

# Titles in Math Modeling and Numerical Analysis *from SIAM*

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## Introduction to the Mathematics of Subdivision Surfaces

**NEW**

Lars-Erik Andersson and Neil F. Stewart

Subdivision surfaces permit a designer to specify the approximate form of a surface defining an object and to refine and smooth the form to obtain a more useful or attractive version of the surface. A considerable amount of mathematical theory is required to understand the characteristics of the resulting surfaces, and this book provides a careful and rigorous presentation of the mathematics underlying subdivision surfaces as used in computer graphics and animation, explaining the concepts necessary to easily read the subdivision literature.

2010 · xxiv + 356 pages · Hardcover · ISBN 978-0-898716-97-9  
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## Discrete Inverse Problems: Insight and Algorithms

**NEW**

Per Christian Hansen

This book gives an introduction to the practical treatment of inverse problems by means of numerical methods, with a focus on basic mathematical and computational aspects. It includes a number of tutorial exercises that give the reader hands-on experience with the methods, difficulties, and challenges associated with the treatment of inverse problems and also includes examples and figures that illustrate the theory and algorithms.

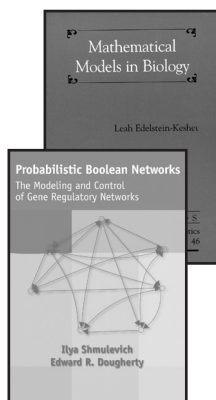
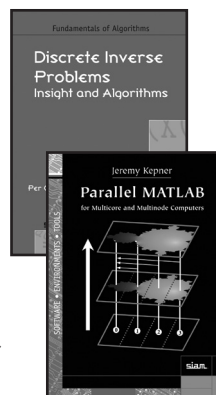
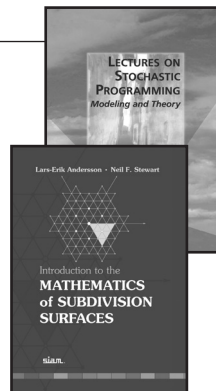
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Ilya Shmulevich and Edward R. Dougherty

This is the first comprehensive treatment of probabilistic Boolean networks, an important model class for studying genetic regulatory networks. This book covers basic model properties, including the relationships between network structure and dynamics, steady-state analysis, and relationships to other model classes. It also discusses the inference of model parameters from experimental data and control strategies for driving network behavior towards desirable states. The authors attempt to unify different strands of current research and address emerging issues.

2010 · xiv + 267 pages · Softcover · ISBN 978-0-898716-92-4  
List Price \$59.00 · SIAM Member Price \$41.30 · **OT118**



## Lectures on Stochastic Programming: Modeling and Theory

Alexander Shapiro, Darinka Dentcheva, and Andrzej Ruszczyński

Optimization problems involving stochastic models occur in almost all areas of science and engineering, such as telecommunications, medicine, and finance. Their existence compels a need for rigorous ways of formulating, analyzing, and solving such problems. This book focuses on optimization problems involving uncertain parameters and covers the theoretical foundations and recent advances in areas where stochastic models are available.

2009 · xvi + 436 pages · Softcover · ISBN 978-0-898716-87-0  
List Price \$119.00 · MPS-SIAM Member Price \$83.30 · **MP09**

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Jeremy Kepner

This is the first book on parallel MATLAB® and the first parallel computing book focused on the design, code, debug, and test techniques required to quickly produce well-performing parallel programs. It covers more parallel algorithms and parallel programming models than any other parallel programming book.

2009 · xxiv + 249 pages · Hardcover · ISBN 978-0-898716-73-3  
List Price \$65.00 · SIAM Member Price \$45.50 · **SE21**

## Mathematical Models in Biology

Leah Edelstein-Keshet

This is an introductory book for readers interested in biological applications of mathematics and modeling in biology. A favorite in the mathematical biology community since its first publication in 1988, the book shows how relatively simple mathematics can be applied to a variety of models to draw interesting conclusions. Connections are made between diverse biological examples linked by common mathematical themes. A variety of discrete and continuous ordinary and partial differential equation models are explored.

2005 · xliii + 586 pages · Softcover · ISBN 978-0-898716-55-4  
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