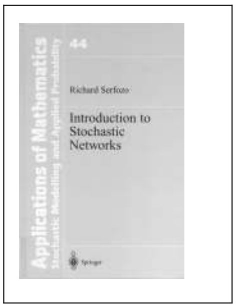
mathematics, as evidenced by the number of symposia and Symplectic Geometry Seminars in mathematics departments around the world.

Integrable Hamiltonian systems were amongst the first to be analyzed in the 19th century, a prime example being the two-body problem. However, with the discovery that the KdV equation is an integrable infinite-dimensional Hamiltonian system, and the discovery of a range of integrable systems, the natural question that arose was how to test a system for integrability. The subject of the book under review is a summary of the development of multi-Hamiltonianism as a framework for integrability. This subject is generally credited as beginning with a seminal paper of Magri in *J. Math. Physics* (1978), and was rapidly developed into a coherent framework, with interesting connections to other branches of mathematics.

The book under review starts with an introductory chapter showing a number of examples of integrable systems with multi-Hamiltonian structures. The second chapter is a very readable introduction into the differential geometric techniques – differential forms, Lie derivatives, et cetera – that are needed for the later analysis. The book then gives an interesting overview of the Lax theory for integrable systems.

One of the most important applications of the theory of integrable systems is to soliton bearing equations, and chapter 5 gives an overview of this subject. Chapter 6 covers the theory of finite-dimensional multi-Hamiltonian systems. The book also contains two chapters of a research nature: multi-Hamiltonian structures for PDEs in 1+1 and 2+1 dimensions.

Without doubt this book is the most comprehensive treatment of the framework of multi-Hamiltonianism, and is quite readable as well. Because of the importance of integrability – as a structure, and as a starting point for perturbation theories – the book would make a welcome addition to the library of any researcher working in Hamiltonian dynamics. *Th.J. Bridges*



R.F. Serfozo
Introduction to stochastic networks
(Applications of Mathematics)
New York: Springer-Verlag, 1999
304 p., prijs DM 139,-
ISBN 0-387-98773-8

This book provides an overview of equilibrium results for queueing network type models obtained over the past decades focussing on networks driven by Poisson processes. The results are to a large extent addressed from an abstract point of view. Generic models are analysed in detail, and most of the classical queueing network type models are included as examples. The treatment of the generic models is self-contained. Throughout most of the text, proofs (for special cases) are provided if necessary to understand the results. Complicated proofs are concentrated in special chapters that handle general cases in the setting of point processes.

The topics covered in the book range from classical Jackson networks to spatial queueing processes. Emphasis is on Markovian models for discrete units that have a tractable (for example, product form) stationary distribution. The main body of the text focuses on network models for discrete units moving in a discrete environment (Jackson and Whittle networks, and their applications to for instance BCMP and Kelly networks). For these networks, the relation between a product form stationary distribution and reversibility, quasi-reversibility, and other forms of partial balance, such as obtained for string transition networks (that allow a relation between queues via signals), is investigated in detail. More advanced results such as network flows, network travel times, Little laws and Palm probabilities require the theory of point processes. These results are provided in the same detailed manner as the results on stationary distributions. The final part of the book considers spatial processes where discrete units move in a general space. In particular, space-time Poisson models, that generalise networks of infinite server queues to allow units to move in a continuous environment, are characterised in detail. These results provide the basic insight into the nature of spatial processes that is required for analysis of spatial queueing systems, the topic of the final chapter of the book.

Introduction to stochastic networks provides a refreshing point of view for the analysis of Markovian network processes integrating both discrete and continuous space models. The restriction of the results to the Markovian setting is both a strong and weak point of the monograph. On the one hand, results beyond the equilibrium distribution for networks with exponential holding times (such as insensitivity results), as well as computational methods (for example, mean value analysis) required for application of the results are not covered in the text, which clearly limits its use. On the other hand, the focus on tractable results for Markovian networks makes the monograph readable and self-contained, thus enabling its use both as a reference text, and for a graduate course for students that preferably have already been exposed to elementary queueing models and a course on stochastic processes at the graduate level. *R.J. Boucherie*

T. Cebeci
An engineering approach to the calculation of aerodynamic flows
Heidelberg: Springer-Verlag, 1999
396 p., prijs DM 159,–
ISBN 3-540-66181-6

In dit boek geeft Cebeci een overzicht van een methode zoals die gebruikt wordt in de vliegtuigindustrie om aerodynamische stromingen te berekenen. Deze methode is ontwikkeld door de auteur en gebaseerd op de interactive boundary-layer (IBL) en stability-transition (ST) theorieën. De IBL theorie behelst het numeriek oplossen van de gereduceerde Navier-Stokes vergelijkingen waarbij de Euler en grenslaag vergelijkingen gekoppeld zijn door een interactie wet. De ST theorie is gebaseerd op lineaire stabiliteitstheorie, in dit geval de e^n-methode. Verder beschrijft het boek toepassingen op profielen, vleugels en high-lift devices.

Na een beknopte inleiding worden in deel 1 twee-dimensionale stationaire profielstromingen (zowel compressibel als incompressibel) behandeld. Ingrediënten zijn de Hess-Smith panelenmethode, het numeriek oplossen van de grenslaagvergelijkingen, de transitie-methode volgens de e^n-methode en toepassingen (profielstromingen met hoge en lage Reynoldsgetallen, loslating, ijs-