implementations are described in easy-to-understand prose, and illustrated with enlightening simulations. This text is ideal for graduate students and researchers in financial mathematics and engineering, as well as for practitioners already working in the field." René Carmona, Princeton University

This cutting-edge textbook shows how to build the advanced mathematical models that underpin modern trading algorithms. If you need to understand how modern electronic markets operate, what information provides a trading edge, and how other market participants may affect the profitability of the algorithms, then this book is for you.

A very practically oriented and mathematically simple narrative. Plenty of examples of exactly solvable dynamic programming problems. Most chapters end with a discussion of practical implications of the calculations.

Can be useful but you have to be an advanced calculus student and have to understand proofs well without practical exercises. As of this writing very little is available on their website and I had bought the book more than 9 months ago the exercises and examples are "still coming". You need more data than what is provided for sure unless you want a biased result. On the good side they have a few good ideas. I had no idea what optimal stopping even was before I read this book.

Undoubtedly one of the best books out there on this topic. It is on the mathematical end but rooted on data and realistic applications. Those who want to learn about the maths behind trading algorithms must start here.

Excellent book with detail explanation of derivations and applied to trading data.

Poorly explained on numerous topics. Far too advanced for a normal mathematical reader. Suggestion for the authors: write books the way Emmanuel derman does, or the book "brownian motion calculus" by ubbo weirsema. I would not recommend this book for some one who wants to self study. Unfortunately as of today, you still need a decent background on optimal control theory and calculus of variations to understand any concepts here.

Amazing collection of trading problems and how to solve them. Not for the casually reader, but those willing to put in the effort will gain lots of insight. Some of the models need to be peppered with real world nuances to make them practical. My sense is that they wrote this book as a demonstration of how to apply control methods to algorithmic trading, rather than providing just a collection of rules of thumb. All in all, well worth the price.

Great book... used it for a course on algo trading. Nice balance of empirical facts, theory and applications. Other books on algo trading out there were full of fluff, this one actually had math details. Hope they post some more code on their website though...

A futile exercise in operations research that has nothing to do with trading. These kids clearly have no clue how trading works. If you want to read about mathematical optimization, there are plenty other good reads out there. This is not one of them.

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